



# **Stories of Secondary School Teachers Cultivating Engaged Pedagogy in Mathematics Classrooms**

by

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## **SUPERVISOR'S AUTHORISATION**

As the candidate's supervisor I agree to the submission of this thesis.

Supervisor: Professor Daisy Pillay

Signed: ...  .....

Date: 27 March 2025 .....

## **DECLARATION**

I, Logandrie Beser (Student number: 205519455) declare that:

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## ABSTRACT

This study, titled “Stories of Secondary School Teachers Cultivating Engaged Pedagogy in Mathematics Classrooms,” explores the daily experiences of four South African secondary school mathematics teachers working in public schools. The research focuses on how their personal and professional experiences influence their teaching practices, particularly in the context of promoting engaged pedagogy in mathematics classrooms.

Guided by Hooks (1994) concept of Engaged Pedagogy and Weaver and Wilding (2013), Five Dimensions of Engaged Teaching, this study creates a space for secondary school teachers to share their stories about cultivating engaged mathematics classrooms. Utilising a narrative inquiry approach within an interpretivism paradigm, the teachers' stories of their everyday experiences provide insights into how their personal and professional lives shape their teaching in mathematics.

The narratives generated using various creative methods, such as memory drawings, self-portraiture, object inquiry, and unstructured interviews, enabled teachers to reflect on their memories and comfortably share the rich and complex stories of their past and present experiences. The data analysed through a paradigmatic lens highlights a range of emotions, feelings, and significant relationships that influenced how these teachers conveyed their experiences in mathematics classrooms. Mathematics teachers face daily demands from the department to produce desired results in mathematics and try to negotiate challenges to foster engaged pedagogy in mathematics classrooms.

This study broadened my understanding of secondary school teachers' lived experiences and how their teaching practices are continuously shaped by navigating challenges and demands. The findings highlight how mathematics teachers can reflect on both past and present experiences, using these memories to inform and engage pedagogical practices within mathematics classrooms. The study revealed that transforming classrooms into environments of imagination, curiosity, and play promotes deeper engagement and connection in mathematics learning. Future research could build upon this study by exploring the narratives of primary and secondary school teachers across KwaZulu-Natal, investigating how their past and present experiences influence the development of engaged pedagogy in mathematics classrooms.

## DEDICATION

*“I can do all things through Christ who strengthens me.”*

-Philippians 4:13

I dedicate this study to my Lord and Saviour, Jesus Christ, whose strength and wisdom made it possible, and for placing significant people in my path to help me throughout my academic journey. To my husband, Shabir Beser, for your unconditional love and unwavering support—you are my pillar of strength. To my spiritual father, Pastor Jace Munsamy, for your steadfast prayers and encouragement. In loving memory of my late grandparents, especially my grandfather, who stepped in as a father figure and showed me endless love. To my amazing children, for your resilience and understanding throughout this journey. Lastly, to my wonderful supervisor, Prof. Daisy Pillay, for your constant guidance and belief in me.

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# **CHAPTER ONE:**

## **INTRODUCTION**

### **STAGING THE SCENE FOR STUDYING AN ENGAGED MATHEMATICS CLASSROOM**

*“Teachers must reflect on their motivations for becoming mathematics teachers and the objectives of mathematics education.”*

-Wright, 2017, p.515

#### **1.1 Background**

This study, titled “Stories of Secondary School Teachers Cultivating Engaged Pedagogy in Mathematics Classrooms,” explores the daily experiences of four South African secondary school mathematics teachers working in public schools. The research focuses on how their personal and professional experiences influence their teaching practices, particularly in the context of promoting engaged pedagogy in mathematics classrooms. Engaged pedagogy is defined as a holistic, student-centered approach that integrates critical thinking, “self-actualization”, and collaborative learning to empower both teachers and students (Hooks, 1994). One of the concerns about Mathematics in secondary schools is the poor results in the subject and a perception by learners that mathematics is uninteresting and irrelevant (Spangenberg & Roberts, 2020). This leads to a lack of motivation in the subject, low self-confidence, and dissatisfaction with the learning experience. Hence, the study provides narratives of teachers’ experiences in practicing learner-centered, interactive, and meaningful teaching practices in math education to explore the effect of engaged pedagogy on collaborative learning, reshaping teacher-self, and connectedness in mathematics classrooms.

As emphasised in the quotation in the header, through reflection, teachers must recognise their dedication to enhancing students' skills in mathematics and embracing the elegance and fulfillment that mathematics offers (Wright, 2017). According to Du Preez (2018), students' decisions to become mathematics teachers are deeply embedded in intrinsic motivation due to their love for the subject and the influence of their mathematics teachers in school. The current state of mathematics in South Africa is appalling (Du Preez, 2018); hence teachers’ inherent motivation combined with the drive to help learners better understand mathematics is required. According to Wright (2017), mathematics teachers face daily challenges in their teaching practice, and it is crucial to understand the root causes of these challenges to address them effectively. Some of the challenges that teachers face include political influence on teaching,

curriculum demands, and lack of time to engage the curriculum with learners due to constraints that persist. Social injustices perpetuated by power relations and ideological disputes are at the root of this problem (Wright, 2017). Du Preez (2018) concurs with Wright (2017) and states that South African education has been challenged politically, socially, and practically.

Providing support for teachers to navigate these challenges and developing positive relationships with their learners is essential to fostering engagement and success in mathematics. Therefore, as Jao and McDougall (2016) suggest, professional development activities should incorporate participation, collaborative learning, and coherent tasks rather than just sharing information from the presenter. Although such a transition in teaching mathematics is required, researchers like Adler (2021) assert it will require much time, effort, and dedication from teachers.

One of the challenges mathematics teachers face is that learners often view mathematics as uninteresting and unimportant, making it difficult to collaborate and engage with the subject. Hence, learners do not feel motivated to study mathematics. This lack of motivation stems from several issues such as regarding the subject as irrelevant, having low self-confidence, or feeling dissatisfied with their learning experience (Spangenberg & Roberts, 2020). Jojo (2019) asserts that learners can become intrinsically motivated if they can understand the practical application of mathematics in everyday life. The South African educational (teacher) community recognises that a culture of collaboration can improve teaching and learning practices and correct this issue.

In this regard, Agyekum (2019, p.121) suggests that positive teacher-learner relationships can create a peaceful and stable learning environment conducive to productive learning. According to Du Preez (2018), many mathematics teachers were intrinsically motivated by their experiences to pursue their careers in mathematics. Thus, to foster engagement in mathematics, teachers should reflect on their own experiences as learners and how their beliefs and knowledge have shaped their teaching practices. Toom (2019) describes tacit knowledge as the practical expertise acquired through experience. It influences our thoughts, actions, and feelings, often subconsciously, helping individuals adapt to their environments. Teachers' tacit knowledge, as explained by Ambrosini and Bowan (2001), can be a valuable resource for creating a creative and inclusive learning environment.

Learners spend a significant portion of their waking hours in school, with most of that time spent in classrooms (Wright, 2017). Therefore, classrooms should be recreated as spaces for positive engagement between teachers and learners (Pietsch, 2020). The primary responsibility of teachers is to create a safe and conducive environment for meaningful and effective teaching and learning. As a result, classrooms can be powerful and influential settings for shaping the education and development of children and teenagers. However, many learners find mathematics boring and unhelpful, limiting their collaboration and ignoring their unique talents and strengths. This is due to outdated teaching methods discouraging active engagement and critical thinking (Wright, 2017).

Therefore, teachers must adopt a new perspective that empowers learners and challenges them to think critically (Adler, 2021). Teachers who engage and offer social relational support, and initiate teacher-learner relationships and interactions, are more likely to promote development change (Adler, 2021). A change in approach to teaching mathematics can help communities in developing countries improve their education systems (Mabena, Mokgosi, & Ramapela, 2021). This change can shape the futures of young people. It can also support the growth of infrastructure, economic understanding, culture, and morality, as well as raise the living standards of their people (Mabena et al., 2021).

Ardeleanu (2019) argues that traditional mathematics teaching methods have dominated the classrooms for years. Traditional mathematical teaching methods involve a teacher-centered approach, where learners are seated to view the teacher explaining new concepts on a board, connecting them to prior knowledge, solving examples, and occasionally engaging learners with questions to stimulate thinking (Ardeleanu, 2019), compared to more democratic, constructive methods which are learner-centered and comprise of interactive pedagogies like group work, projects, inquiry-based learning, investigation, experimentation and similar strategies Olawale, Mncube, and Harber (2023) argue that a democratic classroom is not just about teaching democracy, it entails promoting respectful and supportive interactions among learners. Teaching mathematics democratically focuses on inclusivity, participation, critical thinking, and shared decision-making. It empowers teachers to be change agents, teaching math concepts while also supporting equity, social justice, and teamwork in problem-solving. This transitional approach to teaching mathematics emphasises fairness and social justice, and it does not contradict the goal of improving mathematical proficiency (Wright, 2017). Social justice emphasises the need to address systemic inequities in education and provide all learners

access to meaningful math experiences (Ardeleanu, 2017). Forming a relationship between the teacher and the learner can facilitate the creation of alternative pedagogies (Wright, 2017). By doing so, all learners can acquire the attitudes, behaviours, and social abilities required to be successful learners. The development of a meaningful relationship between teachers and learners extends beyond the standard curriculum (Palmer, 2017). By nurturing this relationship, teachers can engage with learners on intellectual, emotional, and spiritual levels (Palmer, 2017), which ultimately fulfills the aspirations they had when choosing to become mathematics educators.

This study illuminates the experiences of teachers as they cultivate engaged pedagogy in mathematics classrooms. Following Palmer (2017), I draw on Hooks (1994) conceptual framing of “engaged pedagogy”, which emphasises the importance of not only imparting information but also fostering intellectual, spiritual, and emotional development by connecting with learners' minds, bodies, and spirits. Engaged pedagogy prioritises the holistic well-being of both teachers and learners. Engaged pedagogy, as defined by Hooks (1994), is an educational approach that emphasises well-being, critical thinking, and “self-actualization” for both teachers and students. It challenges educators to focus on their well-being to effectively empower learners. This method promotes a transformative learning experience that fosters critical consciousness and collective effort in creating a supportive learning community (Specia & Osman, 2015) I focus on the personal experiences of teachers—both past and present—to explore their beliefs and how those shape their perspectives as teachers, which impacts their abilities to create meaningful connections in mathematics classrooms. The purpose of this study is to explore the lived experiences of four South African secondary school mathematics teachers working in public schools. The research zooms in on their personal and professional experiences and how it influences their teaching practices, particularly in the context of promoting engaged pedagogy in mathematics classrooms. Naidu (2014) draws on Hooks (1994) and describes engaged pedagogy as a teaching method that encourages active participation and critical thinking, which focuses on the well-being of both students and teachers to create meaningful and transformative learning experiences.

In this chapter, the following are discussed, the background, including a synopsis of the research literature. The reasons for the choice of mathematics teachers as my participants, along with the professional and contextual rationale for my study, are explained. The key concepts, such as personal and professional experiences through stories, teacher-learner relationships,

classrooms as spaces for support and collaboration, and engaged pedagogy, are elucidated. The three research questions underpinning this study are clearly outlined. Additionally, a synopsis of my research methodology is provided.

## **1.2 Why Mathematics teachers?**

A great emphasis in South Africa is placed on results in mathematics, and the teacher is often expected to produce the desired results (Jojo, 2019). In July 2024, I was selected by the principal of my high school to help improve the performance of the mathematics department in a poor-performing school in the Umlazi district. In 2023, the pass rate for mathematics in the school was 10%, and the school was placed under intervention. Transitioning from my current school in Savannah Park to the school where I spent five years of schooling as a learner was filled with tension (Steadman, 2021). In my previous school, I felt at “home” and connected with the learners, teachers, and management. Transitioning to a different teacher community and school culture was discomfoting and made me feel uneasy. Although I felt emotionally disconnected, I accepted this move to the new school to help learners better understand mathematics and develop a connection with the subject.

Returning to my high school was nostalgic, I remembered and connected with my personal experiences of schooling and as a learner. As a learner, I related differently from the current learners. I desired to form a connection with the learners in the new school so I could better understand the challenges they faced in mathematics. By the end of the first month, I not only got to know the learners and their struggles, but they also became willing to stay in during their breaks and after school to develop a meaningful understanding of mathematics. When learners visited me to express their gratitude for helping them understand mathematics and being a key role player in the school, I felt overwhelmed. It became clear to me that teaching mathematics went beyond formulae and traditional methods; it was about care, connection, and support. Connectedness in mathematics classrooms with diverse learners to engage in mathematics meaningfully is significant before achieving expected results. Jilk (2012) suggests the creation of meaningful space to connect with diverse learners and valuing experiences as resources for learning. Studying what teachers do to express care and connection in Mathematics classrooms drove my curiosity as a mathematics teacher and researcher. Getting to know how teachers cultivate care and connection and where they draw their ideas from, to break down the traditional ways of teaching mathematics.

### 1.3 Professional Rationale

As a master's student, my interest in exploring the phenomenon of how teachers' personal and professional experiences influence their teaching practices, particularly in the context of promoting engaged pedagogy in mathematics classrooms, was sparked by my own experiences as a mathematics teacher. I wanted to deepen my understanding of teacher-learner relationships, as I believe that teachers who work closely with their learners connect with them not only academically but also socially, emotionally, and intellectually. Teaching learners mathematics in a safe and trusting space encourages interaction between teachers and enhances pedagogical approaches that are implemented in the classroom, leading to the engagement of all stakeholders (Chahine, 2013).



**Figure 1.1 My memory drawing showing a happy moment as a teacher**

I used a simple memory drawing technique to illustrate a "happy moment as a teacher." Memory drawing is a technique that is defined as a research method that involves creating drawings to explore personal and shared experiences. It helps promote learning and improve future remembering (Pithouse-Morgann, Madondo, & Mkhize, 2019). According to Pithouse-Morgann, et al., (2019), memory drawing, when combined with interactive conversation, can create significant professional and social learning. I chose to recall a memorable experience from my Grade 12 Mathematics class when my learners received their results. Many of the learners in my class were anxious and intimidated by mathematics, a common perception;

mathematics is often seen as a difficult subject (Wright, 2017). Typically, mathematics is taught solely through set methods and skills, which can leave learners feeling afraid to attempt problem-solving. The methods and skills outlined encompass essential proofs and calculations that educators are encouraged to teach effectively, while learners are invited to engage with the material through memorisation and practice. To address this, I decided to work closely with my learners and reassure them that we could succeed together. I identified each learner's strengths and weaknesses in various topics and assigned mentor learners to those who were struggling. As we collaborated to explore different methods for solving problems, I noticed a growing sense of motivation and determination among the learners. I encouraged learners to share their solutions both individually and in groups to help build their confidence. Learners who had previously struggled to meet the minimum requirements for passing began to find inspiration and worked harder, demonstrating newfound determination. When the matric results were released, it was a surreal moment: my class achieved a 90% pass rate, and one learner earned a distinction, the only one in our school. Additionally, those who had initially struggled passed comfortably. This success stemmed from my initiative as a mathematics teacher to identify challenges and realise that the best way forward was to collaborate with my learners instead of continuing with traditional top-down, teacher-centered approaches that continue to isolate some learners and make mathematics learning a disembodied experience. Building relationships with my learners is essential as a mathematics teacher. I understand the feelings of disconnection that many learners experience, as I also felt isolated during my learning journey in mathematics. As both a teacher and a researcher, I strive to discover new and innovative approaches to engage my learners, making mathematics a more joyful and meaningful experience for them.

By engaging in a critical discussion of my memory drawing with academic peers and my research supervisor, I was able to assemble keywords and concepts I wanted to focus on in my study. As a researcher, I explore how working with care and collaboration with learners can contribute to engaged pedagogy in Mathematics Classrooms. Engaged pedagogy aims to share knowledge while fostering an inclusive and supportive environment. It emphasises teachers' "self-actualization" and encourages learners to actively participate in their learning journey (Hooks, 1994).

#### **1.4 Contextual Rationale**

In 2008, Christie asserted that schooling in South Africa during apartheid was used as a mechanism to enforce social segregation and maintain inequality among different races. Christie advocated for the transition that took place at the onset of democracy and highlighted how the purpose of schooling had changed to address social injustices. This transition included the move to racially integrated schools, diverse classrooms, and languages, with teachers required to become agents of change, creating inclusive and interactive learning environments (Christie, 2008). However, Soudien (2024) asserts that thirty years after apartheid, South Africa still faces racial and class inequalities. He argues that privilege and disadvantage continue in new forms. To achieve more equality, Soudien (2024) emphasises the need for practical policies and accountability, not just words. These professional imperatives mean that teachers need to move beyond just being deliverers of content and implementers of curriculum. Teachers must therefore revisit their roles as teachers to become agents of change in creating classrooms that promote equity, equality, and engagement. Some of these are stipulated in teaching standards documents by SACE (2018).

According to SACE (2018, p.4), teaching standards for South African teachers, “professional Engagement involves educators demonstrating caring, respect and professionalism in all their interactions with learners, colleagues, parents/carers and the community, and maintaining positive, collaborative relationships.” The policy also highlights for teachers,

Professional practice involves educators acquiring and using a range of effective teaching strategies to ensure learning opportunities for all learners through professional engagement and professional knowledge (SACE, 2018, p.4).

Teachers need to mediate learning to satisfy and meet the diverse needs of learners. This involves creating environments that are conducive to the learning climate, are motivational, and foster respectful and tolerant communication. Teachers are also encouraged to demonstrate strong subject content knowledge and incorporate diverse values, approaches, and resources that are appropriate for the South African context (Adler & Davis, 2006). Mathematics education is often criticised for its conventional teaching methods that include teacher-centered learning, memorising formulae and proofs, and prescribed methods of teaching that result in social inequalities due to a lack of inclusivity (Wright, 2017). In South Africa, teachers are expected to re-evaluate their goals and methods to create inclusive learning environments (Jojo,

2019). While teachers' mastery of the subject matter is crucial for effective instruction and student performance (Tachie, 2022), it is equally important to promote active learner participation and contribution beyond content knowledge (Chahine, 2013).

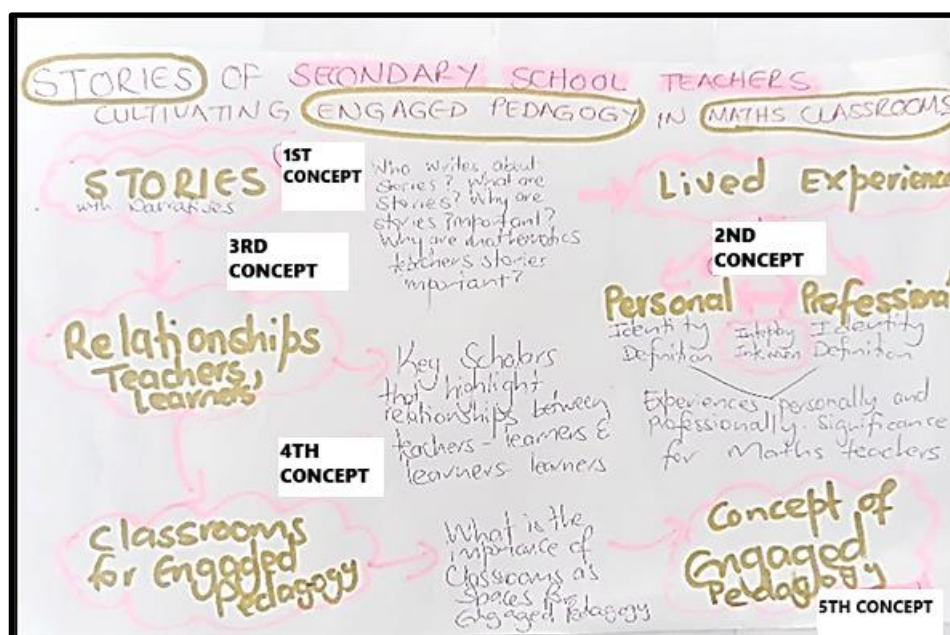
Like all educational practitioners in South Africa, teachers must redirect and refocus their goals and approaches in meaningful ways (Robinson, 2003). While the depth of the teacher's subject content knowledge significantly impacts the learning environment, learners' performance, and instructional strategies (Tachie, 2022), it is equally important to extend learning beyond content knowledge and encourage learner participation and contribution (Chahine, 2013).

Professional learning for mathematics teachers is significantly influenced by proactive actions undertaken by educators, such as participating in curriculum development workshops. These workshops enhance teachers' understanding of the content and effective delivery strategies. (Harrington, Sinfield & Burns, 2021). Additionally, teachers benefit from acquiring and engaging with updated resources such as textbooks, digital materials, and hands-on tools that reflect the latest advancements in their subject areas.

Adler and Davis (2006) argue that to be effective in diverse mathematics classrooms, teachers must have a strong understanding of the content and communicate it effectively to learners. Therefore, it is the responsibility of teachers to continuously develop their skills and transform their mathematics classrooms to engage learners, rather than simply transferring knowledge (Chahine, 2013). Transforming mathematics classrooms into safe, inviting spaces where every learner can be a source of knowledge is complex. This study promotes the idea that engaging and joyful mathematics classrooms go beyond just the teacher's skills. As Palmer (1997) reminds us teaching is projected from the heart and goes beyond methods and techniques.

### **1.5 Key concepts and theoretical perspectives**

To enhance the understanding of the concepts presented in the study titled "Stories of Secondary School Teachers Cultivating Engaged Pedagogy in the Mathematics Classroom," I developed a concept map. Butler-Kisber and Poldma (2010, p. 4) describe concept mapping as a visual method that conveys and communicates the ideas and concepts in one's mind. It transforms thoughts into images, drawings, or other forms of visual representation to enhance understanding and engagement. Using the concept map I created, I was able to identify key concepts that are central to this study. In this section, I unpack and discuss these identified concepts, referencing key scholars to deepen understanding and connect them to the study.



**Figure 1.2: Concept map to help my conceptual understanding**

### 1.5.1 Personal and Professional Experiences through Stories

According to Connelly and Clandinin (1990, p. 2), “humans are storytelling organisms who individually and socially lead storied lives.” This research explores how teachers perceive and implement engaged pedagogy in their mathematics classrooms, connecting it to their personal experiences, cultural backgrounds, and professional interactions. By articulating their stories, teachers offer valuable insights into their authentic experiences, which help to understand the meanings they attach to their identity and actions in the educational environment. This narrative-sharing not only enriches our understanding of educational professionals in terms of who they are and how they think and act in the world but also sheds light on the broader implications of engaged pedagogy. Polkinghorne (2007) explained that researchers employing the narrative approach generate constructions of self (critical incidents, significant others, anxieties, wishes, and everyday experiences) through stories, whether spoken or written. This narrative inquiry enhances the process of using stories to generate valuable insights into teacher participants' past-present-future experiences and the beliefs shaping their ways of being, thinking, and doing.

Stories play a critical role in helping us understand our sense of self and our identities as teachers (Beauchamp & Thomas, 2009). Teachers’ personal experiences are closely linked to

their identities, which is shaped by their values and beliefs. By reflecting on their personal experiences, teachers can reshape and redefine their identities. Additionally, professional experiences also influence this process, contributing to the development of teachers' professional identities (Beauchamp & Thomas, 2009). The continual shaping and reshaping of a teacher's identity through both personal and professional experiences highlights the interplay between these two aspects (Beauchamp & Thomas, 2009). The fluidity and flexibility of personal and professional identities, driven by these experiences, provide teachers with opportunities to explore and grow. This journey helps teachers make meaning of themselves through the meaningful relationships they build with their learners.

### **1.5.2 Teacher – Learner Relationships**

Teachers hold two types of beliefs: “espoused” and “articulated” that shape their practices based on their values (Burns et al., 2014). While teachers and learners have distinct roles, both are vital for creating transformational learning experiences. By focusing on learners' interests and perspectives, teachers can cultivate a culture of responsive engagement, characterised by interaction and collaboration (Cohrssen et al., 2014). Open-mindedness allows teachers to engage with learners thoughtfully, which enhances critical thinking (Cohrssen et al., 2014). Palmer (1997) advocates for teaching beyond technique by connecting with learners intellectually, emotionally, and spiritually. The relationships teachers establish with learners are not found in the methods they use to teach but in showing “heart” to the learners (Palmer, 1997, p.16). Ultimately, fostering these meaningful connections and responsive engagements is vital for positive teacher-learner relationships, which are essential for transformational academic development (Martin & Collie, 2019).

### **1.5.3 Classrooms as spaces for support and collaboration**

Classrooms are complex spaces that promote curiosity, motivation, and a passion for learning (Ramzan, Javaid, Kareem, & Mobeen, 2023). The climate of a classroom is important in ensuring every learner feels included and participates actively in the learning process. According to Jojo (2019), studies show that mathematics education in South Africa is in a critical state, as mathematics classrooms feel isolated and daunting. Some issues and challenges have been identified that contribute to teaching and learning mathematics in South Africa. In the study conducted by Mabena, Mokgosi and Ramapela (2021), challenges like large class sizes, language barriers, limited resources, and limited support for struggling learners also

contribute to the issue. Without addressing these issues, there will be no improvement in the situation (Jojo, 2019). Despite stringent strategies being implemented in underperforming schools, statistics from studies reveal that these schools have still not reached the desirable targets (McCarthy & Oliphant, 2013; Soudien, 2024). Gailard (2019) firmly concludes that mathematics classrooms lack unique life experiences. Incorporating these experiences into the curriculum can significantly enhance learners' understanding of mathematics

According to Pietsch (2020), five adjustments can be made to establish a supportive and collaborative mathematics classroom. First, we need to change the perception of mathematics classrooms. Secondly, teachers' authority should not be focused on logical thinking only but also allow the development of reasoning. Thirdly, the emphasis should shift from merely recalling procedures to employing mathematical reasoning. Fourth, learners should be encouraged to discover answers rather than relying on rote responses to mathematical problems. Finally, mathematics should be connected to its real-world applications, rather than being viewed in isolation as just a subject (Pietsch, 2020). A collaborative mathematics classroom calls for the shift from the teacher being the center of focus and disseminating mathematical rules and methods, and learners following procedure, to a more interactive teacher-learner and learner-learner mode of teaching and learning (Pietsch, 2020). Schwarz, Swidan, Prusak, and Palatnik (2021) concur with Pietsch (2020) and suggest that collaboration between peers that is active and well-coordinated promotes meaningful learning in mathematics classrooms. Creating trusting relationships fosters a secure and innovative learning environment that encourages interaction and participation. Ultimately, fostering these adjustments and collaborative efforts can transform mathematics classrooms into spaces where every learner can thrive and succeed.

#### **1.5.4 Engaged pedagogy**

I draw on Hooks (1994) and Weaver and Wilding (2013) to conceptualise engaged pedagogy in this study. Hooks (1994) derived “engaged pedagogy” from the theories and philosophies of Paulo Freire and the Vietnamese Buddhist monk, Thich Nhat Hanh. Engaged pedagogy emphasises freedom, “self-actualization”, and the empowerment of both students and teachers” (Chahine, 2013, p. 24). Hooks (1994) adopted Freire’s concept of “conscientization,” which encourages a critical awareness that makes learners active participants rather than passive consumers. Thich Nhat Hanh stressed a holistic approach to education, connecting mind, body,

and spirit. This is essential for teachers' "self-actualization", which fosters a collaborative learning environment that encourages mutual participation and risk-taking (Hooks, 1994). In such educational settings, both teachers and learners can share openly, promoting respect and effective engagement.

Weaver and Wilding propose five dimensions of engaged teaching: cultivating an open heart, engaging the self-observer, being present, establishing respectful boundaries, and developing emotional capacity. These interlinked components enhance teachers' authenticity and relationship-building while fostering trust in inclusive learning communities. Cultivating an open heart involves expressing kindness and compassion, while the self-observer aspect allows teachers to reflect on their thoughts and behaviors, promoting critical awareness in learners. Being present focuses on attention management, enabling teachers to support learners in developing literacy and engagement skills. Establishing respectful boundaries helps to create a supportive classroom environment. Finally, developing emotional capacity is vital for managing emotions and fostering emotional intelligence, allowing educators to assist learners in building their self-regulation skills (Weaver & Wilding, 2013).

## **1.6 Research questions**

**The key questions driving the focus of my study are:**

### **1. What are the stories of secondary school mathematics teachers' everyday experiences?**

This research question focuses on the everyday experiences of secondary school mathematics teachers. Teachers share their personal and professional experiences as they recall their past and present memories. Adler (2001) strongly advocates that the stories of mathematics teachers are significant in merging theory and their everyday experiences in classrooms.

### **2. What personal and professional experiences shape secondary school teachers' everyday practice in mathematics classrooms?**

This research question focuses on the personal and professional experiences of secondary school teachers and how these experiences shape their practice in mathematics classrooms. Adler (2001) highlights the significance of mathematics teachers drawing on their everyday experiences to shape their interaction with learners and understand the complexities that are presented in mathematics classrooms. Xie and Cai (2021) suggest that there is a strong

connection between mathematics teachers' beliefs and their teaching experiences. Graven and Lerman (2020) postulate that through experiences mathematics teachers' personal and professional identities are shaped.

### **3. How do secondary school teachers foster engaged pedagogy in mathematics classrooms?**

Adler and Davis (2006) suggest strategies that can improve interaction between teachers and learners. This research question unpacks how teachers can nurture/foster engaged pedagogy in mathematics classrooms through connecting with learners in secondary schools. Palmer (1997) discusses how teaching is connected intellectually, spiritually, and emotionally. To further respond to this research, Hooks (1994) advocates strongly that engaged pedagogy is prominent through freedom, "self-actualization," and teacher–learner empowerment.

#### **1.7 Methodological approach**

This study engaged a qualitative research design with a narrative inquiry approach. This approach was used to study the daily lives and experiences of people. It allowed for a closer examination of people's experiences in relation to social context over time (Clandinin & Caine, 2008). Through this research methodology and conceptual approach, I revisited my past and the experiences of my participants. By using narrative inquiry, I aimed to understand the lived experiences of my participants as mathematics teachers through the stories they shared. In conducting this study, a non-probability, purposive sampling method was employed to select four secondary school mathematics teachers. Khan (2020) describes non-probability purposive sampling as a technique where participants are selected deliberately based on specific characteristics or expertise relevant to the research, rather than through random selection. I purposively selected qualified mathematics teachers who are currently teaching mathematics in secondary schools. I also participated as one of the subjects in this research. The criteria for inclusion required that each participant possessed a formal qualification in mathematics and held a permanent position within the department. The selected teachers were sourced from three schools located in Chatsworth, within the Umlazi district of Durban, and were required to be classified as level one teachers. It is important to note that no individuals in management roles, nor teachers acting in such capacities, were included in this study.

Based on the concepts of *emic* and *etic* as described by Pike (1967) and Olive (2014), I needed

to position myself both as a researcher and a participant. As a researcher, I adopted an etic perspective, which allowed me to view my participants' stories from an external standpoint. In contrast, as a participant, I embraced an emic perspective by sharing my own past and present experiences while also maintaining a reflexive approach (Olive, 2014).

Reflexivity is a detailed process that promotes self-reflection to conduct research (Tracy, 2010). It involves being aware of oneself and how our values influence our actions during the research process (Hickson, 2016). This enables us to better understand what we are researching and encourages us to think about storytelling across time and place (Pino Gavidia & Adu, 2022). As a researcher and participant in this study, I recognised my own and the participants' interpretations and stories as socially located and grounded in reflexivity. As a narrative inquirer, I turned the lens on myself to understand my own experiences of working with learners to cultivate Engaged Pedagogy in Mathematics Classrooms, which enabled me to better understand my participants' experiences and stories.

Therefore, the research process became a collaborative effort between the researcher and the participant (Pino Gavidia & Adu, 2022) in exploring the stories of teachers' lived experiences of working with learners to cultivate Engaged Pedagogy in Mathematics Classrooms. To capture the idea of experience in a way that enables us to talk about teachers as knowledgeable individuals, we refer to their knowledge of schools and classrooms as personal practical knowledge (Clandinin, 2019).

The idea of conceptualising teacher professional learning in education as stories arise from insights into understanding narrative inquiry as an educational process that promotes change and growth through reflective storytelling and re-storying. Relationships with children, schools, communities, teachers, and other groups are changing (Clandinin, 2019). Therefore, it is important to reflect on teachers' experiences with various stakeholders using the narrative approach to explore and capture stories critical to transformation in education.

The purpose of narrative inquiry in my study is to generate data that addresses the research questions. Some critical elements that were considered included culture, religion, society, and institutional protocols that condition an individual's daily experience. Examining and analysing the stories told by teachers allow them to transform their current and future experiences (Clandinin, 2008).

Guided by narrative inquiry, I used arts-based methods like drawing, artifact inquiry, and self-portraiture, alongside unstructured interviews, to collect data from secondary school teachers. I met them at their schools, providing materials like paper, colored pens, and magazines for their creative processes. I also asked them to bring a sentimental object. During our meetings, I explained the data collection methods and emphasised the importance of sharing their experiences.

After gathering the data, I organised each participant's drawings, artifacts, and self-portraits in folders along with printed transcription recordings. I analysed the recordings and visuals using storyboarding to identify key themes. This helped me reconstruct their narratives, which I then interpreted through the lens of research questions two and three, drawing on insights from key scholars like Hooks (1994) and Weaver and Wilding (2013).

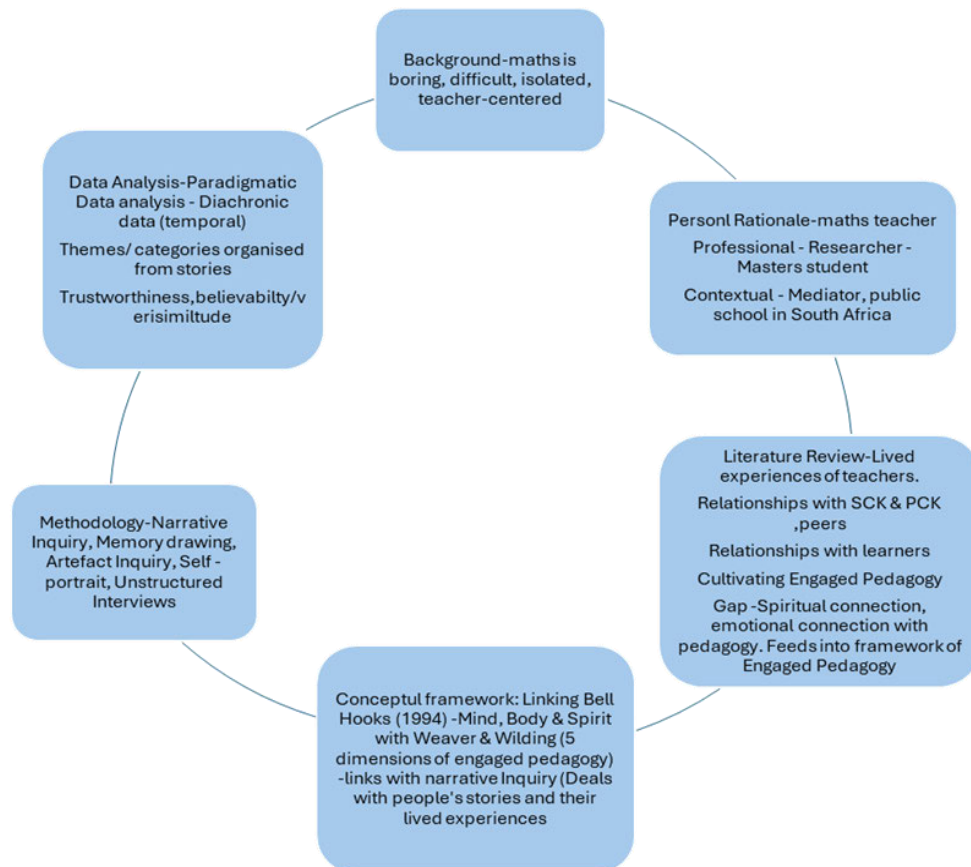
## **1.8 Organisation of the Dissertation**

In this chapter, the background, including a synopsis of the research literature, is discussed. The reasons for the choice of mathematics teachers as my participants, along with the professional and contextual rationale for my study, were explained. The key concepts, such as personal and professional experiences through stories, teacher-learner relationships, classrooms as spaces for support and collaboration, and engaged pedagogy, were elucidated. The three research questions underpinning this study were clearly outlined, including a rationale for each question. Additionally, a synopsis of my research methodology was provided.

**Chapter Two** provides a detailed discussion of the literature reviewed, highlighting how these scholarly conversations enabled me to engage with different issues, concepts and perspectives on Mathematics learning and teachers experiences in and outside the mathematics classrooms. The narrative I developed assisted in framing the conceptual framing of this study, allowing for a comprehensive understanding and analysis of the stories of secondary school teachers in mathematics classrooms.

**Chapter Three** provides a detailed discussion of the research design and the methodology that I employed. I highlight the inclusion criteria for the involvement of the participants and discuss the profile of each. I also discuss why narrative inquiry embedded in the interpretivist paradigm was adopted and reflect on the methodology that I used to reconstruct the secondary school

teachers' stories. The discussion is juxtaposed with debates by key scholars in the field of teacher memory and story work. The trustworthiness, credibility, reliability, and plausibility of this study is argued. I conclude this chapter by presenting the limitations and discussing the ethical considerations that I adhered to.



**Figure 1.3: Diagram showing a summary of chapters 1, 2, and 3**

In **Chapter Four to Seven**, I present the storied narratives of the research participants: Peter, Corah, Zoe, and Ruth. I analyse and interpret these stories by focusing on one secondary school teacher participant per chapter. Section A of each chapter foregrounds the secondary school teachers reconstructed storied narrative to respond to research question one: What are the stories of secondary school mathematics teachers' everyday experiences? Section B of each chapter presents my analysis and interpretation of the narrative as I respond to research question two: What personal - professional experiences shape secondary school teachers' everyday practice in mathematics classrooms? Section C of each chapter responds to research question three: How do secondary school teachers foster engaged pedagogy in mathematics

classrooms? In the last section of each chapter, I provide my conclusions about each secondary school mathematics teacher participant.

**Chapter Eight** provides an overall summary of the findings. I review this dissertation and highlight my overall learnings as they emerged from this study. The theoretical contributions of this research are discussed, and suggestions for future research are offered. I conclude by presenting my understanding of the personal and professional experiences of secondary school teachers in mathematics classrooms, along with my final reflections and recommendations for further research.

## **CHAPTER TWO:**

# **LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK STANDING ON THE SHOULDERS OF SCHOLARLY GIANTS**

### **2.1 Introduction**

In the previous chapter, I provided an overview of the purpose and focus of this study, which explores the experiences of secondary teachers who cultivate engaged pedagogy in mathematics classrooms. I outlined my personal, professional, and contextual reasons for pursuing this research. I also summarised the critical concepts underpinning this study and the methodology I have adopted. In this chapter, I offer a critical review of scholarly studies published in the field of schooling spaces and teachers' experiences. More specifically, the narrative focuses on teachers' experiences in mathematics classrooms in South African Public schools.

To effectively structure this chapter and present a compelling scholarly discussion that supports the study, I utilised a visual illustration to map out the critical concepts and themes that the review has highlighted for my study.

Concept mapping is a powerful tool in qualitative studies, providing a creative visual representation of existing knowledge and the researcher's insights (Conceição & Yelich Biniecki, 2017). By employing concept mapping in my study, I not only build a deeper understanding of the existing knowledge but also connect new and innovative ideas by strategically linking information on the map.

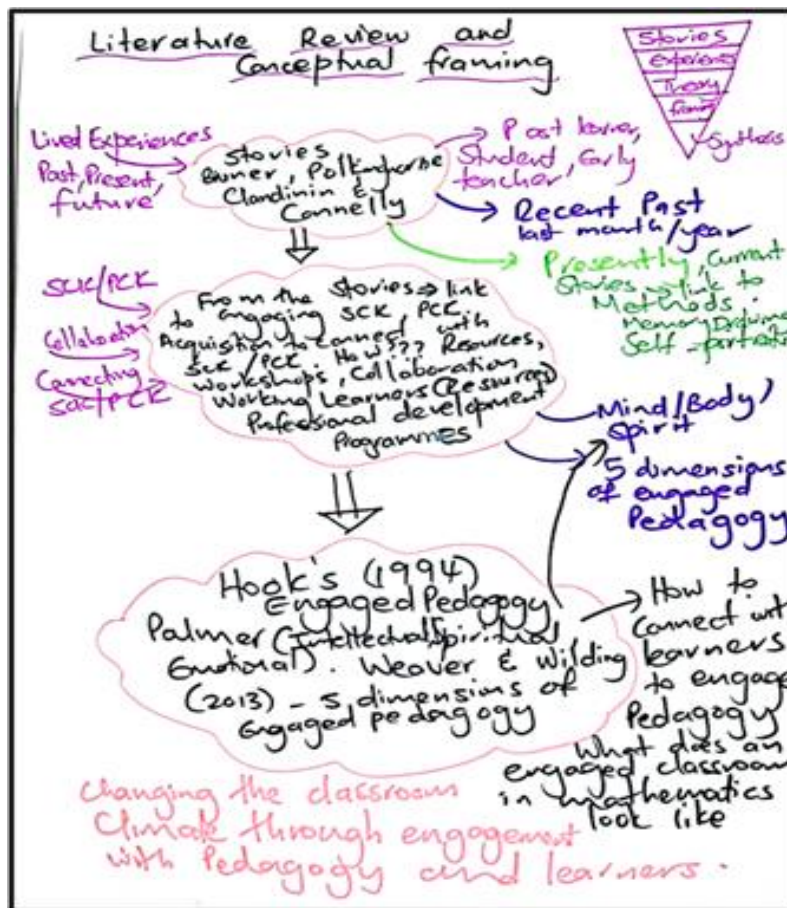


Figure 2.1: Concept map to direct literature review

This chapter provides a detailed discussion of the literature reviewed and highlights how scholarly conversations enabled me to engage with various issues, concepts, and perspectives on mathematics learning and teachers' experiences both in and outside of mathematics classrooms. This study focuses on the everyday experiences of teachers working with learners to cultivate engagement in pedagogy and enhance Education for Participation in Mathematics Classrooms (Adler & Davis, 2006). By evoking the memories of teachers' past-present and future, I bring to the surface stories, voices, and meanings of teachers who work collaboratively and connectedly with learners to promote inquiry, active participation, and cognitive building in mathematics problem-solving. Education for participation in Mathematics Classrooms is associated with creating a meaningful environment that fosters these qualities among learners (Wright, 2017).

To this end, this section reviewed research literature under specific themes, namely: Mathematics teachers' experiences connecting with subject content knowledge (SCK) and pedagogical content knowledge (PCK), Teacher-learner relationship experiences, and

Teachers' experiences of engaged pedagogy in mathematics classrooms. The literature review discusses key concepts relevant to this study and provides the conceptual framing for generating scholarly insights and explanations of mathematics teachers and their experiences of mathematics classrooms in public schools in South Africa.

This chapter is organised into four sections as follows:

**Section A:** This section provides an insight and understanding of the importance of teachers' lived experiences. I unpack key concepts of memory, recalling, and its importance in storytelling.

**Section B:** Mathematics teachers' experiences connecting with subject content knowledge (SCK) and pedagogical content knowledge (PCK)

**Section C:** Teacher-learner relationship experiences and Teachers' experiences of engaged pedagogy in mathematics classrooms.

**Section D:** The conceptual framework is outlined and discussed in this section.

## **2.2 Section A: The Importance of Teachers' Lived Experiences**

Humans have a natural inclination to tell stories about their lives, and these stories shape their perceptions of themselves and others. Stories serve as gateways that allow individuals to understand and give meaning to their experiences in a personally relevant way. They connect past, present, and future experiences, helping individuals progress and gain insight. For teachers, sharing lived experiences can lead to reflective insights and valuable interactions in the classroom. Pithouse-Morgan, Pillay and Mitchell (2019) affirm that memory work is essential for teachers, promoting professional learning, personal growth, and reflection by linking past experiences to current practices. Utilising collaborative methods like storytelling and arts-based reflection allows educators to deepen their understanding of themselves, their learners, and social issues in education (Pithouse-Morgan et al.,2019). This fosters meaningful engagement, transformation, and a commitment to social justice, enhancing inclusive teaching practices (Pithouse-Morgan et al.,2019). Understanding the lived experiences of mathematics teachers is crucial in comprehending how they teach and how they create relationships with learners, peers, and subject matter as Palmer (2008) posits good teaching is beyond techniques and methods.

Khun (2010, p. 15) suggests that recalling memories “is a process, an activity, a construct, and has social and cultural as well as personal resonance.” Memories help us recall events that have impacted our lives both personally and professionally. Furthermore, we can acquire knowledge and skills through the memories of others. There is a continuous movement between the past, present, and future as people engage in the process of remembering.

Recalling memories serves as an important tool in shaping individuals, reshaping their identities, and re-inventing themselves (Beauchamp & Thomas, 2009). Memories not only reflect past experiences but also create a tangible link to society in the present and to the future dreams of what we want to become (Uitto, Lutovac, Jokikokko & Kaasila, 2018). Recollections of one’s schooling memories or early teaching experiences can evoke both positive and negative emotions. For teachers reflecting on their childhood memories can assist them to recreate themselves and their current practices. Memory work as a method for pedagogical reinvention (Mitchell & Weber, 1999), may enhance teachers' professional self and what they think, how, and do in the classrooms.

According to Mitchell and Weber (1999), productive memory recalling involves revisiting and reviewing memories from different perspectives to create meaningful and constructive changes in the future. Jacobs and Eskridge (1999) argue that memories of childhood and early schooling significantly influence teachers’ motivations, expectations, and values in the classroom. Regularly engaging in this reflective process can assist teachers in developing both personally and professionally, enabling them to overcome challenges. This, in turn, benefits learners and contributes to reshaping teachers' identities and their everyday teaching practices.

According to Connelly and Clandinin (1990, p. 2), “humans are storytelling organisms who individually and socially lead storied lives.” This research decisively examines how teachers experience the world and relate to their life experiences. Teachers must share their stories as they navigate their collaborative lives (Connelly & Clandinin, 1990). In this study, "stories" encompass narrative research that highlights personal experiences connected to past events, culture, tradition, and professional encounters.

The act of sharing stories holds significant value for teachers, providing profound insights into the real lived experiences of educational professionals. Polkinghorne (2007) asserts that researchers utilising a narrative approach actively gather feedback from participants through

oral or written stories, contributing essential information that strengthens the study. This underscores the effectiveness of using stories as a method for generating impactful insights. By motivating teachers to share their stories, we not only enhance their personal and professional development but also empower them to embrace change in classrooms.

### **2.3 Section B: Mathematics teachers' experiences connecting with Subject content knowledge (SCK) and pedagogical content knowledge (PCK)**

When teachers share their personal experiences, they receive and give feedback, which helps to identify common challenges and interactions in the classroom (Akinbode, 2013). Dialogues and interaction with other colleagues open funds of knowledge beyond self and can expand how one thinks about their subject, their learners, and how to teach for meaningful, engaging learning to happen. Toor and Mgombel (2016) suggest that teachers who aim to engage their learners effectively must have an in-depth understanding of the subject content, as this will enable them to recommend alternative discussions and ideas for similar topics and concepts. SCK and PCK experiences is guided by teachers' actions. They attend curriculum development workshops, acquire and interact with updated resources, peer-mentoring, and collaborate with colleagues (Harrington et al., 2021).

#### **2.3.1 The role of teacher identity in connecting with SCK and PCK**

Beauchamp and Thomas (2009) unpack teacher identity as dynamic and shaped by internal factors (like emotions) and external factors (like experiences and context). It evolves over time as teachers interact with their environment, balancing personal and professional dimensions. Identity is multifaceted. It is both a product of external influences and an ongoing process of negotiation and meaning-making (Beauchamp & Thomas, 2009). Teacher identity provides a framework for understanding "how to be," "how to act," and "how to understand" within the teaching profession, emphasising its fluid and interconnected nature (Thomas & Beauchamp, 2009, p.178). In connecting with SCK and PCK, teachers are encouraged to attend professional programs. Korthagen (2017) argues that these traditional professional development models often fail to create lasting change because they use a one-size-fits-all approach, focus on outcomes over process, and disregard teachers' emotions and identity. Korthagen (2017) focuses on teachers, encourages reflection, and uses real teaching experiences. This approach values collaboration and internal motivation, and it connects theory with practice. Korthagen (2017) believes that real growth comes from ongoing, personalised support that helps teachers

align their values and beliefs with their practices, creating meaningful learning experiences and engagement with SCK and PCK

### **2.3.2 Teacher experiences of engaging with SCK and PCK**

Schulman (1986) offers insightful ways to SCK and PCK. SCK refers to the preconceived knowledge and concepts that learners from diverse backgrounds and ages bring to the learning of commonly taught topics. It entails understanding what makes learning certain topics easy or difficult (Schulman, 1986). PCK, on the other hand, involves the use of effective parallels, illustrations, justifications, explanations, and demonstrations to express and formulate a subject that helps others understand it (Schulman, 1986). Although it is commonly believed that mathematics teachers have acquired adequate SCK and PCK from tertiary institutions to teach mathematics, they develop more informed SCK and PCK as they continue to interact with resources and learners in their everyday practice (Zazkis & Leiken, 2010). Loewenberg Ball, Hoover and Phelps (2008) argue that the skills and knowledge obtained from tertiary institutions differ from actual classroom instruction. Delivering mathematics lessons requires more than just knowing mathematics and having a fixed set of skills to teach it.

Globally, educational researchers have been pressing for a mathematics curriculum that focuses on conceptual understanding and mathematical reasoning while being engaging (Wright, 2017). Wright (2017, p.516) suggests that a "collaborative orientation" is essential in producing salient meanings and interconnectedness in mathematics. This can be developed through communication and interactions between learners and teachers. Misunderstandings can also be used as learning platforms. Burns, Pierson, and Reddy (2014) agree that the "teacher-centered" instructional method that is so commonly observed needs to be replaced with a more collaborative approach, allowing communication and collaboration during learning (Wright, 2017).

To expand on one's SCK and enhance PCK, teachers need to continuously develop their mathematics content knowledge and adopt learner-centered pedagogical approaches (Gningue, Peach & Schrode, 2013). While this may be a possible shift away from experiences in a traditional mathematics classroom, engaging in regular mathematics workshops, utilising updated mathematical resources, and participating in learning programs can help teachers constructively reconfigure their traditional teacher-centered stand and command a more informed understanding of mathematical concepts, methods, and skills (Gningue et al., 2013).

An engaged pedagogical approach fosters the active participation of learners and introduces higher-order thinking and problem-solving skills. Learners are afforded the autonomy to synthesise their mathematical understanding through reasoning, investigation, and the construction of arguments. Additionally, this approach draws on the diverse experiences each brings to the class (Gningue et al., 2013). By doing so, it redefines the role of the teacher, transforms the teacher-learner relationship, and fosters a more interactive and engaging classroom environment. By doing so, it redefines the role of the teacher, transforms the teacher-learner relationship, and fosters a more interactive and engaging classroom environment (Burns et al., 2014).

Adler and Davis (2006) and Adler (2010) build on Schulman's (1986) concepts of SCK and PCK to present a critical argument. They assert that merely possessing PCK and SCK is insufficient for effective teaching. Instead, they emphasise the importance of how mathematics teachers communicate this knowledge by reflecting on their teaching experiences and exploring different approaches to address the diverse needs of learners in mathematics classrooms. Adler (2010) aligns with Palmer's (1997) notion that teaching involves more than just a sequence of methods and techniques. Jojo (2019) further supports this view, suggesting that mathematics teachers must transition to innovative teaching strategies to alleviate the fears associated with the subject and advocate for the integration of mathematics into everyday life. Therefore, it is the responsibility of the teachers to look beyond the curriculum and engage with various resources, including embodied and tacit knowledge, to promote meaningful connections between learners and mathematics.

### **2.3.3 Collaboration with peers**

Teachers play a crucial role in fostering meaningful relationships and facilitating interactions with both their colleagues and learners in mathematics classrooms. According to Wright (2017), experiences as learners and early teachers are fundamental to their development as knowledgeable educators (Wright, 2017). Teachers take on multiple and multifunctional roles depending on the social climate and academic level, which may be enacted within the school culture or community. To improve their teaching skills, teachers must actively engage in learning from effective resource materials or programmes and professional learning communities (Chauraya, & Brodie, 2017). Collaborating with peers is essential to achieve effective lesson preparation, a deep understanding of concepts and methods, and a variety of

pedagogical approaches (Tachie, 2022). By working together, teachers can identify critical sections and concepts and provide each other with feedback and reflection to improve their teaching practices.

Collaborating with peers is essential for teachers. By working together, teachers can identify critical sections and concepts, providing each other with feedback and reflection to enhance their teaching practices. Effective strategies for peer collaboration include participating in peer-learning communities (PLCs), attending regular subject-area meetings, sharing resources, having online meetings, collaborating on lesson planning, and attending professional development workshops specifically designed for teachers. PLCs are designed to encourage meaningful mathematical discussions among individuals and foster "math talk" (Hufferd-Ackles, Fuson & Sherin, 2004, p.81). Mathematics teachers are allowed to ask questions, share ideas, and exchange resources (Hufferd-Ackles et al., 2004). By sharing professional knowledge and resources, teachers can shape the way mathematics is taught. Collaborating with peers or other mathematics teachers in lesson planning can be particularly useful in identifying key concepts in challenging topics. Through collaborative planning, teachers can develop effective strategies to engage learners in these areas (Tachie, 2022).

Peer mentoring also has a crucial role: by partnering with experienced colleagues, teachers can receive personalised guidance and feedback to refine their teaching practices. Collaborative efforts with fellow educators enrich the professional development experience, providing opportunities to share insights, exchange ideas, and address common challenges. These collaborative actions not only foster professional growth but also contribute to creating a more dynamic and effective learning environment for learners (Harrington et al., 2021)

Professional development workshops that encourage active engagement and sharing of experiences, challenges, and best practices can also be highly effective (Jao & McDougall, 2016). Collaborative models of learning provide a platform for teachers to connect and work towards common goals, offering sustainable feedback and allowing adequate time to learn, practice, implement, and reflect upon new strategies that enhance interaction and engagement (Tachie, 2022). Teachers are essential in creating meaningful relationships and facilitating interactions with their learners in mathematics classrooms. Studies by Chauraya and Brodie (2017) demonstrate that teaching mathematics is not merely a set of methods to solve problems but involves nurturing an environment in which learners can discuss, interact, and develop their

own understanding of mathematics.

## **2.4 Section C: Teacher-learner relationship experiences and Teachers' experiences of engaged pedagogy in mathematics classrooms**

### **2.4.1 Teacher–Learner Relationships**

The relationship formed between teachers and learners is crucial for the classroom environment and significantly influences both teachers' and learners' experiences of mathematics. Collaboration and interaction play a significant role in fostering connectedness and meaningful engagement in the classroom (Cohrssen, Church & Tayler, 2014). While teachers and learners have distinct roles to play, they are equally crucial in creating a transformational learning experience for everyone, both within and beyond the classroom. Teachers' relationships with learning in mathematics classrooms are complex. According to Wright (2017), teachers' experiences as learners and early teachers are fundamental to their development as knowledgeable educators and shape the kinds of relationships they form in mathematics classrooms.

Teachers possess two types of beliefs, "espoused" and "articulated," that govern their practices in classrooms through communication and actions based on their values and beliefs (Burns et al., 2014). When teachers focus on evoking learners' interests and perspectives, a culture of responsive engagement becomes possible (Burns et al., 2014), characterised by relationships that encourage interaction and collaboration among teachers and learners (Cohrssen et al., 2014). These relationships are strengthened through learning together, taking risks, and upholding shared values.

Open-mindedness allows teachers to interact attentively with learners and contribute to continuous projects that promote critical and cognitive thinking (Cohrssen et al., 2014). Establishing trusting, caring, and mutual relationships with learners creates a secure and innovative environment. Creative programmes that stimulate learning and expand on the classroom culture, talents, and knowledge will promote their learning development and encourage interaction and participation in the classroom (Cohrssen et al., 2014).

Adopting a learner-centered approach creates an opportunity for learners to communicate and collaborate on a learning task (Cohrssen et al., 2014). This transition redefines the role and functions of a teacher, enhancing the relationships between teachers and learners (Cohrssen et

al., 2014). A learner-centered approach has been shown to stimulate intrinsic motivation in both teachers and learners (Burns et al., 2014). Teachers are motivated to adjust and tailor their planning, instructional, and assessment methods to promote engaged learning (Cohrsen et al., 2014). Responsive engagement contributes to positive teacher-learner relationships, which is essential for learners' academic development (Martin & Collie, 2019). Observing and practicing the key elements of a learner-centered approach enhances positive teacher-learner relationships, surpassing the effectiveness of a teacher-centered approach (Martin & Collie, 2019).

According to Soldaat (2019), the role of teachers is to provide care and support that enhances the emotional connection between teachers and learners. Gardee (2019) concurs, emphasising the influence of teacher-learner relationships on shaping learners' mathematical identities and their understanding of mathematics. Chauraya and Brodie (2017) examined the interactions between teachers and learners in mathematics classrooms and how these interactions influence learning and identity. According to Chauraya and Brodie (2017), the way teachers engage with learners can either promote or hinder equitable access to mathematical knowledge. A study conducted by Gardee (2019) illustrates that teacher practices in the mathematics classroom are not merely characterised by pedagogy but also by social relationships between teachers and learners, which is significant in supporting all learners to identify with mathematics. Cramond (2021) found that social aspects of teacher care, empathy, humour, "having fun", listening and attentiveness, even unconditionality (giving support no matter what interpersonal challenges may arise), kindness and not having a punitive approach, being flexible and authentic create positive relationships between teacher and learner which motivate mutual commitment.

Despite traditional pedagogical approaches observed in the study, relationships between different teacher-learner social relationships and learners' mathematical identities suggest that different social relationships influence equity, shaping access to knowledge and learner identities in important ways (Gardee, 2019). Thus Adler (2021) and Jojo (2019) argue content and pedagogy are insufficient, but by fostering positive relationships and encouraging active participation, teachers can help learners develop stronger mathematical identities, making them feel more capable and confident in the subject (Gardee, 2019).

#### **2.4.2 Teachers' experiences of engaged pedagogy in mathematics classrooms**

According to Chahine (2013), an engaged Mathematics Classroom is one that promotes freedom and encourages learners to become critical thinkers. This type of learning environment should be exciting and flexible, breaking away from traditional classroom setups. The mathematics classroom should facilitate spontaneous changes and promote in-depth learning, problem-solving, and higher-order thinking. It should also encourage investigational experiences, promote ethnic growth, and create a space for active participation and inclusivity. In short, the mathematics classroom should serve as a mutual ground for learners and teachers to exchange learning experiences and expand their content knowledge beyond the classroom.

To promote engaged learning, teachers must create classroom communities where learners and teachers pay attention to each other's ideas and views. In an engaged mathematics classroom, both the teacher and learners collaboratively contribute to the dynamics of the classroom, creating a resourceful learning community. Harrington, Sinfield, and Burns (2020) developed the "ladder of participation" to explain the various modes of engagement. This includes consultation, involvement, participation, and partnership. Each mode of engagement allows for different levels of autonomy and involvement for learners, promoting trust, shared risks, and resourceful contributions to cultivate and maintain engaged pedagogy in mathematics classrooms.

A study by Drake (2024) on the efficacy of engaged pedagogy on the engagement, academic performance and academic success of high school learners aged 14 through 18 found that characteristics like teacher style, and the engagement of learners cognitively, behaviourally, and importantly, emotionally, contributed to positive outcomes. Teachers reported that when they have fun, asked open-ended questions, create intrigue, use lively warm-up exercises, as well as connect with learners' interests, they are more motivated and engaged.

Therefore, engaged pedagogy significantly enhances teaching by fostering high levels of involvement. This method makes learners more invested in their academics, transforming them into active learners. By introducing innovative hands-on activities and exercises in the classroom, learners' intrinsic motivation is boosted. According to Hooks (1994), engaged pedagogy embodies the practice of freedom, where both teachers and learners are encouraged to share and express themselves. This approach to freedom of expression enriches and challenges learners' cognitive development.

Drake (2024) citing Sutton (2021), also asserted that the three dimensions of cognitive, behavioral, and emotional engagement are interconnected and crucial for students' success. High levels of engagement in these areas increase the likelihood of academic excellence. As students perform better academically, they develop a stronger bond with their school and teachers and experience a greater sense of social-emotional well-being. Teacher participants in the study asserted that the lessons must engage learners in all three dimensions to be successful. Highlighting these indicators fosters engaging pedagogy in the classroom and strengthens the teacher-student relationship.

Hence, an engaged mathematics classroom must be viewed as a safe space where teachers and learners work collaboratively and negotiate boundaries to create a joyful and meaningful classroom beyond prescribed curricula and time frames (Chahine, 2013). Considering the research offered by these scholars, this study aims to explore the types of connections between teachers and learners and how this links to engaged pedagogy in mathematics classrooms.

## **2.5 Section D: Conceptual Framework**

A conceptual framework is a collection of interconnected ideas or concepts that are derived from a qualitative process of theorisation. This framework offers a detailed explanation of a phenomenon by linking various concepts together. Each notion within a conceptual framework performs an ontological or epistemological role, and the framework itself contains ontological, epistemological, and methodological assumptions (Jabareen, 2009). Ontological assumptions relate to the nature of reality and how it exists in the real world, while epistemological assumptions relate to how we know things and how they work (Jabareen, 2019). The methodological assumptions describe the relationship between the knower and what is to be known and explain how one comes to know the connection between one's ways of being and ways of knowing (Jabareen, 2009).

### **2.4.1 Bell Hooks – Engaged Pedagogy**

Hooks (1994) drew inspiration from the ideas and philosophies of Paulo Freire and the Vietnamese Buddhist monk, Thich Nhat Hanh, to derive the concept of “engaged pedagogy.” This approach is aimed at promoting freedom, “self -actualization” and the empowerment of both students and teachers (Chahine, 2013, p.24). Hooks (1994) utilised Freire’s concept of “conscientization,” which encourages that education be practiced with freedom and the

creation of a variety of teaching strategies. “Conscientization” translates to critical awareness and engagement, positioning teachers and learners as active participants rather than passive consumers (Hooks, 1994). Thich Nhat Hanh emphasised a holistic approach to pedagogy, connecting the mind, body, and spirit, which imparts not just knowledge from literature but an understanding of the world. Progressive, holistic education stresses that teachers must actively commit to a process of “self-actualization” that promotes teachers' pedagogy and teacher well-being in a manner that empowers learners. The demonstration of “self-actualization” by teachers creates a climate for optimal learning that promotes mutual participation, risk-taking, and working together in a shared learning space (Hooks, 1994). In the practice of freedom in education, both teachers and learners are allowed to share and confess, promoting a climate of respectful listening and successful engagement for all stakeholders. Engaged pedagogy seeks to empower both teachers and learners by creating a space for mutual participation, risk-taking, and shared learning (Hooks, 1994). Similarly, Nhat Hanh's teachings emphasise a holistic approach to education, connecting the mind, body, and spirit. Progressive, holistic education requires teachers to commit to “self-actualization,” which empowers learners by creating a space for mutual participation, risk-taking, and shared learning (Hooks 1994). The engaged pedagogy approach fosters a classroom environment where both teachers and learners can share and confess, promoting respectful listening and successful engagement for all stakeholders. (Hooks, 1994).

Tack (2022), inspired by Hooks (1994), highlights the joy of learning when the classroom connects to learners' lives and experiences. Naidu (2014) describes the classroom as a collaborative space that makes learning more engaging and interactive. By focusing on collaboration, creativity, interaction, and engagement, Hooks (1994) provides a strong framework for this study. It emphasises the importance of intellectual, emotional, and spiritual connections by actively involving learners. However, due to the dearth in literature connecting Hooks (1994) to mathematics classrooms, especially in South Africa, I chose to apply the connected and collaborative constituents of Engaged Pedagogy in this study. The strong links between fear and isolation in mathematics classrooms (Wright, 2017) and the demand for desirable results (Jojo, 2019) demand more than just strong subject content knowledge and pedagogical content knowledge, as argued by Gardee (2019). Thus, the social relationships suggested by Gardee (2019) lend to the concept of engaged pedagogy such that mathematics classrooms are transformed into more inclusive and empowering spaces for learners to engage in more critical and creative thinking rather than isolated and procedural methods.

#### **2.4.2 Weaver and Wilding – Five Dimensions of Engaged Teaching**

Five dimensions of engaged teaching are identified by Weaver and Wilding (2013), which form the core of the engaged teaching approach. These key components support teachers' capacity to express and embody their authenticity, develop productive relationships with learners and colleagues, and incorporate creative principles and practices in the classroom. The five dimensions include “cultivating an open heart, engaging the self–observer, being present, establishing respectful boundaries, and developing emotional capacity” (Weaver & Wilding, 2013, p.6). These dimensions are not independent but are interlinked and cultivated simultaneously (Weaver & Wilding, 2013).

The cultivation of an “open heart” refers to the expression of closeness, kindness, care, and compassion. Creating teacher-learner and learner-learner relationships is fundamental in practices that require the foundation of trust and inclusive learning communities (Weaver & Wilding, 2013). The engagement of the “self–observer” refers to cultivating the teachers' ability to notice, observe, and reflect critically on their thoughts, beliefs, biases, emotions, and behaviours. This reflection enables them to make more conscious decisions about their actions, which generates self–observation or “self–science” in learners as well (Weaver & Wilding, 2013).

The dimension of “being present” involves bringing attention to the present moment and managing distractions so that teachers can be responsive, aware, focused, and creative in the classroom. The successful management of these skills helps teachers support learners in developing literacy skills, attention capacity, ability to remain focused, and active engagement. Respectful parameters are created by establishing clear and compassionate boundaries with learners, other learners in the school community, and colleagues. This proactive management supports learners and fosters a positive classroom environment (Weaver & Wilding, 2013). To effectively handle a spectrum of emotions inside teachers themselves and in others, teachers must develop emotional intelligence, broaden teachers' emotional range, and cultivate emotional boundaries. This can be accomplished by helping learners build their emotional expression and self-regulation skills (Weaver & Wilding, 2013).

Abdelsamea and Bart (2016) built upon the work of Weaver and Wilding (2013) to develop an engagement model that outlines ways for educators to promote both meaningful learning

experiences and academic success in their classrooms. According to Rendon and Kanagala (2014), meaningful classrooms can be achieved by incorporating contemplative pedagogy and embracing diversity. Such connected and engaged classrooms foster a more respectful and enriched learning environment for all learners (Rendon & Kanagala, 2014). These studies demonstrate that by adopting the five dimensions of engaged teaching, educators can better understand and enhance the connections and engagement in classroom learning.

### **2.4.3 Link and Synthesis of Conceptual Framework**

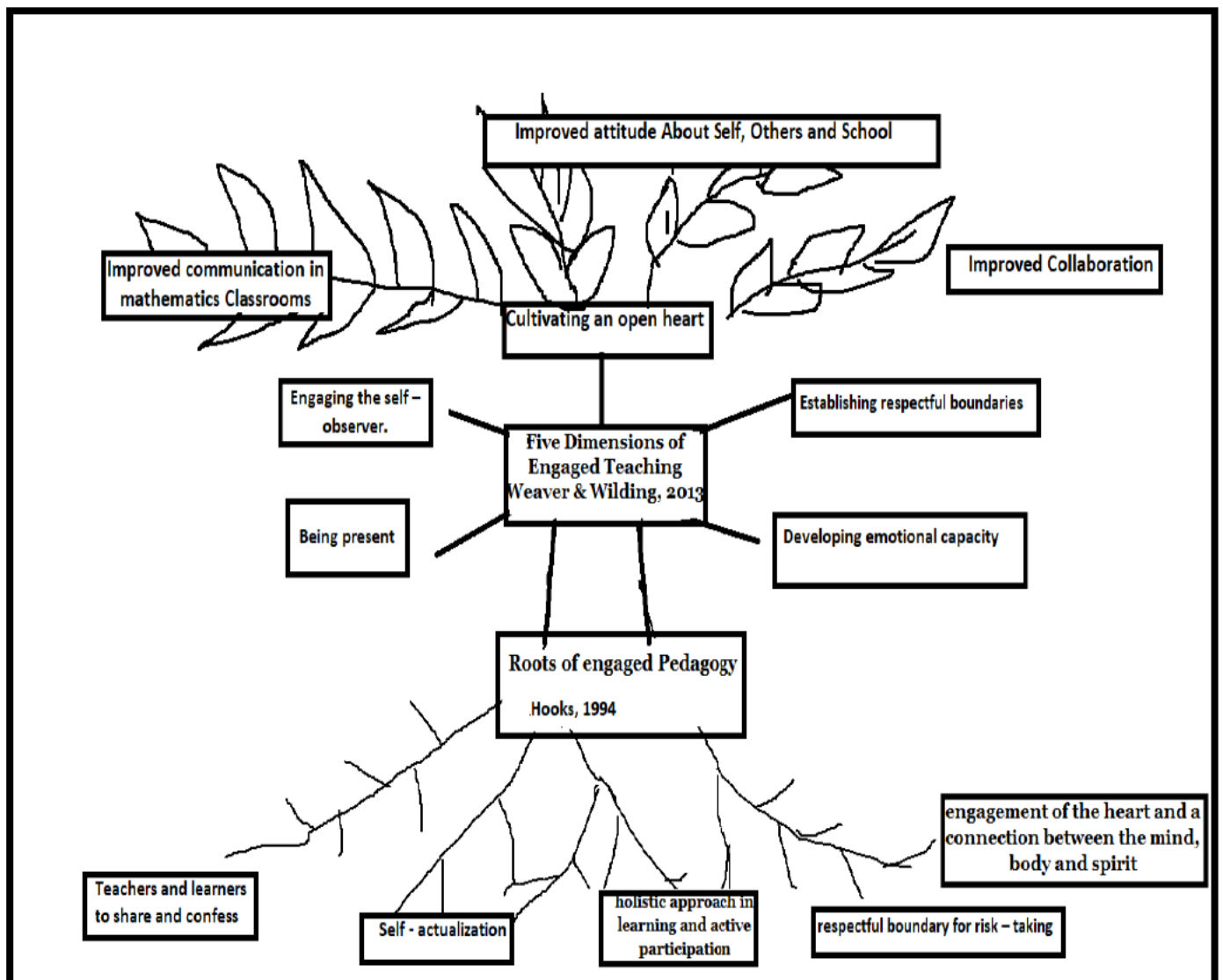
The adoption of this conceptualisation of engagement forms the foundation for understanding the cultivation of engagement in mathematics classrooms. Key factors such as teacher-learner relationships, reflection, openness to change and addressing concerns, developing compassion, and strategically managing classrooms are pivotal in cultivating engagement in mathematics classrooms.

In linking the concepts of engaged pedagogy (Hooks, 1994) with the five dimensions of engaged teaching (Weaver & Wilding, 2013), I created a drawing to illustrate their connections and how they frame the studies. The roots of the tree represent the key concepts drawn from Hooks (1994) that underpin this study.

According to Hooks (1994), engaging pedagogy highlights the significance of shared experiences between teachers and learners. Teachers should focus on “self-actualization”, adopt a holistic approach to learning, and encourage active participation among learners. It is essential to establish respectful boundaries that foster risk-taking, as well as to connect the mind, body, and spirit in the learning process. The bark and stem symbolise the five elements of engaged teaching, as described by Weaver and Wilding (2013). These elements include self-observation, being present, developing emotional capacity, establishing respectful boundaries, and cultivating an open heart.

When a mathematics classroom is connected and engaged, it leads to improvements in self-awareness, relationships with others, and the overall school environment. This is reflected in enhanced communication around mathematics and improved collaboration between teachers and learners. These improvements can be visualised as the leaves of a tree. The ideas presented by Hooks (1994) and Weaver and Wilding (2013) work together to create an interactive, creative, and engaged classroom that promotes emotional, intellectual, and spiritual

connections. I created a drawing below to show a summary and critical links between concepts adapted from Hooks (1994) and Weaver & Wilding (2013).



**Figure 2.2: Image showing summary and critical links between concepts adapted from Hooks (1994) and Weaver & Wilding (2013)**

The key concepts derived from Hooks (1994) and Weaver and Wilding (2013) are employed as a conceptual lens to understand, analyse, and interpret the experiences of secondary school mathematics teachers. This approach elucidates how these educators navigate daily challenges in their efforts to cultivate an engaged pedagogy within their classrooms.

## **2.5 Conclusion**

The critique of traditional teaching approaches and the proposed shift toward more reflective, experiential, and teacher-centered approaches provide a critical foundation for understanding how to cultivate engaged pedagogy in mathematics classrooms. By emphasising the importance of teacher identity, intrinsic motivation, and context-specific learning, these insights align closely with the goals of my study. This literature review and conceptual framing highlight the need for professional development approaches that empower teachers as active agents of change (Korthagen, 2017), fostering meaningful, sustainable practices that resonate with their lived experiences. These concepts guide the exploration of how secondary school mathematics teachers cultivate engaged pedagogy in their classrooms, ensuring that the study remains rooted in both theoretical foundation and the realities of teaching practice.

## **CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGICAL APPROACH MAPPING THE WAY**

### **3.1 Introduction**

In the previous chapter, I provided a literature review and outlined the conceptual framework adopted for this study. The scholarly discourse focused on the narratives of secondary school mathematics teachers, encompassing both their personal and professional experiences, as well as the critical connections that facilitate engaging pedagogy with learners. Key scholars, including Hooks (1994) and Weaver and Wilding (2013), were referenced to conceptualise engaged pedagogy and to emphasise the foundational framework of this research.

The development and evaluation of the conceptual framework in terms of its applicability to the "real" world is closely related to methodological strategies. Essentially, a conceptual construct demonstrates a pattern of relationship and is adjustable, allowing for alteration. It assists us in understanding phenomena rather than predicting them. Therefore, the conceptual framework adopted in this study is intimately connected to the purpose, objectives, research questions, and methodological approach.

This study employs a qualitative and narrative inquiry approach to explore stories of teachers' experiences in cultivating engagement in mathematics classrooms. Narrative inquiry allows us to regard teachers as informed and knowledgeable individuals and provides a gateway for reflection and capturing of stories significant in transforming the classroom (Clandinin & Connelly, 2000). Researchers operate in a "three-dimensional space" symbolised by space, time, and place. Framing engagement satisfies the criteria for narrative inquiry as teachers revisit and reflect on their experiences in forming relationships with learners, being reflective and reflexive, adapting to change, interacting with learners emotionally, and developing managerial strategies to maintain respectful boundaries.

This chapter presents the methodological approach and design employed in the data generation process. It elucidates the rationale behind the selection of the chosen research methodology and design, alongside an overview of the research process and the underlying research

paradigm. The chapter also addresses the criteria for participant selection, the research context, and provides a detailed description of each participant.

The data production methods and the instruments utilised for data collection are thoroughly delineated. These methods facilitate a comprehensive exploration and understanding of the personal and professional experiences of secondary school mathematics teachers. The techniques employed effectively evoke memories and emotions, yielding profound and rich insights when analysed.

Additionally, this chapter encompasses the methods of data analysis, the processes of data interpretation, ethical considerations, issues related to trustworthiness, and the limitations inherent in this research project, all presented with transparency and rigor.

### **3.2 Research Paradigm**

Rehman and Alharthi (2016) define a research paradigm as a fundamental belief system that shapes how a researcher views and interprets research phenomena, guiding their approach to understanding and analysing data. A paradigm comprises four key components: ontology, epistemology, methodology, and axiology (Rehman & Alharthi, 2016). Ontology addresses our beliefs about reality, while epistemology focuses on knowledge and understanding. Methodology refers to the strategies used for exploration, and axiology relates to ethical values and principles (Khatri, 2020). Ontology in this study refers to my perspective on teachers' experiences, either seen as a single objective truth or shaped by personal and social contexts. Epistemology involves co-creating knowledge about teachers' experiences through storytelling and dialogue, emphasising the influence of personal and social contexts on subjective perspectives. This study's methodology refers to qualitative approaches, including narrative inquiry that employs arts-based methods and unstructured interviews, to collect and analyse teachers' stories about their lived experiences. Axiology in this study pertains to how your values, such as equity and inclusion, influence the research process and the values evident in teachers' practices of engaged pedagogy. Together, these components shape research approaches' foundational values and beliefs (Khatri, 2020). The interpretivist paradigm was therefore the most suitable approach for this study. This paradigm aims to understand the social world by exploring how people perceive and interpret social phenomena (Bertram & Christiansen, 2014). According to Cohen, Manion, and Morrison (2018), qualitative research methods provide an in-depth understanding of various phenomena, actions, attitudes, and

overall participation. The interpretivist paradigm emphasises the importance of understanding social phenomena from the perspective of those involved. This paradigm acknowledges the subjective nature of social reality. of the teachers' personal experiences of their own lives as learners and the impact of engaged pedagogy in the classroom.

### **3.3 Research Methodology**

This study engaged a qualitative methodology with the selection of a narrative inquiry approach. This approach is used as a research methodology and perspective on the phenomenon of people's experiences. It allows for a closer examination of an individual's experiences over time and how these experiences relate to one another (Clandinin & Caine, 2008). In this research study, I revisited the past and the present experiences of my participants. The stories were analysed qualitatively and organised thematically to interpret the data collected. This research design provided a platform to explore the experiences of teachers working together with learners and forming critical relationships in Mathematics Classrooms.

### **3.4 Key Features of Narrative Inquiry**

Narrative inquiry is a method of comprehending experience that serves a twofold purpose. It enables the examination of the phenomena of participants' experiences, while also serving as a means of narrative inquiry into the experience (Clandinin & Caine, 2008). This approach allowed for a thorough investigation of individuals' experiences over time and in context. The defining characteristic of narrative inquiry is the act of storytelling (Pina Gavidia & Adu, 2022). The co-creation of these stories occurs across various periods and locations and is based on the participants' lived experiences.

Three important dimensions are illustrated within the narrative inquiry approach, sociality, temporality, and place (Clandinin & Caine, 2008). Sociality refers to the social and personal situations, such as the participants' emotions and hopes including their surrounding environmental conditions (Clandinin & Caine, 2008). Temporality encompasses stories that are continuously transforming and are dependent on the specific time frame and draw on the changing nature of individuals, places, and experiences held between their past, present lives, and future situations that result in a causal relationship that ensues over some time (Clandinin & Caine, 2008). Place is the actual physical setting in which events occur over a while (Clandinin & Connelly, 2009). The specific place is an integral part of narrative inquiry, reflecting the influence of experiences in that place (Clandinin, Pushor & Orr, 2007).

According to Clandinin and Caine (2008), the description of key features of narrative inquiry is based on the approach which is seen as studying events as a story and as a way of thinking such that these stories are rooted in the illustration of lived, told, and re-told experiences. Hence the fundamental goal of the researcher in narrative inquiry is to explore the experiences of participants to obtain an in-depth understanding of their lived experiences within a specific context (Clandinin & Connelly, 2000). There is a variety of narrative data sources and ways of collecting narrative data (Connelly & Clandinin, 1990). These include field notes of shared experiences, unstructured interviews, storytelling, letter writing, and autobiographical and biographical writing. Narrative inquiry is thus presented as being the most suitable and appropriate methodology for this study as the phenomenon focuses on the stories of teachers' lived experiences of working together with learners in cultivating engaged pedagogy. It allows for travel back and forth between the participant and the researcher to explore the lived experiences, taking into consideration sociality, temporality, and place. To ensure that a narrative inquiry follows the correct protocols, it is critical to consider the guidelines of a narrative inquiry.

### **3.5 Guidelines for Narrative Inquiry**

The primary purpose of narrative inquiry is to bring about change in the lives of both teacher researchers and teacher participants by exploring how their experiences have shaped them personally, socially, emotionally, and culturally. In concluding a narrative investigation, both the researcher and the participants should attain a renewed perspective of life and their lived experiences. The process of narrative inquiry commences with the researcher reflecting on their own stories and experiences (Clandinin & Caine, 2008). This process is both reflexive and reflective. In this study, I continually acknowledge my subjective positioning as the researcher and consistently reflect on the choices and perspectives I take in the different moments of the research process.

The common starting point for narrative inquiry is interviewing as a conversation (Clandinin & Caine, 2008). Other methods, such as artifact inquiry, can be used to trigger the telling of stories. It is important to acknowledge the experiences of the participants, which are woven into social, cultural, and institutional narratives (Clandinin & Caine, 2008).

### **3.6 Suitability of Narrative Inquiry**

Reflexivity is a detailed process that promotes self-reflection to conduct research (Tracy, 2010). It involves being aware of oneself and how our values influence our actions during the research process (Hickson, 2016). This enables us to better understand what we are researching and encourages us to think about storytelling across time and place (Pino Gavidia & Adu, 2022). As a researcher and participant in this study, I was prompted to recognise both my own and the participants' interpretations and stories as socially located and grounded in reflexivity. This means that as a narrative inquirer, I turned the lens on myself to understand my own experiences of working with learners to cultivate Engaged Pedagogy in Mathematics Classrooms. This enabled a better understanding of my participants' experiences and stories.

Therefore, the research process became a collaborative effort between the researcher and the participant (Pino Gavidia & Adu, 2022) in exploring the stories of teachers' lived experiences of working with learners to cultivate engaged pedagogy in mathematics classrooms. To capture the idea of experience in a way that enables us to talk about teachers as knowledgeable individuals, we need to refer to their knowledge of schools and classrooms as personal practical knowledge (Clandinin, 2019).

The idea of conceptualising teacher professional learning in education as narrative inquiry arises from insights into understanding narrative inquiry as an educational process that promotes change and growth through reflective storytelling and re-storying. Relationships with children, schools, communities, teachers, and other groups are changing (Clandinin, 2019). Therefore, it is important to reflect on teachers' experiences with various stakeholders using the narrative approach to explore and capture stories critical to transformation in education.

The purpose of narrative inquiry in my study was to generate data that addresses the research questions. Some critical elements that were considered included culture, religion, society, and institutional protocols that shaped an individual's daily experience. Examining and analysing the stories told by teachers allowed them to transform their current and future experiences (Clandinin, 2008).

### **3.7 Stories in Educational Research**

Storytelling is an inherent part of a human being. In various cultures, stories are shared to recall memories and experiences that have shaped individuals or contributed to their social and moral

development. Similarly, narrative inquiry adopts this approach in the collection and production of information for aiming at transformation, development, and generation of new knowledge of ourselves and engagement with others. Thus, the acquisition of this information contributes to the benefits of the inquiry process.

### **3.8 Benefits and Challenges Associated with Narrative Inquiry**

When engaging in any kind of research, there are benefits and challenges. According to Clandinin and Caine (2008) and Clandinin (2013), researchers and participants interact and intertwine their stories through their shared lived experiences and a substantial amount of knowledge can be obtained as the learning is guided and negotiated.

Utilising the narrative inquiry approach is highly advantageous in conducting research. This method fosters the development of innovative ideas based on participants' stories through inductive reasoning and an emergent design (Pino Gavidia & Adu, 2022). Narrative inquiry prioritises reflexivity, which is consistently implemented throughout the research process (Pino Gavidia & Adu, 2022). It also gives priority to the participant's voice, leading to a comprehensive understanding of the subject matter (Pino Gavidia & Adu, 2022).

Some drawbacks, however, are associated with the process of collecting data, as it is time-consuming. Other drawbacks stem from ethical considerations and the sensitivity of the inquiry process. The freedom of participants to share what they prefer can be limited, and this can be intimidating for the researcher and the participants. The researcher must anticipate hearing multiple views and stories that may be insignificant while trying to guide the learner back to the focus of the study. In addition, the ambiguity of several identities and roles as a researcher and the researched, ethical issues, and presenting personal information to the public may cause insecurity.

### **3.9 Location of the study**

This study delved into the lived experiences of teachers, narrated through their stories. I identified, selected, and met with the teachers to allow them to share their stories of their lived experiences. I selected three mathematics teachers from Chatsworth Schools in Durban, Kwa-Zulu Natal. I was the fourth participant. The two schools selected, including mine, are quintile four and serve the lower-income and middle-income communities. The third school is a quintile five school and serves the middle-income and upper-income communities.

### **3.10 Research Participants**

It is widely believed that throughout human existence, we have all undergone various levels and types of transitional experiences. For instance, many of us have made the transition from our homes to playschool or preschool, and later from school to the workplace. Some of us have also undergone significant personal growth and change, such as career changes or entering adulthood. These experiences can have a profound impact on a person's life, and it is important to fully explore and understand the experiences of individuals as they have transitioned from being a young child playing at home or in nursery school, to attending preschool, primary school, high school, university, and eventually becoming teachers.

I used purposive sampling to select four secondary school mathematics teachers (myself included) and engaged with them so that they could share their stories of lived experiences. Taking into consideration the roles and responsibilities teachers have personally and professionally, I met the participants face-to-face at a time that was convenient for them and did not impede their duties and obligations at school or personally, or I chose to call them at a convenient time. Some activities were shared via WhatsApp or email. All formal or informal interactions were obtained within the duration of my study.

As part of my research strategy, I purposively selected four Mathematics teachers from secondary schools that specialise in the General Education and Training (GET) and Further Education and Training (FET) phases. I identified secondary school teachers experienced in teaching mathematics who volunteered for the study, selecting them from various contexts in Chatsworth's quintile four and five schools, which reflect socio-economic status. After obtaining ethical clearance, I confirmed participation with the selected participants via phone. In total, four participants, including myself, agreed to take part in the study. The selected participants included one male teacher and three female teachers, including myself. All participants held a mathematics qualification and were permanently employed by the department, currently teaching the subject. It is important to note that all participants were level one teachers; no management personnel were included. I used pseudonyms to protect the identity of the participants and the schools.

### **3.11 Addressing Issues as a Researcher/Participant**

When a researcher participates in a narrative inquiry, there are important ethical, methodological, and practical considerations to address (Clandinin, 2006). Ethical concerns are

managed by obtaining informed consent, ensuring confidentiality, reflecting on the experience, and offering professional assistance if any distress is experienced. Methodological concerns were managed by clearly defining the researcher's roles as both a participant and a researcher, using multiple methods to collect data, and applying rigorous analysis techniques. To ensure accuracy and validity, I requested my critical friends to assist in data collection and review the findings. Practical considerations are managed by establishing clear boundaries between the researcher's roles, keeping a reflective journal, and seeking guidance from critical friends and supervisors on how to manage the dual role.

**Table 3.1: Table showing Profile of the research participants (Pseudonyms used for participants)**

Name of Research Participant	Gender	Race	Quintile Ranking of School	Age	Experience in the profession	Grades taught	Phase of teaching
<b>Peter</b>	Male	Black	4	36	12	9,10,11,12	GET FET
<b>Zoe</b>	Female	Black	4	24	3	8,10,11,12	GET FET
<b>Corah</b>	Female	Indian	5	48	26	8,9,10,11,12	GET FET
<b>Ruth</b>	Female	Indian	4	37	11	9,10,11,12	GET FET

### 3.12 Profile of the participants

#### Playful Peter



Peter is a 36-year-old, black male teacher in a quintile 4 school. He has 12 years of teaching experience and teaches grades 9, 10, 11, and 12 mathematics. I described Peter as playful as he began his story with the words “*I was playful...*” which sparked my interest.

#### Zealous Zoe



Zoe is a 24-year-old black female teacher in a quintile 4 school. She is a novice teacher with only two years of teaching experience. She teaches grades 8 and 10 mathematics and grades 11 and 12 mathematical literacy. I used the adjective zealous to describe Zoe because as she narrated her stories, this adjective best described her response to her life experiences.

### **Challenging Corah**



Corah is a 48-year-old Indian female teacher with over 26 years of teaching experience in mathematics. She is currently in a quintile five school and teaches mathematics to grades 8,9,10,11 and 12. Corah throughout our interaction emphasised her love for challenges and hence I described her as challenging Corah.

### **Resilient Ruth**



Ruth is a 37-year-old Indian female teacher at a quintile four school. She has over eleven years of experience and is currently teaching grades 9, 10, 11, and 12 mathematics. Ruth's drive and passion for responding to her experiences summed up her resilience, and thus I described her as "resilient Ruth."

### **3.13 Critical friends**

Alan, Sariyev and Odabasi (2021) highlight critical friendship as getting constructive feedback from a critical friend who can be both supportive and challenging. This feedback focuses on strengths, points out weaknesses, and encourages growth. Critical friendship is developed through a voluntary partnership based on a shared goal, where critical friends support the

progress of the research, understand the context, and establish a favourable outcome together (Noor & Shafee, 2021). This collaboration was achieved by mutual trust, where critical friends scrutinised the work and provided valuable feedback (Noor & Shafee, 2021).

During my study, I received valuable support from a group of experienced critical friends, led by my supervisor. They not only read my work and listened to my presentations but also asked important questions, provided valuable suggestions, and guided me through their feedback. Their continuous support, viewed through a critical lens, offered both intellectual and emotional encouragement, which greatly facilitated my progress in the study. By incorporating alternative perspectives from my critical friends, I was able to be reflexive as a researcher, which influenced the trustworthiness of my study and enhanced its transparency (Noor & Shafee, 2021).

### **3.13 Data generation**

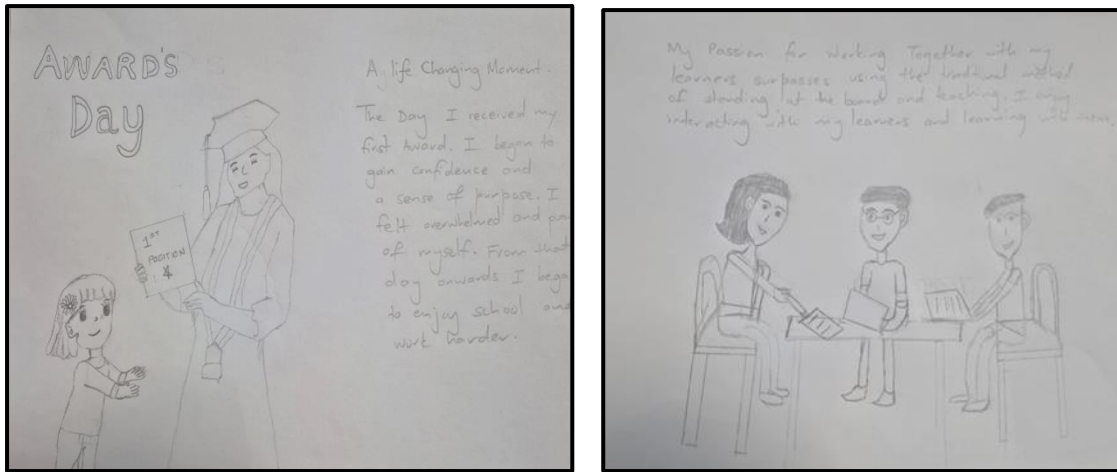
This study explored how teachers worked with learners to cultivate Engaged Pedagogy in Mathematics Classrooms. To achieve this, a narrative inquiry approach was used. Narrative inquiry is a method of studying individuals' experiences and understanding them in context over time. Participants were allowed to reflect on their experiences as learners, learners, and teachers. The study employed arts-based methods such as memory drawings, artefact inquiry, unstructured interviews, and self-portraiture to collect data that accurately represented their experiences. These methods helped participants express their truths about connecting with learners in Mathematics Classrooms. As Leitch (2006) suggested, arts-based inquiry helped reveal different truths and created new meanings through the interaction of these truths.

For this narrative study, arts-based methods were used to generate data. Arts-based methods involve the use of creative arts in research (Jones & Leavy, 2014). Memory work is a form of arts-based method that involves intentional memory staging, as described by Kuhn (2010, p.6). This method uses all types of memory stories, including memory texts, as source material for interpretation. It challenges the assumed certainty and transparency of memory in the past. These methods were used to highlight the important information about the lived experiences of teachers and learners. Specifically, I focused on how they worked together to create engaged pedagogy in Mathematics Classrooms.

### 3.13.1 Memory Drawing

Memory drawing is defined by Pithouse-Morgann et al. (2019) as an arts-based research method that includes creative and simple drawings to explore both personal and shared experiences. The combination of memory drawing and personal and collective conversations can lead to valuable learning experiences both professionally and socially (Pithouse-Morgan et al., 2019). Recalling memories can evoke emotions and experiences that have been dormant. Memory drawings can help us access elusive knowledge that is difficult to put into words (Pithouse-Morgan et al., 2019, p. 59). The simple act of drawing stick figures can bring up graphic memories of past experiences, which shows that simplistic methods can bring about interesting changes in the classroom. Memory drawings allow individuals to recall their past experiences and make positive and adaptable changes in their profession. Through mosaic pieces, individuals can highlight their experiences and how it has encouraged them to grow and develop as educators in different school contexts. Memory drawing is an excellent method for reflecting on past experiences, whether positive or negative, to overcome challenges that teachers may face and embrace transformation. Memory drawing emphasises the importance of reflection, which is a systematic technique teachers can use to form vital links from their own experiences to reconstruct their teaching practice to be more effective and fruitful (Pithouse-Morgan et al., 2019, p. 59). To engage the participants in this arts-based method, I encouraged them to recall a memory, either positive or negative, from their experiences as a learner and to draw it on the paper I provided. Next, I asked them to reflect on a memory, again either positive or negative, from their experiences as a teacher and to create a drawing of that memory as well. I emphasised that neatness and perfection were not important; what mattered was the significance of the memory they recalled. To help them feel more comfortable, I also shared my own memories as a learner and a teacher by drawing them, and we discussed our drawings together.

The images below are my memory drawings. The memory drawings below are significant memories of happy moments I experienced as a learner and as a mathematics teacher.



**Figure 3.1: Photographs of My Memory Drawings**

### 3.13.2 Artefact Enquiry

The creation of self-boxes is a technique used to collect items that represent and develop one's professional career. According to Leitch (2008, p.151), the objects collected can be classified as esteem and collective objects (Riggins, 1994, p.112). The process of artefact inquiry involves participants selecting and demonstrating items that evoke a specific memory or hold significant meaning. This method was used in my study to understand the memories and stories associated with the items chosen by mathematics teachers. Participants attached their meaning to their chosen artefact, generating new, specific, and interactive data. Cole (2011, p. 225) argues, "Memory is both a material piece of knowledge and an active process by which the knowledge itself is constructed." The journey of constructing and reflecting on the artefacts helped participants identify significant events in their lives that have transformed them as teachers, as they revisited their experiences and attached critical meanings to those moments.

I gave my self-box the title "Timeless Treasures of the Heart." It contains objects that hold significant meaning to me. As I interacted with the items in my self-box, I recalled stories from my childhood and the different seasons I experienced. The objects I placed in my self-box included a picture of my Mum and me, the newspaper article with my matriculation results, and my pregnancy files for both my daughter and son.



**Figure 3.2: Memory Box: Timeless Treasures of the Heart**

### 3.13.3 Self – portraiture

Visualisation prompts memory recollection. For my study which is a narrative inquiry, the use of self-portraiture was used to allow participants to recall and revisit their memories. Hancheruk, McBride, and Witczak (2016) suggest that creating a picture offers a chance for reflection on deeds, convictions, and results. Self-portraiture also provides something tangible and concrete; in this creative process, it deepens comprehension of the teacher’s tacit knowledge, teaching, and learning (Hancheruk et al., 2016). The ambiguity in self-portrait is for individuals who would like to investigate beyond the image, for those who are prepared to risk the chance of uncertainty and observe the potential challenges of engagement (Hancheruk et al.,2016). The purpose of self-portraits is to discover oneself and offer narratives that were “once complex, provocative, and inviting” that aim to be holistic thus revealing the dynamic interaction of values, personality, structure, and history (Hancheruk et al.,2016, p.287). This method was executed by teachers drawing images of how saw themselves in the teaching profession. Basic drawing materials such as paper, pencils, and crayons were needed as well as magazines and newspapers.

### **3.13.4 The Unstructured Interview**

An unstructured interview is a qualitative research method that is employed to collect data and information. According to Zhang & Wildemuth (2009), unstructured interviews are most suitable when an in-depth understanding of a particular phenomenon embedded in a specific cultural context is required. Based on the premise that the data and information were received from the participant, only the topic or main research question was introduced, and the participant was able to respond freely, and, in any manner, they felt comfortable about the topic (Bertram & Christansen, 2014). There are several steps involved in conducting an unstructured interview that is centered around the three key principles of narrative inquiry, namely sociality, temporality, and place. This included the location of the setting, acknowledging the language and culture of participants, the way I presented myself as a researcher, identifying key participants that provide relevant data for the study, developing a trusting rapport, and capturing the data (Zhang & Wildemuth, 2009). I contacted the participants telephonically to arrange to meet at a place they felt comfortable and relaxed. All participants chose school as it was the final week of school before the term ended. I further requested a suitable time in which they were available for me to meet with them. I enquired if they were comfortable communicating in English, and all participants agreed to English as a language as a medium of communication. As a narrative inquirer, I created a comfortable and relaxed space to allow participants to share their stories and experiences freely. The participants selected for my study were mathematics teachers from schools in which English is the language of instruction. Meeting my participants face-to-face minimised confusion and concern as I tried to build confidence by earning their trust. Based on the nature of this data collection method, bias was minimised concerning the participants' responses.

### **3.14 Data Collection Plan**

Based on the research questions to guide the study, I generated the table below that outlines the processes and methods that guided the data collection process.

**Table 3.2: Table showing data generation methods**

<u>Research questions</u>	<u>Research methods</u>	<u>Quantity per Method and Participant</u>	<u>Data source</u>	<u>Relevance to data collection methods</u>
1.What are the stories of secondary school mathematics teachers’ everyday experiences?	Memory Drawing  Artefact inquiry	2 drawings, 1 as a learner and 1 as a teacher.  1 or 2 objects per participant.	Teacher’s stories	Past Memories  Past and Present Memories
2. What personal - professional experiences shape secondary school teachers’ everyday practice in mathematics classrooms?	Self – Portrait  Unstructured Interview	1 self–portrait per teacher.  1 x 1 hour, per participant	Teacher’s stories	Present memories  Past / Present memories
3. How do secondary school teachers foster engaged pedagogy in mathematics classrooms?	Unstructured Interview	1 x 1 hour, per participant	Teacher’s stories	Past / Present memories

### **3.15 Making meaning [analysis and interpretation]**

Data collected using a narrative inquiry approach differs from other qualitative research studies as it is in the form of “storied narratives” (Polkinghorne, 1995, p.12). The similarity lies in the use of the paradigmatic analysis of data. The data analysed in this study are diachronic. The term "diachronic data" refers to temporal information regarding the order of events (Polkinghorne, 1995, p.12). The information often includes references as to when and why actions were taken as well as the expected outcomes of those acts and autobiographical recounts of specific incidents. Analysis of data employing the paradigmatic approach will start by identifying similar themes or concepts that emerge from the stories collected. The paradigmatic search method that is employed in this study is one in which ideas are derived from earlier theories or logical possibilities, as it aligns with the inductive analysis that is embedded within qualitative research. This method identifies relationships among the different categories and does not just discover or demonstrate occurrences within the data. The ability of paradigmatic techniques to create a general understanding of a group of stories is most beneficial when analysing data that is collected using a narrative approach (Polkinghorne,

1995).



**Figure 3.3: Diagram showing snapshots of working with data**

### **3.15.1 Narrative analysis: Reconstructing stories of secondary school mathematics teachers**

Constructing narratives has enabled me to gain a deeper understanding of secondary school teachers' experiences in their mathematics classrooms and the methods they employ to foster engaged pedagogy. The creation of these narratives involved recounting personal experiences, while the process of co-construction occurred as I received and engaged with their stories through various interactions. As a narrative inquirer, it was essential for me to become an active listener before I could effectively reconstruct the narratives of the secondary school mathematics teachers. The following discussion outlines the process that I undertook to translate these stories into written text.

The first level of narrative analysis involved working with the raw data generated from the participants' memory drawings, object inquiries, self-portraiture, and unstructured interviews. According to Polkinghorne (1995), the narrative analysis process enables researchers to collect descriptions of events and organise them into a story using a plot. This involves integrating and interpreting the data through the technique of "plotting" the narrative. After collecting the data, I began to plot the narratives. These encouraged me to envision each participant's story as a movie and to identify six critical plot points that I could present on a storyboard. Creating

storyboards aids in arranging and organising the story in a "plotted" sequence using visual images (Naicker, Pillay & Blose, 2020).

I began the process of creating plots by listening to the recordings of my conversations with the participants multiple times. While I transcribed these conversations, I focused closely on their responses. Polkinghorne (1995) states that it is important to consider the emotions, challenges, and feelings of participants, as they offer valuable insights. After reviewing the raw data, I identified key plots that represented the personal and professional experiences of the participants. To illustrate these plots visually, I chose images that matched their significant experiences in everyday life. I also recognised my role as a researcher, as visual representations of the plots can affect how they are judged (Naicker et al., 2020).

The progressive structure of the plots highlights critical events that emerge in the study (Polkinghorne, 1995). As I developed each storyboard to illustrate the personal and professional experiences of the participants, I presented it to my supervisor and critical friends. The presentation to my critical for critical feedback was to ensure transparency and researcher reflexivity to eliminate any bias as a researcher/participant. During our discussions, I received valuable suggestions, which prompted me to review and revise each storyboard accordingly. I then revisited the raw data to ensure that I had not overlooked any significant information. Polkinghorne (1995) asserts that experiences that may have appeared irrelevant initially may influence the outcome of the study. Once I completed the storyboards, I shared them with each participant to allow them to validate the authenticity of their stories.

Given the abundance of data available, storyboarding facilitated the visualisation of the participants' narratives and assisted in organising the sequence of key events. As noted by Polkinghorne (1995), understanding the contextual features of experiences is essential for understanding the overarching narratives. Furthermore, the plots can be easily integrated, facilitating a systematic arrangement of events in an organised manner.

Polkinghorne (2007) characterises narrative inquiry as a study focused on the stories that convey individuals' lived experiences. This research method emphasises the understanding and interpretation of these experiences as expressed through narrative. Clandinin and Connelly (2000) assert that storytelling serves to clarify these lived experiences. In my role as a narrative inquirer, I recognised the necessity of ensuring that the stories were both detailed and nuanced,





**Figure 3.5: An example of a storyboard using Peter’s personal experiences**

### 3.15.2 Analysis of the narratives: Deconstructing and working with the mathematics teachers' stories

The second level of analysis examines common elements in stories, a process known as narrative analysis. Polkinghorne (1995) asserts that the first level of analysis focuses on how these elements come together to form coherent stories. Analysing narratives helps to create new stories. For me, it was like unravelling each story to answer the research questions. Polkinghorne (1995) states that at the end of the configuration process, the story should fit all the events in its plot. This process happened after I collected all the data, which I sorted into themes or plots. The methods I used allowed me to gather useful information, starting with storyboards. This approach helped me form plots and themes from the raw data to retell the lives of my participants.

I conducted this narrative analysis to answer the first research question. For the second level of analysis, I used a pantoum poem and a haiku poem, respectively, to break down the stories for the second and third research questions. I engaged deeply with the data and used sticky

notes and drawings to outline the themes. I examined each research question closely and focused on each narrative to ascertain the best answers. Harris (2012) points out that data can be meaningless without the ability to understand and analyse it. My goal was to convert data into stories that made sense and supported the purpose of the study.

The stories of the participants are found in Chapters Four, Five, Six, and Seven. I started by looking for key themes in each story that described certain events relevant to the research questions. After reading the narratives, I wrote down keywords and phrases to construct the poems, which guided the interpretation of the data. According to Creswell (1998), it is essential to interpret and present data carefully. I grouped notable events and ideas into themes. Gibson (2006) explains that narrative thematic analysis involves sorting data into categories for analysis. I developed themes by grouping specific experiences, opinions, and ideas. Throughout this process, I remembered that people could react differently to similar events (Polkinghorne, 1995). The varied reactions to similar events highlight how individuals' unique perspectives shape their interpretations (Polkinghorne, 1995). This idea helped me understand how different teachers approach engaged pedagogy while facing the same challenges in my study.

### **3.16 Trustworthiness and Issues of Believability and Verisimilitude**

The most crucial elements that ensure the quality of a narrative study are trustworthiness and issues of credibility and authenticity. Trustworthiness is used for qualitative studies as compared to reliability and validity which are statistical measures used for quantitative studies (Loh, 2013). The key components of trustworthiness are credibility, transferability, dependability, and confirmability. Credibility in qualitative research ensures the findings are accurate and trustworthy (Korstjens & Moser, 2018). Triangulation, which involves using multiple data collection methods, can strengthen credibility. Transferability refers to the applicability of findings to other contexts (Korstjens & Moser, 2018). Thick descriptions of the interview process ensured transferability (Cohen et al., 2018). Dependability involves participants' assessments of the study's findings and interpretations (Korstjens & Moser, 2018). To enhance dependability, record keeping and an audit trail of data collection, analysis, and interpretation were important. Confirmability ensures that data and interpretations are rooted in the data, not the researcher's imagination (Korstjens & Moser, 2018). To ensure confirmability, data generation was screened and confirmed by participants and a supervisor.

Riessman (2008, p.187) states that “a narrative is not simply a factual report of events, but instead one articulation told from a point of view that seeks to persuade others to see the events exclusively.” Polkinghorne (2007, p.479) confirms this statement by suggesting that a study that employs a narrative inquiry approach does not aim to confirm historical evidence but to understand and provide an explanation of the experiences of events shared by people in the form of stories. As a narrative inquirer, I tried to ensure credibility by understanding and presenting an interpretation of the stories of the lived experiences shared by participants. I also described upfront my position as a researcher in this study. To address the issues associated with authenticity, which include the “quality of stories of experiences that seem to be true or real” (Loh, 2013, p.10), I ensured this study generated similar feelings and emotions in the reader’s experiences as they engaged with narrated stories of the participants. This was executed by peer checking and validation by participants and my mentor. Critical friends played a key role in qualitative research by enhancing trustworthiness, reflexivity, and transparency. They offered constructive feedback, challenged assumptions, and provided different perspectives, helping me identify biases and refine methods. This collaborative process, based on mutual trust, leads to stronger, more credible findings. As Noor & Shaffee (2021) emphasise, such collaboration significantly improves research quality through increased reflexivity and transparency, for which I found myself accountable

### **3.17 Ethical considerations**

Resnik (2018) defines ethical considerations as moral principles in qualitative research. Tripathi and Chaturvedi (2023) emphasise key principles: autonomy, beneficence, non-maleficence, and justice.

#### **3.17.1 Gatekeeper’s Permission**

In any study, the researcher must adhere to ethical issues. Before beginning the study, I obtained the permission of three gatekeepers to conduct the study, before recruiting the three secondary school mathematics teachers. Initially, I obtained permission from the principals of the schools, who served as the first gatekeepers. Subsequently, I sought authorisation from the KwaZulu-Natal Department of Basic Education, the secondary gatekeeper, to conduct research in three schools located in Chatsworth within the Umlazi district. Finally, I applied for ethical clearance from the University of KwaZulu-Natal, which represented the third gatekeeper, to gain the necessary approval to undertake my study.

### **3.17.2 Autonomy**

Autonomy allows participants to make independent choices, and their consent was obtained to ensure voluntary participation and allow recording of the meetings (Tripathi & Chaturvedi, 2023). Participants signed informed consent letters to signify voluntary participation. Participants were informed they could withdraw at any time without penalty. The identities of my participants and their schools remain protected as I used pseudonyms.

### **3.17.3 Beneficence and non-maleficence**

Beneficence and non-maleficence focus on maximising benefits and minimising risks, ensuring a safe environment for participants to share their stories (Tripathi and Chaturvedi, 2023). I was also sensitive to their needs and understood when they would not be available for a virtual meeting or a conversation. None of the participants withdrew, however, one participant did not respond to my messages or calls to follow up on the data collection and thus I had to engage a new participant to progress with my study.

### **3.17.4 Justice**

Clandinin (2016) urges narrative inquirers to ensure that their participants' feelings and emotions are protected, especially as recalling and revisiting experiences may result in negative emotions and even trauma. Due to the emotional and sensitive nature of narrative inquiry, I provided my participants with the details of a practicing psychologist should they need one. However, this study did not cause emotional harm to any of my participants. Neutral language was used to prevent emotional distress and protect participants' feelings (Clandinin, 2016).

## **3.18 Researcher Reflexivity**

In this narrative inquiry study, researcher reflexivity plays a vital role as researchers do not only observe but also actively participate. Reflexivity recognises that the researcher's values, beliefs, and experiences may impact the study. Moser and Korstjens (2018) state that reflexivity ensures transparency and research quality by ensuring that the researcher is honest about their strengths and weaknesses. To ensure data accuracy, I used audio recordings and kept a reflexive journal to record my feelings and biases encountered during the study. This study helped me maintain a critical mindset while conducting interviews. As a narrative inquirer, I maintained reflexivity by acknowledging my position as an educator and positioning myself to be impartial about my views and beliefs regarding the research topic. Throughout the study, I felt emotional as the participants shared their memories and experiences. The challenges and struggles the

participants shared, mathematics teachers face significant challenges compared to other teaching disciplines due to the pressure of achieving results. I often felt like voicing how I felt and perceived their experiences, but I chose to journal my thoughts and feelings to remain impartial and not add my beliefs and values to the research. As a researcher, I was mindful of my own feelings and hence used active listening to focus on properly understanding the participants' viewpoints, rather than making judgments or interpreting their words through my own lens. Another technique I used was bracketing, where I set aside my own experiences and preconceptions while listening.

### **3.19 Research challenges**

As a researcher, one experiences exhilaration when selected participants agree to take part in your study. However, the data collection process can often become chaotic and challenging. After receiving my ethical clearance, I began collecting data, initially feeling excited as participants were open and willing to share their memories and experiences, with some even expressing gratitude for the opportunity to discuss their feelings and stories. However, not all participants were as forthcoming; some only shared what they felt comfortable discussing. When I requested a follow-up session with one participant, she stopped responding to my messages and calls. This left me feeling anxious, leaving me to move on and seek another mathematics teacher from one of the schools from which I had obtained permission. I eventually found a new participant, who was a novice teacher. Despite her limited years of experience, her insights and background contributed significantly to my study. Initially, I believed that the best participants would be teachers with more than five years of experience. Yet, my challenging experience with my previous participant and my decision to include a novice teacher taught me that early-career educators also provide valuable perspectives that are essential for understanding the concept of engaged pedagogy.

### **3.20 Chapter synthesis**

In this chapter, I provided an account of the research design and methodology employed in this study. This qualitative research was situated within the interpretivist paradigm, using a qualitative methodology. By adopting narrative inquiry as the research methodology, I was able to closely explore the daily lives of secondary school mathematics teachers through their stories and personal experiences. Discussing the location and profiles of my participants was crucial for understanding the context of the schools and for gaining insight into the participants'

backgrounds before engaging with their narratives.

I chose to use arts-based methods, such as memory drawing, object inquiry, and self-portraiture, to help participants reflect on their past and present experiences and to share their connections to these memories. In addition to these arts-based methods, unstructured interviews allowed participants to share their stories freely, retrospectively as learners and currently as teachers. Conducting a paradigmatic analysis was crucial for identifying and linking key themes that emerged from the conceptual framework, addressing the research questions. I also emphasised addressing ethical issues and ensuring trustworthiness and credibility while analysing the data. This involved allowing critical friends and the participants to validate the narratives and the analysis of the narratives.

In Chapters Four, Five, Six, and Seven, I detail how I conducted both levels of analysis—narrative analysis and analysis of narratives—for each of my participants individually. First, I reconstructed their stories in response to Research Question 1, and then I deconstructed the data to answer Research Questions 2 and 3. The stories of each of the three participants are interpreted and analysed in separate chapters. These stories are presented unedited in the first person to privilege the voices of the participants. I use these narratives to gain deeper insights into the lives of secondary school teachers and how they foster engaged pedagogy in mathematics classrooms.

### **3.21 Conclusion**

This chapter outlines a thoughtful approach to exploring the experiences of secondary school mathematics teachers using engaged pedagogy. A qualitative research design with a narrative inquiry framework keeps teachers' voices central to the study. The purposeful sampling strategy, ethical considerations, and careful data analysis reflect a commitment to authenticity and reliability. These choices support the study's aim to provide valuable insights into mathematics education. This foundation enables a rich exploration of participants' stories, highlighting how engaged pedagogy can transform classrooms and inspire meaningful learning.

# CHAPTER FOUR

## PETER'S STORY: FROM PLAYFUL LEARNER TO PARTICIPATIVE TEACHER

### 4.1 Introduction

In the previous chapter, I outlined the research design and methodology and described the research instruments I employed to gather data. In this chapter, I draw on Polkinghorne's "storied narratives" and present and analyse Peter's reconstructed narratives conveyed in the first-person genre. The diachronic data collected from Peter will be analysed by paradigmatic analysis (Polkinghorne, 1995). Peter's story was reconstructed utilising various data collection and generation strategies. A pseudonym, "Peter," is used to refer to the participant. Throughout this chapter, excerpts from my reflective journal are included to share my subjective experiences as the narrative inquirer, acknowledging my positionality and awareness of Peter's storied data. This reflexive engagement allowed me to critically examine my choices and authorial responsibility throughout the research process. The concept map below illustrates the organisation of the chapter.

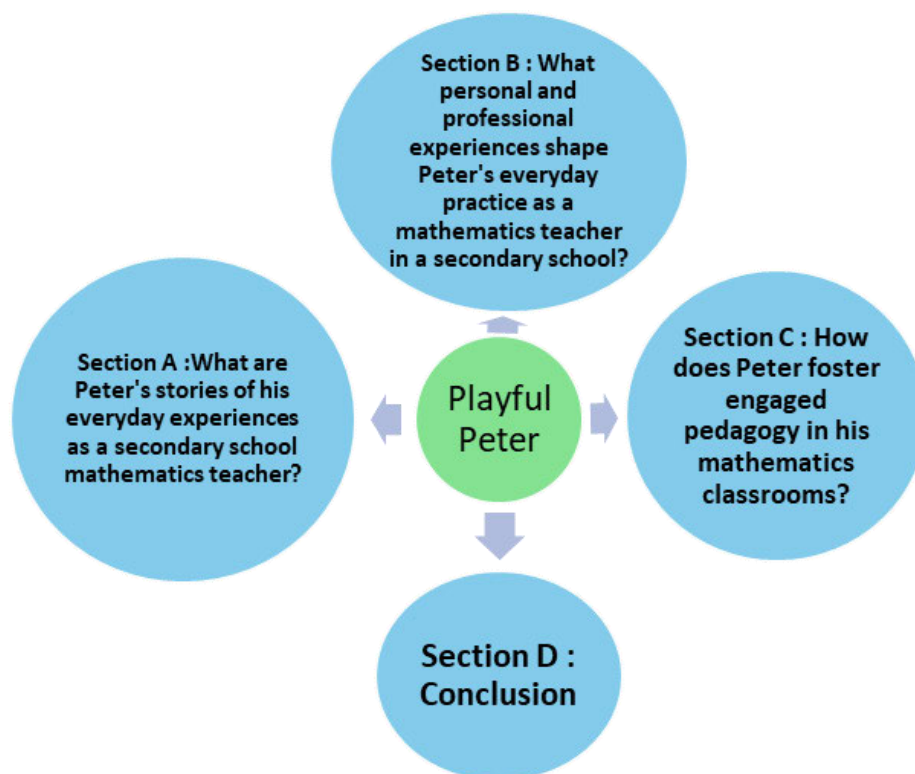


Figure 4.1: Diagrammatic summary of my analysis of Peter's narrative

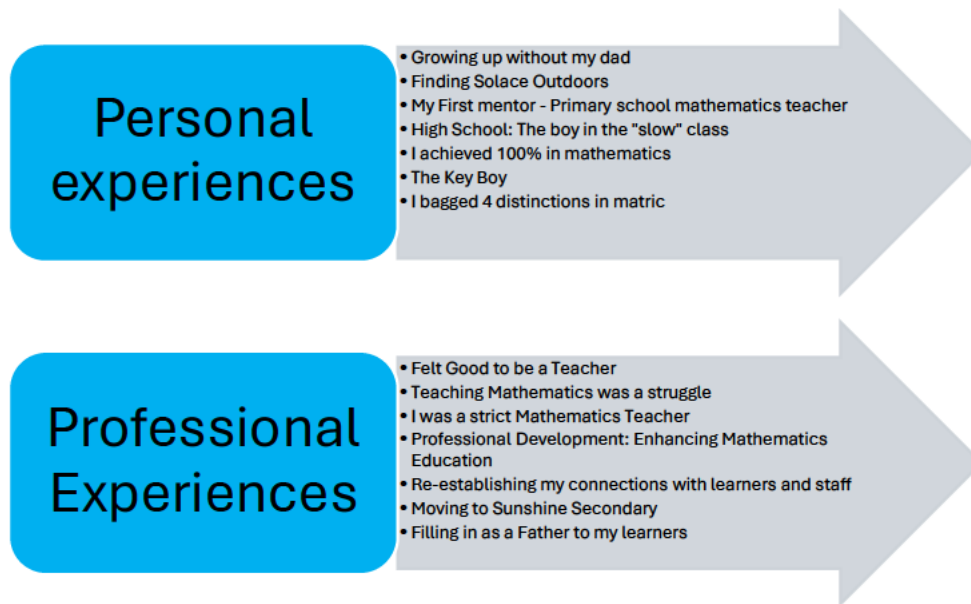
This chapter comprises three sections. Section A focuses on Peter’s reconstructed narratives presented in the first-person genre using a range of data collection and generation strategies and methods. The participant is referred to by the pseudonym “Peter.” Throughout this chapter, I include excerpts from my reflective journal to share my subjective experiences as the narrative inquirer, acknowledging my positionality and awareness of Peter’s storied data. This reflexive engagement allows me to critically engage with my choices and authorial responsibility throughout the research process. The concept map illustrates the layout of the first, second, and third levels of analysis and discussion. In Figure 4.1, the different sections developed to represent Peter’s experiences as a mathematics teacher addressing each research question are depicted. Section B draws on Peter’s storied narratives to address research question two, “What personal-professional experiences shape Peter’s everyday practice as a mathematics teacher in a secondary school?” Section C offers interpretive responses to question three, “How do secondary school mathematics teachers foster engaged pedagogy in mathematics classrooms? Section D offers an overall synthesis and conclusion of the chapter.

#### **4.2 Section A: Peter’s reconstructed storied narrative: From playful learner to passionate mathematics teacher**

In this section, I present a reconstructed storied narrative of Peter’s experiences in response to the first key research question: What are the stories of secondary school mathematics teachers' everyday experiences? The narrative was reconstructed after working with the storied data generated from Peter’s memory drawings, object inquiry, self-portrait, and unstructured interviews to yield thick descriptive data (Van Maanen, 1979; Leeds-Hurwitz, 2020). This section explores the nuances and complex experiences of Peter’s everyday life as a secondary school mathematics teacher.

The following diagram was created to organise and identify the key plots and subplots in Peter’s reconstructed storied narrative. Drawing on the work of Connelly and Clandinin (1990), I analysed Peter's narrative and identified key plots within his life story, categorising them into personal and professional experiences. Peter's personal experiences are traced from his childhood through his time as a learner and then a student. His professional experiences are plotted from the moment he was appointed as a teacher.





**Figure 4.2: Diagram showing plots and subplots of Peter’s reconstructed storied narrative**

### Peter’s Story

I met Peter in December 2023 at his school, Sunshine Secondary School. He was quite relaxed as it was the last week of school, and he was looking forward to the school holiday.

Peter is a 36-year-old African male with a passion for mathematics education. He has a strong background in teaching and holds qualifications as a mathematics teacher. His teaching journey started in 2010 at a Quintile 2 school in the Pinetown district. A quintile school reflects the socio-economic status of the institution (Maistry & Africa, 2020), with disparities in school financing. The quintile system aims to assist underfunded schools. According to Ncanywa (2015), quintile 3 and lower are classified as "no-fee" schools due to their disadvantaged and low-resourced nature. Peter has accumulated 12 years of valuable experience in the field of education from more than four schools. Throughout his career, he had the opportunity to teach mathematics to learners ranging from grade 8 to grade 12, allowing him to develop a deep understanding of the curriculum at various levels.

### Growing Up without my dad

*In 1992, at the tender age of four, I had my first experience of sorrow. I was a playful and happy child, but the loss of my dad made me feel emotions I didn’t think or imagine I would*

ever feel. It was a very sad and gloomy time, and I didn't know how to feel or express myself. I could barely understand the meaning of death. My three siblings and I, along with my widowed mum, had to find a way to survive without my dad. My mum had to become the breadwinner of the family, and my older sister had to take on added duties and responsibilities. Living in a rural area, there weren't many job opportunities. My mum worked as a domestic worker in the town nearby and tried her best to provide for us. I grew very close to my older sister, as she understood me and made me feel loved. She would prepare our meals since my mum worked and ensured our homework was done. I looked up to her as she was also in school, but she took on the responsibility of caring for us while my mum was at work.

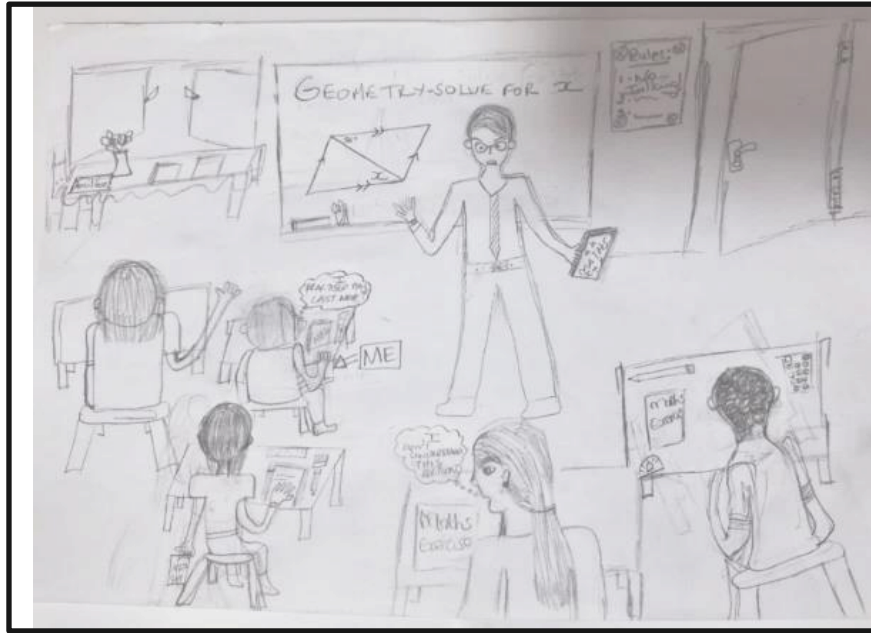
### **Finding solace outdoors**

The loss of my dad left a huge void in my life. I didn't share a close bond with my siblings, except with my older sister. It was an unspoken rule not to share our emotions or complain. To compensate, I sought solace in outdoor activities and reveling in joy and laughter. Despite feeling small in comparison to my peers during my time in primary school, I found solace in being playful and engaging in activities such as soccer and cycling. My focus leaned more towards sports than academic pursuits, as I preferred being active and engaging in outdoor experiences over studying.

### **My first mentor : Primary school Mathematics teacher**

In grade 7, my mathematics teacher, Mr. Zondo, took a personal interest in me. He recognised something in me that I didn't see in myself. With his guidance and support, I developed a passion for mathematics that had a profound impact on my life. He understood me well and knew that if he could channel the same energy I had in sports into the classroom, I would excel. Mr. Zondo assigned work that challenged me and motivated me to apply myself in problem-solving. His mentorship and belief in my potential ignited a newfound love for learning, particularly in mathematics. Mr. Zondo would give me work that challenged me so I could gain motivation and apply myself to problem-solving. His mentorship and belief in my potential ignited a newfound love for learning, particularly mathematics

### High School : The boy in the “slow” class



**Figure 4.3: Peter’s memory drawing as a learner**

*In grade 9, I was placed in the "B" class, which was considered the "slow class" as opposed to the "A" class which was the bright and smart class by the teachers due to our previous year's results and discipline issues. My mathematics teacher, Mr Khomo was strict and barely paid any attention to us as we were in the B class. He would often call learners from the "A" class to teach us and praise them. I knew the learners from the "A" class, and I was confident that I was better than them in mathematics. Coming from a family of high achievers, I felt the need to prove my intelligence to the teacher. I started by moving to the front of the classroom and studying hard daily. I discovered my passion for mathematics, but my mathematics teacher didn't pay much attention to me. This motivated me to work even harder and achieve excellent results in mathematics.*

### I achieved 100% in mathematics

*In grade 10, I was placed in the 10A class based on my subject choices, which included mathematics and physics. Despite having the same math teacher from grade 9, I received minimal attention. I sought help from my older sister and studied using their textbooks at home to be ahead in class. In addition, my best and I created a small study group to help each other and our classmates. We each chose a subject we were strong and would teach*

each other. In the first term, I achieved 100% in mathematics. Finally, my dedication, hard work, and excellent results caught my teacher's attention, and he acknowledged my commitment to my studies.

As I sat and listened to Peter's heartfelt recounting of his childhood, I was overcome with emotion. Yet, amidst the upwelling of emotions, I couldn't help but swell with pride for his unwavering determination to prove himself to his mathematics teacher.

Journal Entry (December 2023)

### The Key Boy

I was the “key boy,” in charge of opening the gates and classrooms. The principal chose me as the key boy as he noticed that I was playful but also responsible. Being the key boy, I would have to sacrifice my time and be punctual to school and stay in later. This was also to keep me away from “bad company” and out of trouble. Matric results were released during our vacation. I had to be at school that week for the release of results. On that memorable day, I opened the gates for my principal, I could see the excitement on his face because my friend and I had achieved the highest marks in our matric class. He wanted to tell me, but he couldn't. Instead, he told my mom, and she only told me a day after we received our statements.

### I bagged 4 distinctions in matric

KWAZULU-NATAL DEPARTMENT OF EDUCATION

STATEMENT OF SYMBOLS  
SENIOR CERT. (FULL-TIME) / SENIOR DEPT. (VOLTYDS)  
NOVEMBER 2005

EXAMINATION NUMBER: [REDACTED]

CENTRE: [REDACTED] SECONDARY SCHOOL

SUBJECTS	M	SYMBOL
ISITILU FIRST LANGUAGE HQ	86	A (80% +)
ENGLISH ENGLISH SECOND LANGUAGE HQ	73	B (70-79%)
PHYSICAL SCIENCE HQ	87	E (80-89%)
PHYSICAL SCIENCE HQ	34	A (80% +)
GEOGRAPHY HQ	91	A (80% +)
MATHEMATICS HQ	91	A (80% +)

PASS SENIOR CERTIFICATE WITH ENDORSEMENT (MERIT) M (1440 - 1679)

DATE: 2005/12/16

H. CASSIUS LUBISI, PhD  
SUPERINTENDENT-GENERAL

THE DEPARTMENT RESERVES THE RIGHT TO EFFECT CHANGES TO THIS DOCUMENT IF NECESSARY 1515366CT

Figure 4.4: Peter's object (matriculation report) that he holds sentimental

*I made the choice to keep my statement of results because it holds immense sentimental value for me. When we got the statements, it was a surreal moment for me because it meant everything. Looking at my results, I felt proud and emotional to see that I had received four distinctions. The marks on this statement of results are a testament to my unwavering hard work and determination. It opened doors I didn't even know existed.*

*I was absolutely amazed by Peter's incredible work ethic, especially considering his lively and playful personality as a child. It's extraordinary to think that he achieved four distinctions in matric without receiving much recognition. As Peter opened up about his journey in more depth, I could sense the emotions running through him.*

*Journal Entry (December 2023)*

### **Moving into Teaching: University experience was affirming**

*I dreamed of pursuing a career in medicine, and with this goal in mind, I applied to the Nelson Mandela School of Medicine. I vividly felt anxious as I presented my application to the administration office in January, fearing that I might have missed the deadline. To my relief, the staff member assured me that they would try accommodating me. They suggested a bridging programme that would allow me to start studying medicine the following year. However, due to financial limitations, I made the difficult decision to pursue a different path and applied to study teaching at Edgewood. To my surprise, Edgewood accepted me based solely on my academic results and even offered me a full bursary and accommodation. This opportunity meant the world to me and allowed me to pursue my passion for becoming a teacher.*

### **Memorable Teaching Practice**

*During my first year at university, I faced challenges navigating campus and the city of Durban, but I made new friends and quickly adapted. Although teaching wasn't my first choice, I grew to enjoy it and excelled in my courses. I dedicated myself and actively participated in study groups to enhance my learning experience. Within our groups, we exchanged various teaching methodologies and concepts to implement during practice teaching sessions. This collaborative effort significantly enhanced our confidence as we entered the classroom in the role of student teachers. My practice teaching experience at an under-resourced school in my final year was rewarding, as I learned the value of patience and allowing learners to discover solutions on their own. On my final day of teaching practice, I was touched to receive notes*

*and gifts from the learners, expressing their gratitude towards me. This thoughtful gesture made me feel valued and reaffirmed my choice of profession.*

### **Becoming a teacher**

#### **Felt Good to be a teacher**

*In 2011, I was appointed as an Unprotected Temporary Educator (UTE) at Horizon High School, a quintile 3 school that was under-resourced and had overcrowded classrooms. I began teaching in February as a replacement for an unwell educator. At first, I felt nervous and anxious, but I found fulfillment in being a teacher, particularly as a young educator surrounded by more experienced and older teachers. My role primarily involved teaching mathematics to grade 8 and grade 9 learners. My main challenges were the large class sizes and the lack of resources. There were nearly 60 learners in each class, and it was a struggle for every learner to have a mathematics textbook. As a new teacher in an overcrowded classroom, it was quite stressful to maintain discipline while teaching a subject that required uninterrupted focus and constant monitoring of classwork and homework.*

#### **I was a strict Mathematics teacher**

*I was very strict and did not tolerate any misbehaviour, questions, or poor performance from the learners. I was serious and believed that if I taught something once, the learner should understand it. Due to the large class sizes, I chose to practice corporal punishment to maintain discipline and did not allow learners to speak unless I permitted them. Due to a lack of space and overcrowded classrooms, learners were seated closely together in rows, and I made sure to remain the central focus of the classroom. I did not allow any group work or peer learning because I believed it would lead to disruptions and increased noise levels. I chose to teach at the board and expected the learners to understand the material once I finished the lesson. At that time, I thought that being a teacher meant I was always right until I was called to the principal's office.*

#### **Critical Realisation**

*The principal arranged a meeting with me and explained to me that learners were afraid of me and did not enjoy mathematics lessons because I practiced corporal punishment, and I*

screamed at them for not being able to do mathematics. I also acknowledged from viewing schedules that learners were performing better in other subjects. Regrettably, I recognised that my learners were “victims of my past experiences.” It pained me to acknowledge that they had to endure the same teaching style and approach that I had encountered as a high school mathematics learner.

*I was completely amazed and looked at Peter with great respect. He humbly acknowledged his mistakes and took responsibility for them. I listened as he shared his thoughts and feelings, reflecting on his past experiences as a learner and how they were influencing him as a teacher. This made me wonder if I had also unintentionally affected my learners with my own past experiences. Peter's reflections were deeply emotional.*

*Journal Entry (December 2023)*

### **Professional Development: Enhancing Mathematics Education**

*During my time at Horizon High School, I had the honour of being selected by the Pinetown district to take part in a rigorous 6-month Hilton professional development workshop focused on enhancing mathematics education. This workshop was an intensive programme that took place every weekend and throughout the school holidays. Throughout the workshop, we delved into a wide range of innovative teaching methodologies and approaches, and we had the opportunity to visit various schools as part of our experiential learning. It was eye-opening to witness the disparities in resources among the different schools. While some schools had state-of-the-art facilities and abundant resources, others were struggling to provide even the basic furniture for their classrooms. The programme helped in exploring multiple innovative teaching methods and sharing our successes and challenges with our peers daily. Being a novice teacher, this programme not only served as a professional learning programme for the community but was an excellent support structure for newly appointed teachers.*

*I was eager to learn more about this programme. I'm grateful that Peter was patient and understanding. Despite my numerous questions about the programme, he patiently discussed it in great detail. He provided comprehensive information about the resources, the context of different schools, and the various pedagogical approaches used.*

*Journal Entry (January 2024)*

### **Re-establishing my connections with learners and Staff**

*In 2021, I resigned from Horizon High School to open my own business. Unfortunately, it didn't work out. I returned to teaching as an SGB(School Governing Body) appointment at Pilsbury Secondary, where I was assigned to teach mathematics to grade 9, 10, and 11 learners. The learners, staff, and management welcomed me warmly and treated me with respect and kindness. Even though I was new, I felt comfortable in the classroom. The feeling of support and comfort enabled me to establish deep connections with the learners, my colleagues, and the management. I did not want to repeat the mistakes I made as a novice teacher. Forming important relationships with learners became a priority. I changed my teaching approach and focused on assisting learners during breaks, after school, and on weekends. I created a WhatsApp group that included parents to share information and resources. In addition, I moved away from the teacher-centered approach and allowed for peer learning and peer teaching. Learners felt at ease approaching me in or out of class for help with any topic or question. As learners expressed their love for mathematics and began to perform better, I felt a sense of joy and peace.*



**Figure 4.5: Peter's memory drawing as a teacher**

### **Moving to Sunshine Secondary**

*After teaching for a year at Pilsbury High School, I applied for a state-paid position at*

Sunshine Secondary School to teach General Education and Further Education Training (GET and FET) Mathematics. It was an emotional decision to leave Pilsbury, as the school had generously offered me a job when I needed it. However, the opportunity at Sunshine Secondary was too good to pass up, especially after having already left the system.

This decision to leave Pilsbury High School made me realise the influence I had on my learners, staff, and the community. The day I left, the entire staff, along with the parents and learners, planned a farewell to say their goodbyes. It was a surreal moment for me. Everyone gathered in the quad, sang, and praised me. The first week I left, the parents and the principal called and asked if it was possible for me to come back. For the first time, I felt appreciated and valued. I felt like part of the family, a sense of belonging and connection. To this day, I still have a relationship with the learners, staff, and parents of Pilsbury High School.

I am surprised by the continued strong relationships Peter maintains not only with his colleagues and learners, but also with the parents even after leaving the school.

Journal Entry (December 2023)

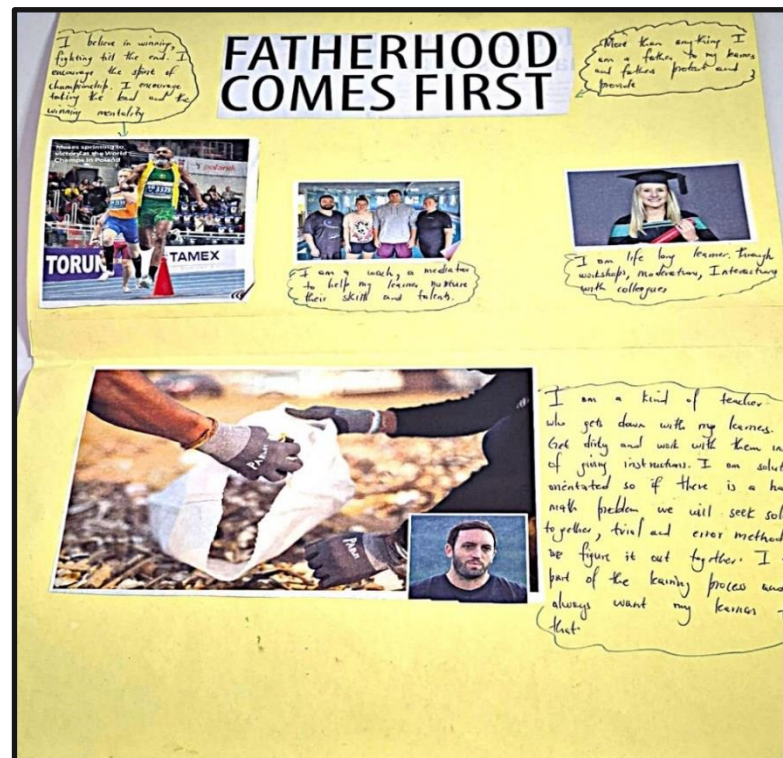


Figure 4.6: Peter's self-portrait

The larger student body at Sunshine Secondary reminds me of my first teaching position, but the difference lies in the support I receive from my colleagues and management. As I began to adapt to a new school, new learners, and new staff, I started to feel more at home. Coming to a school in the final term demanded extra classes and helping learners during breaks and on weekends. I felt compassionate for the learners as they had two different math teachers before me, leading to large gaps in their learning. I took time to get to know the learners better. I called learners individually during registration or break and had a general conversation about school. Gradually, learners began to trust me and share their struggles at home and school. I realised that most of them come from poor socio-economic backgrounds. Some of them come from child-headed homes, and some lack little to no parental guidance. I decided to step in and fill more than the position of a math teacher, taking on some of the roles as their "father." Although this was a significant decision considering I lost my dad at a young age, it turned out to be to my advantage as learners became more comfortable and began to enjoy mathematics.

#### 4.1.2 Synthesis of Section A

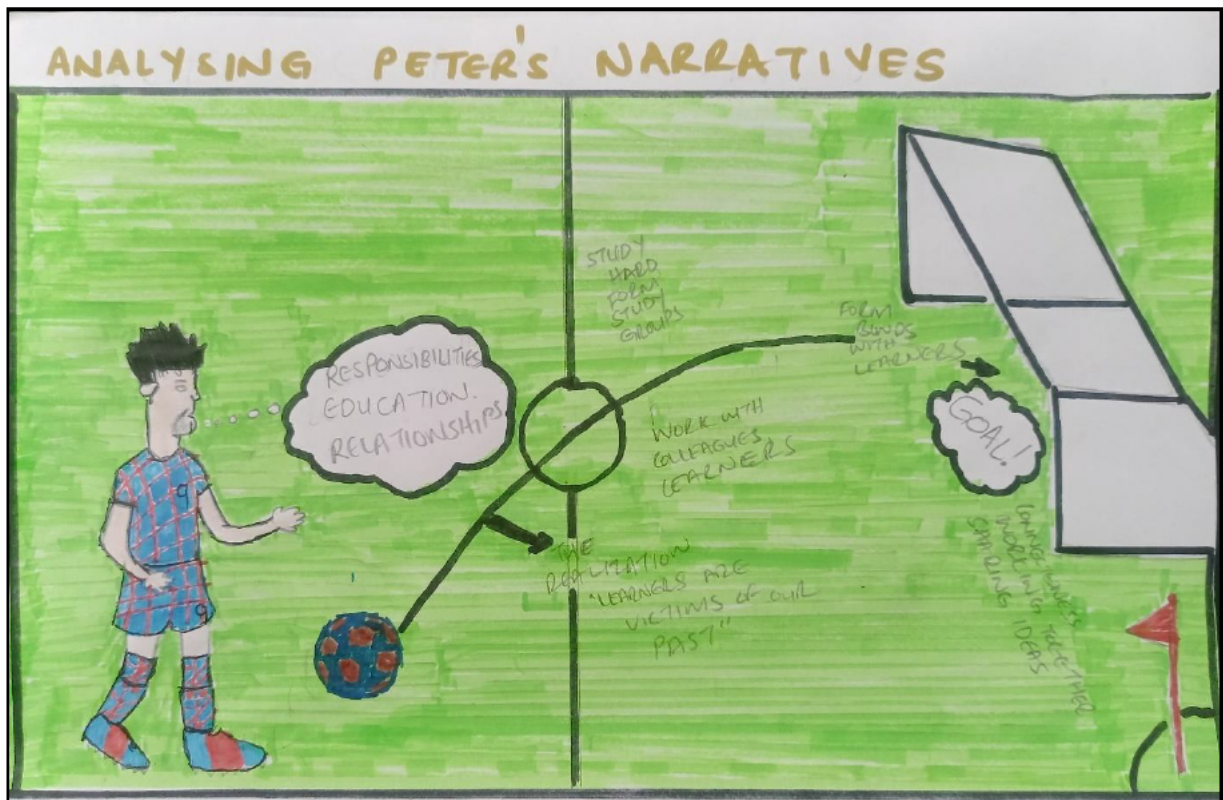


Figure 4.7: Analysing Peter's Narratives

To summarise Section A of Peter's reconstructed story, I created the accompanying drawing to encapsulate the key points from Peter's experiences as a secondary school Mathematics teacher. The drawing of the soccer field and Peter kicking the ball to score a goal best represents. Peter's passion for soccer brings him comfort and peace, and I used this analogy to illustrate how he experiences similar happiness and joy in the classroom. He achieves this by recreating a playful learning environment. Peter's complex everyday experiences as both a learner and a teacher. The open spaces, play and being active is what made him feel joyful and connected as a person. The disconnection he felt inside the classroom, unapproachable teachers and learners like him were inactive, made learning boring and disconnected. I included words and phrases that Peter used to depict his childhood and his transition into achieving his aspirations. The stories "lived and told" (Britzman, 2012) provided by Peter offer valuable insights into his developmental journey from early childhood through his transition from student to teacher. These critical reflections on critical experiences and significant relationships with significant people (his sister and primary school mathematics teacher) shed light on his personal tensions, emotional experiences, and worries. The significance of relationships that were supportive, caring, and where he was actively involved – like being recognised by the principal and made a key boy or his sister and fellow students and colleagues at workshops who he worked with to learn and understand mathematics.

#### **4.3 Section B: Interpretation and analysis of Peter's story**

In this section, I analyse and interpret Peter's storied narrative. I respond to key research question 2: *What personal-professional experiences shape secondary school teachers' everyday practice in Mathematics Classrooms?* Drawing on Polkinghorne's (1995) paradigmatic analysis, I delve into the personal and professional experiences of Peter. Additionally, selected a pantoum poem, a form which originates in Malaysia, due to its distinctive structure and the repetition of lines. According to Brannon (2011), the repetitive nature of a pantoum poem facilitates the exploration of significant themes. The Pantoum poem helped me identify concepts and issues to respond to the research question and elucidate the meanings of Peter's experiences.

#### **Passion for mathematics**

I knew I was good at Mathematics

I looked up to my older sister  
My matric statement meant everything to me  
Reflection as a teacher is important

I looked up to my older sister  
There's an emotional part to teaching  
Reflection as a teacher is important  
Learners evoke memories we try to bury

There's an emotional part to teaching  
My high school mathematics teacher was unapproachable  
Learners evoke memories we try to bury  
Learners are victims of our past

My high school mathematics teacher was unapproachable  
Changed negative experiences into positive  
Learners are victims of our past  
I knew I was good at mathematics

From the Pantoum poem, key themes in Peter's personal and professional experiences are observed. The important relationships Peter developed with his sister, mathematics teachers, his mathematics textbooks, and learners contributed to his passion for mathematics

#### **4.2.1 Relationship of Love and care was a source of inspiration**

According to Sanders (2017), fostering strong connections between siblings is crucial for children's social and emotional development. As a boy child growing up in a working-class, female-headed household, Peter found a deep sense of security and nurturing in his bond with his sister. She assumed a significant parental role, acting as a mentor, offering him emotional support and valuable guidance. Their relationship provided a safe and supportive environment for Peter to pursue schooling and do well in his studies.

*My mum worked as a domestic worker and tried her best to provide for us. I grew very close to my older sister, as she understood me and made me feel loved. She would*

*prepare our meals since my mum worked and ensured our homework was done. I looked up to her as she was also in school, but she took on the responsibility of caring for us while my mum was at work.*

The love and care he received from his sister not only shaped his academic life as a lifelong learner but also imparted to him essential skills that enabled him to be a positive role model to others. Notably, his sister's value for her education and academic achievements served as a source of inspiration for Peter, igniting his drive to excel in school. When Peter was placed in the "slow" class during ninth grade, he diligently used his sister's textbooks to improve his academic performance.

*I sought help from my older sister and studied using their textbooks at home to be ahead in class.*

Silva (2019) argues that objects have agency as they can evoke emotions and feelings within humans. Mitchell (2017) emphasises that objects are essential learning tools that play a significant role in fostering connections within education. The textbook Peter used gave him a sense of motivation and encouraged him to study. When he studied using the textbook, he understood mathematics, and when he understood mathematics, he enjoyed it and felt accomplished when he was ahead in the classroom. The excerpt also points to the learner as a thinker and the textbook as a space for learners to think and “self-learn” with the support of his sister.

#### **4.2.2 Teacher Mentorship, support, and guidance**

According to Asuo-Baffour, Daayeng, and Agyemang (2019), mentorship involves a more experienced individual providing guidance and counsel on career development, as well as offering personal and emotional support. Palmer (2008) identifies three levels of connection between teachers and learners: intellectual, emotional, and spiritual. These connections contribute to effective teacher mentorship. When teachers engage with learners on these levels, they foster essential relationships that help learners realise their full potential. Central to Peter's story is his primary school mathematics teacher, who played a pivotal role in mentoring him and supporting him in unlocking his untapped potential and academic abilities.

*In grade 7, my mathematics teacher, Mr Zondo, took a personal interest in me. He*

*recognised something in me, something I didn't recognise in myself. With his guidance and support, I began to develop a passion for mathematics, which had a profound impact on me. He understood me and took the time to counsel me out of the class. Mr. Zondo would give me work that challenged me so I could gain motivation and apply myself to problem-solving. His mentorship and belief in my potential ignited a newfound love for learning and particularly mathematics.*

The guidance and support from the mathematics teacher nurtured Peter's passion for mathematics as a subject as well as their love for learning. This genuine passion for mathematics was propelled by the supportive teacher who believed in learners and their potential to love learning and mathematics. This illustrates how Peter's teacher engaged with him on intellectual, emotional, and spiritual levels. This connection enabled Peter to apply his knowledge, discover his passion, and find joy in mathematics (Palmer, 2008). Peter's primary school teacher played a crucial role in his life by helping him uncover his untapped potential and expand his academic abilities.

#### **4.2.3 Intimate networks and familial resources**

Lortie (1975) explains how learners observe teachers, noting their teaching styles, attitudes and relationships with learners. This observation significantly shaped Peter's beliefs and behavior regarding teaching and learning. Peter observed his grade 9 mathematics teacher, who also taught him in grades 10, 11, and 12. He noticed that his teacher paid more attention to learners who knew the subject content and were good at it. Consequently, Peter felt unnoticed by his teacher, who failed to acknowledge him as someone who understood mathematics.

*In grade 10, I was placed in the 10A class based on my subject choices, which included mathematics and physics. Despite having the same mathematics teacher from grade 9, I received minimal attention. I sought help from my older sister and studied using their textbooks at home to be ahead in class. In addition, my best friend and I created a small study group to help each other and our classmates. We each chose a subject we were strong in and would teach each other. In the first term, I achieved 100% in mathematics. Finally, my dedication, hard work, and excellent results caught my teacher's attention, and he acknowledged my commitment to my studies.*

Supportive family relationships provided Peter with valuable resources, enabling him to take

proactive steps in his academic journey as a learner. His sister played a crucial role in coordinating resources and facilitating peer learning, which fuelled Peter's determination to work harder and gain recognition for his efforts. Additionally, learners unknowingly adopt values and attitudes by observing their teachers, influencing their future role as educators (Lortie, 1975). The school life and traditional teaching methods Peter experienced in his mathematics classes played a powerful role in shaping him as a future mathematics teacher.

#### **4.2.4 Theme Synthesis**

##### ***4.2.4.1 Supportive relationships that contribute to interactive and collaborative teaching in a mathematics classroom***

Peter's encounters have played a pivotal role in shaping his approach to teaching mathematics. His formative childhood experiences underscore the importance of active learning, a playful learning environment, and caring, and supportive relationships in education. Notably, the love, care, support, positive role models, and playful environment he received from his sister served as a powerful demonstration of the impact of familial support, positive role models, and playful environment in a learner's life. Additionally, his experience with a caring and supportive primary school mathematics teacher and being recognised as a responsible learner by the principal, highlighted the pivotal role of teachers in recognising and fostering the potential within learners. Peter's resilience, determination, and value for learning were a catalyst for personal growth and academic achievement in school.

*In the next section, I address the question: How did Peter's professional experiences shape his everyday teaching in mathematics classrooms? The following themes were identified.*

##### ***4.2.4.2 Traditional Teaching***

According to Lortie (1975), learners observe their teachers and unconsciously adopt similar values and attitudes when they practice as teachers. Peter imbibed the formulaic teacher routines

and embraced a strict disciplinary style like his high school mathematics teacher. His challenging experiences at school perpetuated the belief that the teacher's authority is absolute. However, his learners were passive receivers and not active creators of learning. Being a novice teacher, it was challenging trying to deliver curriculum whilst maintaining discipline in an overcrowded classroom. Although his strict disciplinary style ensured a well-behaved class, as time progressed, Peter made a valuable realisation:

*Regrettably, I recognised that my learners were “victims of my past experiences.” It pained me to acknowledge that they had to endure the same teaching style and approach that I had encountered as a high school mathematics learner.*

After teaching a topic once, he expected all his learners to understand it. However, he soon noticed that the learners excelled in other subjects, which led him to realise that they had a better understanding of those subjects due to the diverse teaching approaches used by their other teachers. It became evident to Peter that his learners responded differently to him and were not performing well in his class. Upon reflection and careful observation, he realised that his learners were experiencing the same rigid teaching style that he had encountered in high school. Consequently, Peter decided to take a step back and reevaluate his teaching methods for mathematics, leading him to make significant changes in his approach. Peter realised his learners felt like him when he was in the “slow class” and “did not receive any attention.” Teacher reflection and observation were critical. Palmer (2008) asserts that connecting with learners and the subject is more important than the techniques employed to actually teach. Peter's questioning of his frustration, and consequently his evaluation of his teaching methods for mathematics led him to make significant changes in his approach. Further, Peter's reflection and change in approach demonstrate that there is a need to address the challenges associated with teachers' expectations of learners in education especially in mathematics (de Boer, Timmermans, & van der Werf, 2018).

#### ***4.2.4.3 Traditional methods to manage large classes and the lack of resources***

Spahiu and Spahiu (2013) define classroom management as a combination of varying plans and actions that the teacher employs to maintain learning in the classroom effectively and efficiently. Traditional methods of classroom management used by teachers in mathematics classrooms perpetuate fear and a lack of confidence in learners. Ardeleanu (2019) describes the traditional approach to math learning as teacher-led, where the educator introduces concepts, connects them to prior knowledge, demonstrates examples, engages learners in problem-solving, and reinforces learning through discussions, exercises, and homework. Peter's belief that teachers teach, and learners learn, compelled him to practice a top down in the classroom to manage discipline. He believed that discipline and good classroom management would create a better environment to teach mathematics.

*The main challenges I faced were the large class sizes and the lack of resources. As a*

*new teacher in an overcrowded classroom, it was quite stressful to maintain discipline while teaching a subject that required uninterrupted focus and constant monitoring of classwork and homework. I was very strict and did not tolerate any misbehaviour, questions, or poor performance from the learners. I was serious and believed that if I taught something once, the learner should understand it. Due to the large class sizes, I chose to practice corporal punishment to maintain discipline and did not allow learners to speak unless I permitted them. Due to a lack of space and overcrowded classrooms, learners were seated closely together in rows, and I made sure to remain the central focus of the classroom. I did not allow any group work or peer learning because I believed it would lead to disruptions and increased noise levels. I chose to teach at the board and expected the learners to understand the material once I finished the lesson.*

The large numbers in the mathematics classroom, forced Peter to adopt a similar stance and teaching approach as his mathematics teacher in high school. Marais (2016) highlights the challenges that teachers with overcrowded classes face, such as managing large groups of learners, maintaining discipline, and ensuring effective instruction. He therefore believed that discipline and good classroom management will create a better environment to teach mathematics. Practicing corporal punishment and not allowing collaboration was a strategy Peter adopted as a coping mechanism as a novice teacher to deliver curriculum whilst maintaining discipline in an overcrowded classroom. Peter was successful in maintaining discipline through practicing the traditional teaching approach, however a meeting with his principal forced him to make a valuable realisation.

*The principal arranged a meeting with me and explained to me that learners were afraid of me and did not enjoy mathematics lessons because I practiced corporal punishment, and I screamed at them for not being able to do mathematics. I also acknowledged from viewing schedules that learners were performing better in other subjects.*

Marais (2016) explains that overcrowded classrooms create major challenges for teachers in managing their classes. As a result, Peter uses traditional teaching methods and corporal punishment to keep order. On the other hand, Heekes, Kruger, Lester, and Ward (2022) argue that corporal punishment is common and influenced by cultural and social factors. They point out that it can harm children emotionally and lead to poor academic results. Evident from

Peter's narrative, are the learners' mathematics results in comparison to other subjects. Although Peter maintained discipline, there was a limitation in his strategy as he was unable to connect with learners intellectually and emotionally (Palmer, 2008) thus resulting in poor results in mathematics and instilling fear and isolation in learners for the subject (Wright, 2017).

#### **4.2.4.4 Connecting with learners emotionally**

Palmer (2008) described three levels of connection between teachers and learners: intellectual, emotional, and spiritual. Palmer (2013) states that teaching is more than just applying methods; it involves connecting with learners and the subject by acknowledging the trust within themselves. The external support and comfort Peter received made him trust himself in the classroom and use this trust to connect with learners.

*The feeling of support and comfort enabled me to establish deep connections with the learners, my colleagues, and management. I did not want to repeat the mistakes I made as a novice teacher. Forming important relationships with learners became a priority. I changed my teaching approach and focused on assisting learners during breaks, after school, and weekends. I created a WhatsApp group that included parents to share information and resources...As learners expressed their love for mathematics and began to perform better, I felt a sense of joy and peace.*

Peter's realisation of how he taught mathematics changed when he began to open up spaces in his approach to connecting with other teachers, learners, and management. He received support from all stakeholders which created a sense of comfort and connection. Consequently, he chose to change the way he approached learners in his mathematics classrooms and how he treated them after he taught a topic. As a high school learner, Peter did not share a relationship with his mathematics teacher, however after deep reflection, he tried to remedy his actions by forging bonds with his learners. This connection with learners and colleagues enhanced his teaching approach to mathematics and created a more conducive environment in mathematics classrooms.

#### **4.2.5 Theme Synthesis**

The key theme that emerged was his shift from an unfriendly, uninviting classroom environment and traditional teacher-dominated lessons to a caring, comfortable, teacher-learner-connected classroom: Significant reflections that stimulate connections with learners

in classrooms.

In responding to the question, "What personal-professional experiences have shaped Peter's everyday practices in mathematics classrooms?" the focus is on how Peter's professional experiences have influenced his teaching approach. This chapter highlights Peter's journey marked by adapting to various tensions and challenges encountered in the mathematics classrooms, these experiences required him to adjust his teaching methods. maintain discipline and order. A traditional and conservative top-down approach led to a disconnect with mathematics as a subject. The analysis also reveals that Peter's strict, uncaring, and unsupportive demeanor stemmed from his lack of confidence in creating a playful, engaging approach to mathematics learning. The large classes and traditional approaches to teaching stifled his inner passion. His apprenticeship as a mathematics learner (Lortie, 1975) was a dominant force in shaping his disconnection with his playful self from his passion for mathematics and his learners. Beauchamp and Thomas (2009) contend that teacher identity is a dynamic construct influenced by both internal factors, such as emotions, and external factors, including experiences and contextual elements. This identity evolves over time as educators engage with their environments, effectively balancing personal and professional dimensions. In this regard, Peter's identity was shaped by intrinsic beliefs and values acquired through his apprenticeship, which emphasised traditional teaching methods (Lortie, 1975). Additionally, it was externally influenced by factors such as overcrowded classrooms and the necessity to maintain discipline while achieving results in mathematics (Marais, 2016; Jojo, 2019).

#### **4.2.6 Synthesis of Section B**

I created a haiku poem to guide me in synthesising the issues that are foregrounded in the analysis of Peter's response to research question two: *What personal-professional experiences shape secondary school teachers' everyday experiences in mathematics classrooms?* A haiku is a form of Japanese poetry consisting of three simple lines that evoke powerful meaning (Harr, 1975).

*Victims of our past  
Relationships with learners  
Role as a father*

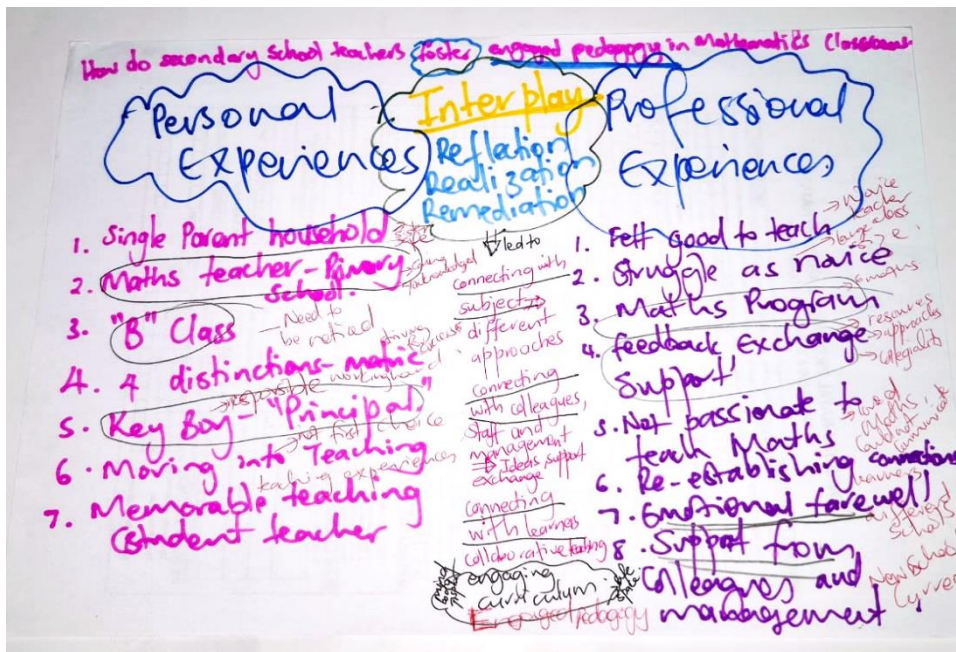
In response to research question two, I realised that Peter's personal and professional experiences are inherently intertwined. His personal life has been shaped by both positive and negative relationships, through the varied relationships he formed and was part of, which in turn has significantly influenced his approach to teaching mathematics. My analysis

foregrounds critical experiences and significant others (human and non-human) that have profoundly influenced his life as a teacher and the approaches he used to teach mathematics (Silva, 2019).

Despite initially emulating his high school math teacher's methods, Peter came to understand that cultivating a positive attitude and passion for mathematics. He acknowledged that mathematics education transcends mere delivery of disciplinary content. His evolving perspective and his desire to connect with both learners and fellow educators provided an avenue for him to express his deep-seated passion for mathematics. Drawing on his experiences of care and support, he actively engaged in mathematics. This awareness of the emotional aspect of teaching, reveals how Peter drew from positive personal interactions with his sister and his primary school mathematics teacher. Taking on the position of a fatherly figure came easily to him. He learned as a child how to be supported and cared for to succeed at school, and now he shows the same care and acknowledgment to each learner and their potential. Therefore, his positive childhood experiences provided him with the basis for shaping his professional journey. The intricate connection between these experiences has profoundly influenced his daily approach as a mathematics educator (Connelly & Clandinin, 1990).

#### **4.2.7 Section C: Interpretation and Analysis of Peter's everyday experiences**

In this section, I offer an interpretation and contextualisation of Peter's narratives, specifically addressing research question 3: *How do secondary school teachers foster engaged pedagogy in mathematics classrooms?* To tackle this research question, I employed bell Hooks' concept of "Engaged Pedagogy" as a critical framework to scrutinise the day-to-day experiences of mathematics educators. I examined how these mathematics teaching experiences are shaped and influenced by their emotional, intellectual, and spiritual connectedness and how dynamic interplay and fluidity of the personal and professional experiences (discussed in Section B) can incite introspection and foster engaged pedagogy within mathematics classrooms. I also draw on Weaver and Wilding (2013) to support the analysis of Peter's everyday experiences. Complementing the conceptual framework of engaged pedagogy, I developed a concept map to visually elucidate Peter's personal and professional narratives, highlighting the substantial interplay between experiences necessitating deep reflection. This map illustrates how he adapted his teaching methods to promote engaged pedagogy in mathematics classrooms.



**Figure 4.8: Concept map: The idea to foster engaged pedagogy**

#### 4.2.7.1 Nurturing Relationships Through Self-reflection

Weaver and Wilding (2013) characterised one of the dimensions of engaged teaching as “engaging the self-observer.” This is actuated when teachers can notice, observe, and reflect critically on their thoughts, beliefs, biases, emotions, and behaviors which will enable them to make better and more conscious decisions about their actions (Weaver & Wilding, 2013). After some self-reflection, Peter came to the profound realisation that his learners were facing challenges in grasping teaching methods and he acknowledged that the traditional, top-down approach that dominated his teaching in mathematics classrooms was a constraint. As a teacher, his failure to establish a meaningful relationship and make connections with his learners was due to his single-minded, instrumentalist approach focused on completing the curriculum. Reflecting on his childhood and apprenticeship assisted him in making a valuable realisation in preventing the repetition of his mistakes:

*The feeling of support and comfort enabled me to establish deep connections with the learners, my colleagues, and the management. I did not want to repeat the mistakes I made as a novice teacher. Forming important relationships with learners became a priority.*

In the different school settings where he was warmly welcomed after he left teaching, he felt

supported and part of a team. He felt the need to reconnect with his passion for mathematics and what enabled him to learn mathematics. The sources of support and responsibility he took as a learner to actively learn the subject himself in the academic setting demonstrated his mathematics skills. This reflection led him to understand the importance of caring and supportive role models and mentors inside and outside the mathematics classroom to establish strong connections with and amongst learners. According to Weaver and Wilding (2013) cultivating an “open heart” refers to the expression of closeness, kindness, care, and compassion. Palmer (2008) supports this discussion by advocating for teaching from the heart. The creation of teacher-learner and learner-learner relationships is fundamental in practices that require the foundation of trust and inclusive learning communities. Peter therefore considers a path of remediation that he needs to recreate an open heart that might reconnect him to his learners in mathematics classrooms. Like Hooks (1994) advocates when teachers demonstrate “self-actualization” a climate for optimal learning is created that promotes mutual participation, risk-taking, and working together in the space of shared learning.

#### ***4.2.7.2 Reconnecting with learners: Shifting from a teacher-centered approach to teamwork***

Hooks (1994) used Freire’s concept of “conscientization” which encouraged the idea that education could be practiced with freedom and the creation of varied teaching strategies. “Conscientization” can be translated as critical awareness and engagement, which foregrounds teachers and learners to become active participants rather than passive consumers. Peter acknowledged that for his learners to understand mathematics, he needed to adjust his approach to teaching the subject.

*I changed my teaching approach and focused on assisting learners during breaks, after school, and on weekends. I created a WhatsApp group that included parents to share information and resources. In addition, I moved away from the teacher-centered approach and allowed for peer learning and peer teaching. Learners felt at ease approaching me in or out of class for help with any topic or question.*

The demonstration of “self-actualization” from teachers creates a climate for optimal learning that promotes mutual participation, risk-taking, and working together in the space of shared learning (Hooks, 1994). Peter, in response to noticing the need for an alternate approach, made a deliberate decision to adapt his teaching style and approach to better align with the needs of

his learners. He realised he did not want his learners to feel the same disconnection he felt as a learner when the “teacher did not pay attention to him” and he had to become self-motivated to achieve excellent results in order to be noticed. This change in perspective led him to acknowledge the emotional aspect of teaching and recognise the significance of tailoring his instructional methods and course content to effectively address the diverse needs and interests of his learners (Bechard, 2017).

#### ***4.2.7.3 Creating a comfortable and interactive classroom environment***

Establishing clear and compassionate boundaries while maintaining an emotional connection with learners is essential for creating an engaged classroom (Weaver & Wilding, 2013). Hooks (1994) suggests that engaged pedagogy fosters an environment where both learners and teachers can share and learn from one another. Peter recognised the necessity of establishing a classroom environment that promotes comfort, enabling learners to openly share their challenges and successes.

*I decided to step in and fill more than the position of a math teacher, taking on some of the roles as their "father." Although this was a significant decision considering I lost my dad at a young age, it turned out to be to my advantage as learners became more comfortable and began to enjoy mathematics.*

This narrative underscores the crucial role of recognising learners' diverse backgrounds and extending beyond conventional teacher responsibilities to cater to their comprehensive needs (Pillay, 2002). Engaged pedagogy, as exemplified here, frequently encompasses emotional investment and necessitates that educators skillfully navigate intricate socio-economic realities to cultivate an encouraging atmosphere for learning. These personal skills and emotions that he embodied are what nurtured learner involvement, fostering not only academic growth but also personal development. Peter’s decision to fill the role of a father in the classroom not only demonstrated his emotional capacity but also his willingness to take risks while maintaining respectful boundaries (Weaver & Wilding, 2013).

#### **4.2.8 Synthesis of Section C**

These narratives illustrate that promoting engaged pedagogy in mathematics classrooms requires teachers to engage emotionally, passionately and actively in choosing their teaching methods that effectively respond to the diverse needs of their learners and create supportive and interactive spaces through informal and formal relationships/networks (like WhatsApp) to

support the learning environments. By embracing their emotional and relational roles, teachers like Peter can establish meaningful connections with their learners, encourage critical engagement, and foster a non-traditional, comfortable classroom climate where learners feel valued and motivated to actively participate in their learning (Hooks, 1994). This comprehensive approach not only enhances academic performance but also contributes to the overall development of learners, embodying the core principles of engaged pedagogy.

#### **4.2.9 Section D: Conclusion**

In this chapter, I presented my analysis and interpretation of Peter's experiences as a secondary school teacher nurturing engaged pedagogy in mathematics classrooms. Excerpts from his narratives were analysed to respond in each section to the three research questions.

- Section A: *What are the stories of secondary school mathematics teachers' everyday experiences?*
- Section B: *What personal and professional experiences shape secondary school teachers' everyday practice in mathematics classrooms?*
- Section C: *How do secondary school teachers foster engaged pedagogy in mathematics classrooms?*

The purpose of this chapter was to present an analysis and interpretation of Peter's lived personal and professional experiences that shape his everyday teaching as a mathematics teacher and how his perspectives, values, and beliefs inform his practice in nurturing engaged pedagogy in mathematics classrooms.

Based on my analysis as presented in Sections A, B, and C, my overall interpretation of Peter's lived experiences in a secondary school highlights the critical importance of relationships that contributed to his connection with learners in mathematics classrooms. Both positive and negative relationships are evident in the narratives that shape his everyday teaching as a mathematics teacher recreating a connected classroom.

In section A, I used the diagram of Peter kicking the ball to summarise his connection with the ball to demonstrate how his playful nature brought him joy and a sense of belonging (Silva, 2019). I also highlighted keywords that showed his relationships with his sister, his high school mathematics teacher, and the significant connections once again with his sister's mathematics textbook and being appointed as "key boy" by the principal. Silva (2019) offers an argument of the agency of non-human objects in our daily lives.

In section B, I analysed and discussed how Peter's significant relationship with his sister, a mathematics teacher in both primary and high school, shaped his interaction with learners in mathematics classrooms. In addition to his personal experiences, his professional experiences with his learners and colleagues afford him critical links to reconnect and engage pedagogy in mathematics classrooms.

In section C, I presented a detailed account of how Peter demonstrated a connection with his learners in the mathematics classroom to engage in pedagogy. I drew on Hooks (1994) and Weaver and Wilding (2013) to frame Peter's intellectual, emotional, and spiritual connection with learners. He connected with them intellectually by offering additional support in mathematics. He showed emotional support by relating to their backgrounds and contextual issues. He showed spirituality when he was able to feel joyful in his teaching by once again connecting with his playful self in the mathematics classroom.

Peter's playful nature highlights his joyful and free-spirited personality. Although he adopted a traditional approach as a novice by teaching the same way he was taught, he realised through reflection and interaction with learners that there was a need to reconnect with the learners and recreate an engaged mathematics classroom. He became playful and joyful in his mathematics classroom and not only conveyed the curriculum but also connected with learners.

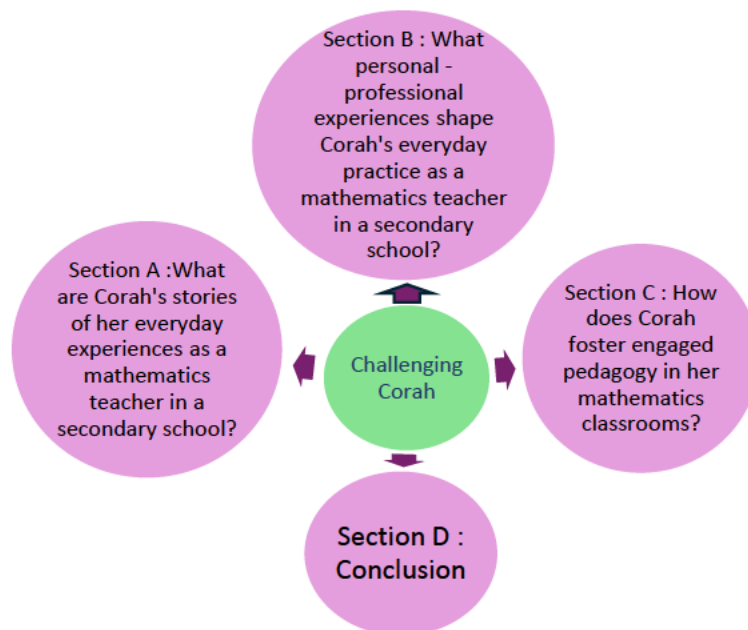
# CHAPTER FIVE

## CORAH'S STORY: CONQUERING THE CHALLENGES OF THE CURRICULUM

### 5.1 Introduction

In the preceding chapter, I comprehensively analysed Peter's narrative as the primary participant, using deconstruction and reconstruction to address three fundamental research inquiries. As I immersed myself in and interpreted the anecdotes of his daily life as a mathematics educator in a secondary school, I presented a thorough analysis and interpretation of the data I gathered from Peter. I delved deeply into his experiences to illuminate the valuable insights he gleaned to inform his approach to teaching in mathematics classrooms.

In this chapter, I present my analysis and interpretation of Corah's narrative. At the time of our meeting in December, Corah was 47 years old and eagerly anticipating her upcoming birthday. She holds the position of a mathematics teacher, instructing learners across grades 8 to 12. Her current teaching placement is at Ascott Secondary School, a quintile five institution. With 26 years of teaching experience, Corah brings a wealth of knowledge and expertise to her role. The concept map below illustrates the layout for analysing and interpreting Corah's responses to the research questions.



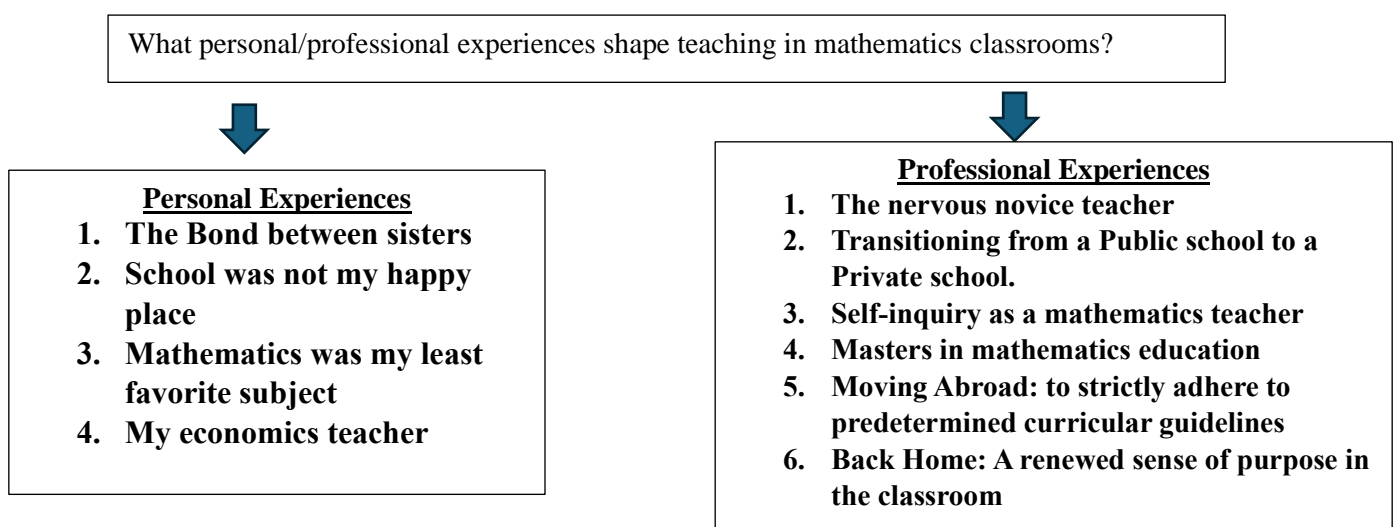
**Figure 5.1 Diagrammatic summary of my analysis of Corah's narrative**

Figure 5.1 illustrates the different sections that unpack Corah’s responses to each research question and provide a synthesis for each section. Section A contains Corah’s reconstructed stories in response to research question one: *"What are Corah’s stories of her everyday experiences as a mathematics teacher in a secondary school?"* Section B presents Corah’s response to research question two: *"What personal-professional experiences shape Corah’s everyday practice as a mathematics teacher in a secondary school?"* Section C presents Corah’s responses to research question three: *"How does she foster engaged pedagogy in her mathematics classroom?"* Lastly, section D provides an overall synthesis and conclusion of each section.

## 5.2 Corah’s Story

### 5.2.1 Section A: A reconstructed storied narrative of Corah’s personal and professional experiences

In this section, I present a reconstructed storied narrative of Corah’s experiences in response to the first key research question: *What are the stories of secondary school mathematics teachers’ everyday experiences?* The story was reconstructed using the raw data generated by Corah’s memory drawings, object inquiry, self-portrait, and unstructured interviews to yield thick descriptive data (Van Maanen, 1979; Leeds-Hurwitz, 2020). In this section, I capture the nuances and complex experiences of Corah’s everyday life as a secondary school mathematics teacher. The following diagram was created to organise and identify Corah’s narrative’s key plots and subplots.



**Figure 5.2: Mapping Corah’s Personal and Professional Experiences**

### Corah's Story

Corah warmly welcomed me in December 2023 at her school, Ascott Secondary.

**This is her reconstructed storied narrative told in the first-person genre:**

Corah is a 47-year-old Indian female mathematics educator currently employed at Ascott Secondary School. Her professional journey has spanned over 26 years, during which she has demonstrated an unwavering commitment to the field of mathematics education. She holds a formal qualification as a mathematics teacher and completed my master's study in November 2011, focusing on the topic of "An Exploration of Mathematics Learner Transition from Primary School to Secondary School." Her career in mathematics education commenced at Woodstock Secondary School, a quintile five institution situated in the Umlazi district. Since then, she has imparted knowledge at various secondary schools, including a teaching tenure in the UAE. Throughout her career, she has remained dedicated to staying abreast of the evolving educational landscape, particularly regarding the dynamic curriculum in South Africa.

### The Bond Between Sisters

*I am the youngest of three kids. I lost my dad at a very young age. I was raised by my mum. My grandparents helped my mum raise my sisters and I. My sisters and I grew up with a very close-knit relationship. Initially, when we were younger, we used to fight a lot, but as we grew older, we became so close like best friends. We did everything together, and I looked forward to sitting down and having conversations that lasted hours. We looked out and cared for each other, and our bond grew stronger as we grew older. Despite our mum being the breadwinner of the family and our financial situation, our little games and chats were enough to entertain us, and we cherished every moment we spent together.*

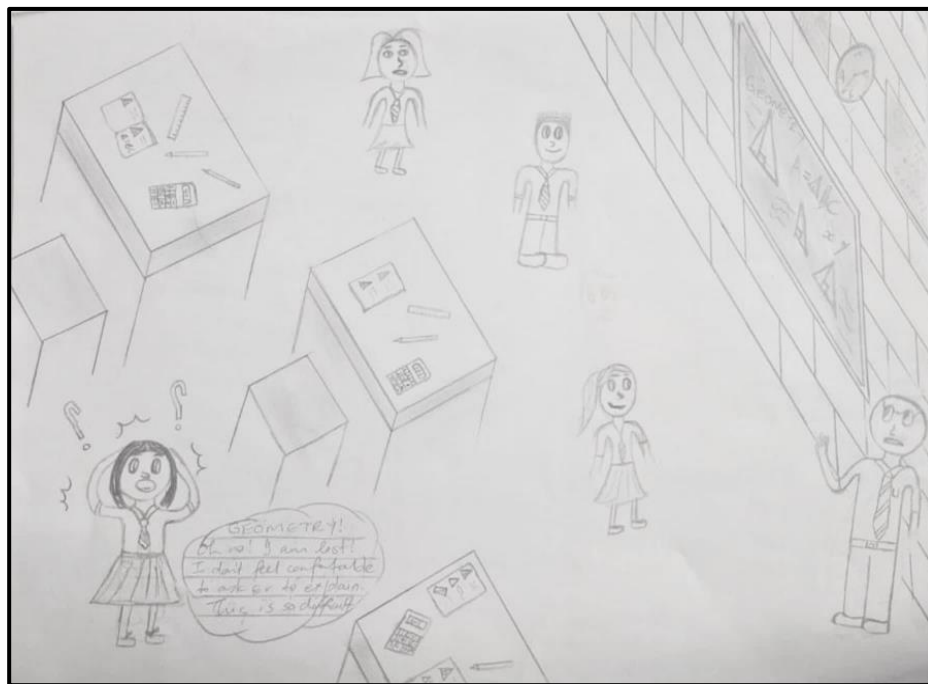
### School was not my happy place

*Since my very first day of school, I have despised the experience. I found no joy in being there; I longed to be at home instead. I spent my entire first year of grade one screaming and crying, and I would attempt to escape from school every single day. My mother and grandparents struggled tremendously to get me to school and endeavored to convey its importance to me. As a first grader, I failed to recognise the significance of school in*

*my life. It was not a place where I found happiness, and I felt like I simply did not belong. I longed to be at home and play with my sisters.*

*In that moment, Corah and I found ourselves sharing a small, light-hearted chuckle as we both came to the realisation that she had ended up back at school, despite her strong aversion to it during her early years as a learner in grade 1. We even shared a light-hearted joke about how it felt like a form of payback for her running away from school. This amusing exchange brought a sense of ease and comfort to our conversation.*

*Journal Entry (December 2023)*



**Figure 5.3 : Corah's memory drawing as a learner**

### **Mathematics was my least favourite subject**

*In high school, mathematics was my least favourite subject. I felt very uncomfortable in mathematics class. My mathematics teacher in standard 7 was unapproachable and didn't provide much help. He would just stand at the board and teach without much interaction. I was too embarrassed to ask questions when I didn't understand. One particular memory from standard 7 takes me to the topic of Geometry, which I despised. I couldn't grasp this section at all. I chose to sit at the back of the class to avoid being asked any questions or show any signs of not understanding the work. The teacher seemed to just teach us to get through the material without ensuring that we understood.*

*My mathematics grades, especially in geometry, were so poor that I lost motivation to continue with higher-level mathematics in standard 8.*

*Once again, I found myself laughing as Corah confided in me about her deep-seated dislike for mathematics during her high school years. It's quite amusing to think that she has now become a high school mathematics teacher despite her previous aversion to the subject.*

*Journal Entry (December 2023)*

### **My Economics Teacher**

*I did not like my mathematics teacher, and I disliked the subject itself. The mathematics was taught in a traditional way, with the teacher standing at the board explaining a set of rules and methods along with theorems. This approach did not engage us in understanding the meaning of mathematics and created a fear of asking questions when we didn't understand. In contrast, I found my economics teacher's challenging character to be a personal motivation for me. He taught economics with such passion and energy, stepping away from the usual teacher-centered approach. He encouraged interaction and collaboration in the classroom, motivating us to inquire about the subject and go beyond just textbook knowledge. I enjoyed his lessons, which helped me understand the material better. As a result, I developed a passion for economics and an admiration for my teacher. This experience allowed me to discover my own ability to rise to challenges, leading my economics teacher to become my favourite teacher. My newfound love for the subject allowed me to excel in economics, ultimately inspiring me to pursue a career in internal auditing at ML Sultan.*

### **A full Bursary to pursue teaching**

*After submitting my application for the Internal Auditing programme at ML Sultan, I encountered financial difficulties that led me to reconsider my career path. Subsequently, Springfield College presented me with a full bursary to pursue teaching. However, as part of this scholarship, the college determined the subjects I would study. Consequently, I was assigned Mathematics and Information Technology. Despite my initial disappointment, I can now reflect on this experience and confidently assert that I have no regrets, as I have developed a true passion for these subjects and the teaching*

profession as a whole.

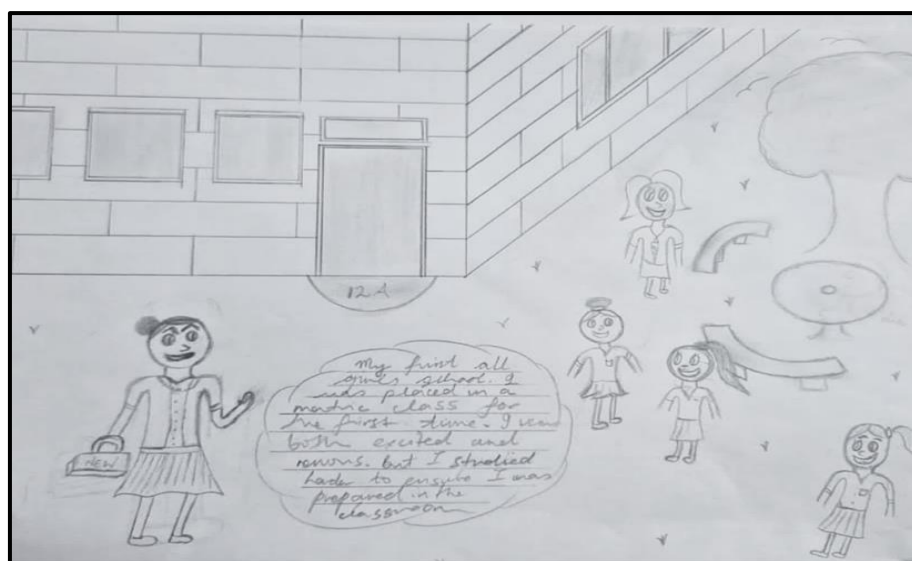
## **Professional Stories**

### **The nervous novice teacher**

*When I first started my teaching career, I was employed as a UTE at Woodstock Secondary School. My responsibilities included teaching Mathematics and Information Technology to learners in grades 10 and 11. Initially, I felt quite nervous about taking on this role, but the welcoming school environment, supportive learners, and helpful colleagues soon helped me overcome my apprehensions and grow as a novice mathematics teacher. I made diligent efforts to assist my learners during instructional periods and breaks. I allowed learners to query any misconceptions or challenges they faced. I also advocated for group work and peer learning to ensure collaboration and sharing of ideas and strategies in understanding mathematical problems. Establishing a respectful and supportive relationship with my learners proved to be a valuable experience that significantly contributed to my professional growth in the educational field.*

*The emotions and struggles Corah experienced as a new teacher resonated deeply with me, evoking memories of my own early days in the classroom. Corah noticed my contemplative expression and remarked in a calm tone, "I'm sure you can relate to the challenges of being in the classroom for the first time."*

*Journal Entry (December 2023)*



**Figure 5.4: Corah's memory drawing as a teacher**

## **Transitioning from a public school to a private school**

*Upon transitioning to my second school, I found myself in a private institution, an "all-girls school" located in Pietermaritzburg. It was at this school that I encountered my first significant challenge, I was tasked with teaching matric mathematics for the very first time. With unwavering determination, I embraced the challenge, dedicating myself to daily study and working closely with my learners. I studied the curriculum every day and practiced different methods to best help my learners to understand. When My learners corrected me, I didn't feel embarrassed, but I embraced the learning and was proud of them for displaying their understanding of unpacking solutions in mathematics. I also encouraged peer learning and assessing and moved away from being the central focus. I poured my heart and soul into this endeavour, and my efforts bore fruit as my learners excelled under my guidance.*

## **Self-inquiry as a mathematics teacher**

*The decision to pursue further academic qualifications stemmed from my deep-seated ambition to excel in my field. Motivated by the chance to elevate my credentials from a diploma to a prestigious honours degree, I embarked on a transformative journey to complete my Honours in Education, with a specialised focus on leadership and management. This decision was fuelled by the belief that it would unlock new and exciting opportunities for personal and professional growth. Fortunately, I was granted a bursary, which served as a crucial pillar of financial support, enabling me to successfully achieve my goal of obtaining an honours degree.*

## **Masters in Mathematics Education**

*To better understand the learning gaps that learners experience as they transition from primary to high school, I pursued a master's degree in mathematics education. I was fortunate to receive a bursary for my studies. My dissertation focused on the topic of "An Exploration of Mathematics Learner Transition from Primary School to Secondary School." I strongly believe that primary school teachers, who are not subject specialists, may struggle to effectively guide learners in their academic progression.*

*One potential solution I propose is to assign high school teachers junior classes to help learners transition into the Further Education and Training (FET) phase.*

### **Moving Abroad: strictly adhering to predetermined curricular guidelines**

*After much consideration, my husband and I made the joint decision to tender our resignations from the school where we both worked and embark on a new chapter in the UAE. The prospect of broadening our expertise and embracing fresh challenges in a country with cutting-edge technology and abundant resources was immensely appealing to us. However, upon our arrival, I found myself grappling with a sense of losing my professional identity. The teaching environment offered little room for flexibility, and I felt compelled to strictly adhere to predetermined curricular guidelines without the opportunity to introduce my own teaching methods or recommendations. As an educator, one particular approach that I strongly advocated for was differentiation, a method designed to accommodate the diverse learning needs of all learners.*

*"I was truly inspired by Corah's resilience during the interview. Despite early loss, financial struggles, and difficulties with mathematics in high school, she was determined to become a mathematics teacher. Her research on mathematics education has positively impacted her colleagues' ability to support learners transitioning from primary school to high school."*

*Journal Entry (December 2023)*

### **Back Home: A renewed sense of purpose in the classroom**

*After my mother's health unfortunately deteriorated, I made the difficult decision to move back to South Africa to be closer to her. Sadly, my mother passed away, and I found myself dealing with the profound loss of both of my parents. It was an incredibly challenging time, and I took a few months to readjust and refocus as I processed the grief and loss. Every time I feel emotional and face a challenge, I wear the ring my mum gifted to me. It's a simple ring, but when I wear it, I feel like my mum is close to me and I am comforted. After giving myself the time I needed to heal, I made the choice to rekindle my passion for teaching. I am now employed at Ascott High School, where I have found a renewed sense of purpose in the classroom. Despite facing some challenges in management, I am grateful for the opportunity to be myself again and*

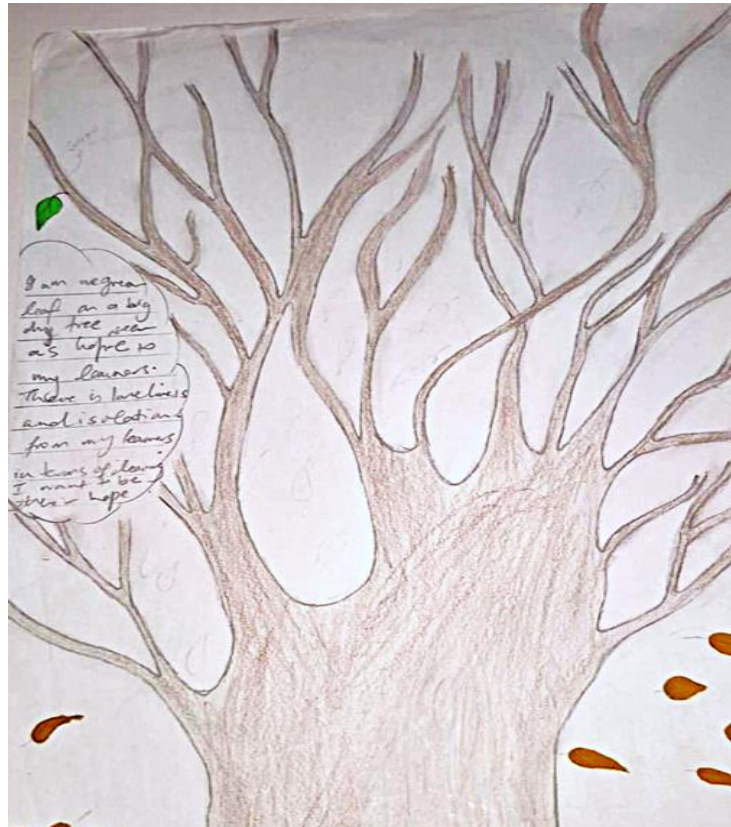
*pursue my love for teaching. This journey of leaving South Africa, returning home, and grieving the loss of my mum has been filled with its ups and downs but ultimately, I am finding solace and fulfillment in empowering and educating young minds.*



**Figure 5.5: Picture of Corah's object that she holds sentimental**

*"It was an emotional moment for Corah, but she reassured me that she is strong and has learned, with the support of her siblings and her belief in the Almighty, how to overcome grief. I was surprised at how she managed to adjust and adapt to loss, change of countries, and a new school in such a short time."*

*Journal Entry (January 2024)*



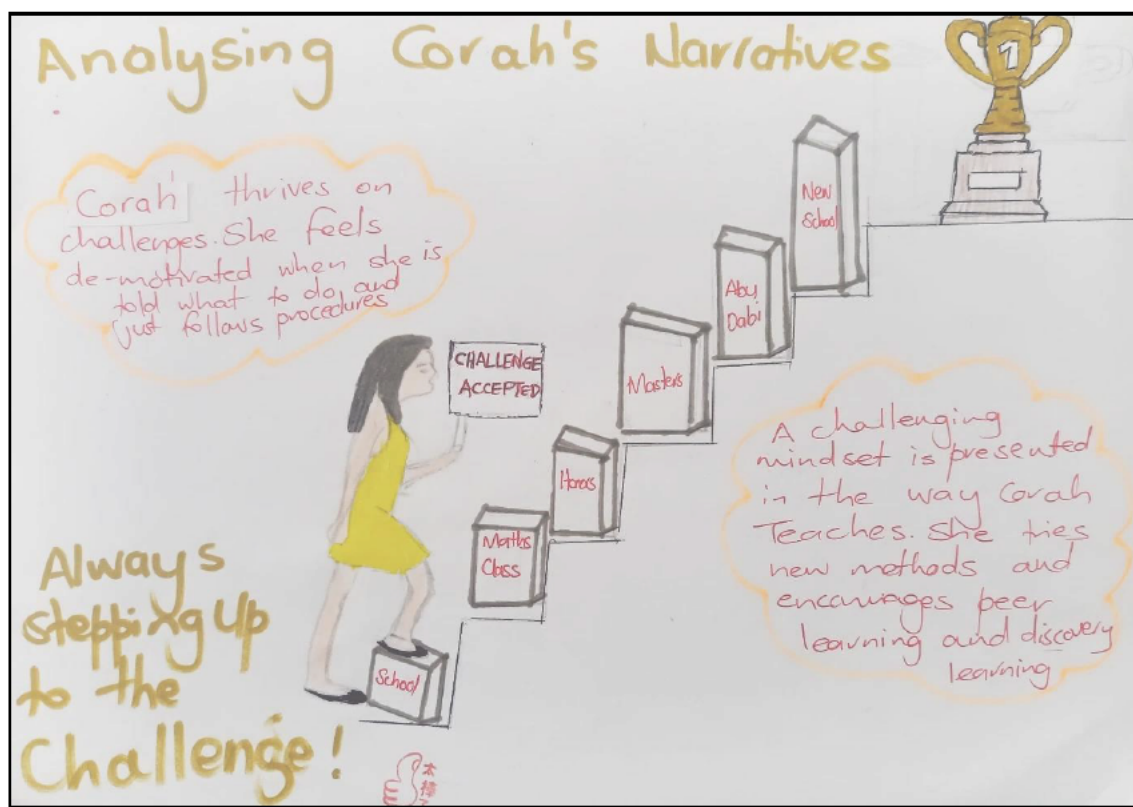
**Figure 5.6: Corah's self – portrait**

**Embracing Change: The Teacher as a leaf of Hope in my Learner's educational journey**

*From my experience abroad, the most important method I enjoyed practicing in my mathematics classroom was differential learning. This method recognises that learners have varied learning styles and paces. I have started using this method in my current school with my learners. I begin by observing how my learners prefer to learn mathematics, using various methods to identify their learning styles. Based on these observations, I tailor my lessons to accommodate their different preferences, incorporating worksheets, games, peer learning, group activities, and incentive-based strategies. This approach helps learners feel more confident in their ability to learn mathematics, alleviating any feelings of being overwhelmed by the subject's complexity. Learners are encouraged to work at their own pace and choose the learning methods that suit them best. I also maintain an open-door policy, inviting learners to come to see me during breaks or my non-teaching periods to seek help. I encourage them to ask questions and share their understanding when solving mathematical problems. When learners visit me, I allow them to talk about their challenges, guiding them in a way*

that ensures they do not feel scared or anxious about mathematics. By creating a comfortable space for asking questions, I ensure that my learners don't feel alone in their learning journey, as I did in high school. I further encourage learners that mathematics is more than just rules and methods, but an exploration of different ideas to solve problems. I see myself as a symbol of hope for my learners, a guide to assist them in their academic journey.

### 5.2.2 Synthesis of Section A



**Figure 5.7: Picture analysing Corah's narratives**

To summarise Section A of Corah's reconstructed story, I created an accompanying drawing to capture the key points from her experiences as a secondary school Mathematics teacher. The image shows Sarah climbing each pillar which represents challenges. Corah thrived on challenges as evident from her narratives. I included keywords and phrases that represent her journey as both a learner and a teacher. The stories shared by Corah offer valuable insights into her developmental path from early childhood through her transition from student to teacher. These recollections shed light on her personal challenges, accomplishments, and emotional experiences. Particularly noteworthy are the central themes that emerged, emphasising the importance of her relationships with her sisters, teachers, fellow learners, and colleagues, and how, through each experience, she challenged herself and thrived in the various environments.

Corah's insightful experiences in the UAE are crucial for understanding her renewed teaching perspectives and her adaptation of new learning approaches in her mathematics classroom. From the co-constructed stories presented in section A, the central theme that emerged is Corah's resilient character in both her personal and professional life and how she conquers the challenges she faces.

### **5.2.3 Section B: Interpretation and analysis of Corah's story**

In this section, I analyse and interpret Corah's storied narrative. I respond to key research question 2: *What personal-professional experiences shape secondary school teachers' everyday practice in Mathematics Classrooms?* Brannon (2011) elucidates that the repetitive nature of a pantoum poem facilitates the exploration of significant themes. The Pantoum poem helped me identify key themes that respond to the research question and make explicit meanings of Corah's experiences.

*Very close-knit relationship*

*Mathematics was my least favourite subject*

*Allowed me to discover my own personality*

*Developed a true passion for the teaching profession*

*Mathematics was my least favourite subject*

*I embraced the challenge*

*Developed a true passion for the teaching profession*

*Transformational journey to complete my Honors*

*I embraced the challenge*

*Pursued a master's degree in mathematics education*

*Transformational journey to complete my Honors*

*Losing my professional identity*

*Pursued a master's degree in mathematics education*

*Solace and fulfillment in empowering young minds*

*Losing my professional identity*

*Very close-knit relationship*

From the pantoum poem developed, key themes are observed which include, close-knit relationships, embracing challenges, moving away from conventional teaching methods and empowering learners, and a commitment to being a lifelong learner.

#### ***5.2.3.1 Close-knit relationships that provide guidance and support***

Sanders (2017) advocates that strong connections between siblings are significant for children's social and emotional development. Corah lost her dad at a young age and grew up in a home with her mum and sisters. Corah formed a close bond with her sisters that displayed their support and love for each other. This bond also foregrounded Corah's zeal to pursue her academic journey.

*My sisters and I grew up with a very close-knit relationship. Initially, when we were younger, we used to fight a lot, but as we grew older, we became so close like best friends. We did everything together, and I looked forward to sitting down and having conversations that lasted hours. We looked out and cared for each other, and our bond grew stronger as we grew older. Despite our mum being the breadwinner of the family and our financial situation, our little games and chats were enough to entertain us, and we cherished every moment we spent together.*

According to Sanders (2017), there is a strong bond between siblings, which is essential to children's growth. Through games, conversations, and in-depth discussions, Corah developed a strong friendship with her sisters. Activities and spending time with her sisters gave Corah strength and comfort. These significant, treasured experiences emphasise the value of sibling ties and how a person's identity is formed and emphasised via close bonds. The activities they engaged in together and Corah's close-knit friendship further shaped her as a mathematics teacher.

#### ***5.2.3.2 Challenges build resilience and develop character***

Lortie (1975) provides an insightful description of how learners observe their teachers, including their teaching styles and attitudes, and how these observations influence the learners' beliefs and behaviors regarding teaching and learning. Although Corah did not have a personal relationship with her economics teacher, she admired his teaching style from a distance.

*In contrast, I found my economics teacher's challenging character to be a personal motivation for me. He taught economics with such passion and energy, stepping away from the usual teacher-centered approach. He encouraged interaction and*

*collaboration in the classroom, motivating us to inquire about the subject and go beyond just textbook knowledge. I enjoyed his lessons, which helped me understand the material better. As a result, I developed a passion for economics and an admiration for my teacher. This experience allowed me to discover my own ability to rise to challenges, leading my economics teacher to become my favourite teacher. My newfound love for the subject allowed me to excel in economics, ultimately inspiring me to pursue a career in internal auditing at ML Sultan.*

Despite her economics teacher having a challenging character, Corah realised that she shared some similar traits with this teacher. Her economics teacher's non-conventional approach sparked curiosity and passion within Corah. His approach differed from the traditional method of chalk and talk, teacher-centered approach, and lack of learner participation (Ardeleanu, 2019). His encouragement for learners to engage in self-inquiry and collaboration created more engagement and curiosity in his classroom, this revelation helped her better understand her character and develop her identity. Observing her economics teacher influenced her beliefs and behaviours regarding teaching and learning. Corah felt enjoyment in a challenging environment. This challenging environment provoked her to thrive and discover a sense of "self." The development of her resilient character empowered her to embrace the challenges she faced daily and shaped her character as a challenging mathematics teacher.

### ***5.2.3.3 Lack of motivation in a conventional mathematics classroom***

Conventional teaching methods in mathematics contribute largely to separating learners and perpetuating injustices in society (Wright, 2017). Corah experienced this separation through the conventional teaching method in mathematics in grade 9. She was uncomfortable and did not enjoy math due to the unapproachable methods displayed by her teacher.

*In high school, mathematics was my least favorite subject. I felt very uncomfortable in math class. My math teacher in standard 7 was unapproachable and didn't provide much help. He would just stand at the board and teach without much interaction. I was too embarrassed to ask questions when I didn't understand. I chose to sit at the back of the class to avoid being asked any questions or show any signs of not understanding the work. The teacher seemed to just teach us to get through the material without ensuring that we understood. My math grades, especially in geometry, were so poor that I lost motivation to continue with higher-level math in standard 8...I did not like*

*my mathematics teacher, and I disliked the subject itself. The mathematics was taught in a traditional way, with the teacher standing at the board explaining a set of rules and methods along with theorems. This approach did not engage us in understanding the meaning of mathematics and created a fear of asking questions when we didn't understand.*

Corah's experience with mathematics in high school was unpleasant. She felt uncomfortable and embarrassed as she did not understand what her math teacher taught (Wright, 2017). The environment in mathematics class was not challenging, and Corah did not feel like she belonged. Under these strict and prescribed conditions in mathematics classes presented by the traditional teaching methods, Corah did not thrive and lost her motivation. Like Jojo (2019) reminds us, mathematics in South Africa is feared and many teachers find comfort in using a teacher-centered approach and do not engage learners. Corah found no joy in mathematics as she chose to "sit at the back of the class and avoid answering any questions." She also felt disconnected as their mathematics didn't engage them rather, he "stood at the board and taught." Since she found her mathematics teacher unapproachable, she could not try to establish how to better understand mathematics or perform better in the subject (Jojo, 2019).

## **5.2.4 Theme Synthesis**

### ***5.2.4.1 Relationships that promote a comfortable learning environment***

Upon analysing Corah's narratives, I identified key themes that underscore the relationships essential for cultivating a comfortable learning environment. Engagement in collaborative learning, willingness to take risks, and commitment to upholding core values contribute significantly to strengthening the bonds between educators and learners (Cohrsen et al., 2014). Additionally, Weaver and Wilding (2013) propose that the establishment of respectful boundaries can be effectively achieved through proactive classroom management that supports learners. Corah's experiences, as a child and a student, highlight the critical importance of positive, caring, and supportive relationships within the educational setting (Wright, 2017). The strong connection among her sisters demonstrates the influence this relationship had when Corah assumed the role of mathematics teacher at an all-girls school. Furthermore, the apprenticeship she received from her economics teacher reinforced her resilience and informed her strategies for creating respectful boundaries within her classroom. Although Corah encountered challenges with her high school mathematics teacher, which rendered her uncomfortable in communicating with him, she made a conscious decision to exemplify care

and compassion for her learners by fostering a safe and nurturing classroom environment where learners felt secure and supported.

The next set of themes addresses the question: *How did Corah's professional experiences shape her everyday teaching in mathematics classrooms?*

#### **5.2.4.2 Supportive relationships provide growth for teachers**

The skills and knowledge that obtained from tertiary institutions differ from actual classroom instruction. Delivering mathematics lessons requires more than just knowing mathematics (Loewenberg Ball et al., 2008). In addition, collaboration with peers provides a foundation for teachers to collaborate and work towards a common goal. Corah was initially nervous as a novice mathematics teacher; however, with the help of her peers and supportive learners, she began to find her feet.

*Initially, I felt quite nervous about taking on this role, but the welcoming school environment, supportive learners, and helpful colleagues soon helped me overcome my apprehensions and grow as a novice mathematics teacher. I made diligent efforts to assist my learners during instructional periods and breaks. I allowed learners to query any misconceptions or challenges they faced. I also advocated for group work and peer learning to ensure collaboration and sharing of ideas and strategies in understanding mathematical problems. Establishing a respectful and supportive relationship with my learners proved to be a valuable experience that significantly contributed to my professional growth in the educational field.*

Corah aimed to create a respectful and interactive relationship with her learners. By allowing learners to work in groups and learn with their peers Corah displayed teaching beyond methods and encouraged collaboration and interaction (Adler, 2021). She accomplished this by welcoming support and assistance from both her learners and colleagues. Weaver and Wilding (2013) provide valuable insights on how establishing respectful boundaries fosters interactive teaching and learning. Corah opened up a channel of communication and a safe space outside of the stipulated class time to encourage learners to share their challenges and misconceptions thus developing a better understanding of mathematics (Adler, 2021). Corah's efforts to cultivate a comfortable and respectful atmosphere not only enhanced the classroom environment but also contributed to her growth as a mathematics teacher.

#### **5.2.4.3 Teacher as a Researcher and Lifelong Learner**

According to SACE (2018), the norms and standards for educators specify that one of the seven essential roles of a teacher is to function as a “scholar, researcher, and lifelong learner.” Educators are expected to pursue ongoing personal, academic, and professional development by engaging in reflective studies and conducting research in their specific areas of expertise, as well as in broader professional and educational matters and other pertinent fields (SACE, 2018). Corah, in line with the standards for educators, identified a learning gap that required research and potential solutions to address it.

*To better understand the learning gaps that learners experience as they transition from primary to high school, I pursued a master’s degree in mathematics education...I strongly believe that primary school teachers, who are not subject specialists, may struggle to effectively guide learners in their academic progression. One potential solution I propose is to assign high school teachers junior classes to help learners transition into the Further Education and Training (FET) phase.*

Corah’s pursuit of a master’s degree in mathematics education has enhanced her understanding of the learning gaps that learners experience as they transition from primary school to high school. Her commitment as a researcher and lifelong learner is aligned with the norms and standards expected of educators, enabling her to propose potential solutions (SACE, 2018). Her approach guides learners through their transition and fosters a stronger bond between learners and teachers from grade 8 to matriculation.

#### **5.2.4.4 Grappling with My Professional Identity**

A teacher’s identity is situated at the intersection of personal and professional capacities (Thomas & Beauchamp, 2009). There exists a significant relationship between personal identity, often referred to as the “self,” and professional identity, which includes the educational environment and interactions with various stakeholders. Corah’s decision to move abroad was appealing due to availability of advanced technology and increased resources. However, the educational environment she encountered proved to be restrictive, limiting her ability to engage freely with her learners. She found herself constrained by stringent policies and pedagogical approaches, which ultimately contributed to a sense of lost professional identity (Thomas & Beauchamp, 2009).

*The prospect of broadening our expertise and embracing fresh challenges in a country*

*with cutting-edge technology and abundant resources was immensely appealing to us. However, upon our arrival, I found myself grappling with a sense of losing my professional identity...The teaching environment offered little room for flexibility, and I felt compelled to strictly adhere to predetermined curricular guidelines without the opportunity to introduce my own teaching methods or recommendations.*

Corah's professional identity in a new country was significantly influenced by the educational environment and the stakeholders responsible for school policies. She felt constrained by these policies, which affected her sense of professional identity. According to Palmer (2008), there are three levels of connection with learners: intellectual, emotional, and spiritual. However, Corah struggled to connect with her learners at these levels because her teaching approach was limited by the mandated policies (Jojo, 2019). Although her narratives often portrayed her as resilient and open to challenges, these policies undermined her professional identity, which would have thrived in a teaching environment that allowed for more freedom and comfort. Beauchamp and Thomas (2009) remind us of the fluidity of teacher identity, however, Corah's personal identity, characterised by curiosity, a willingness to challenge norms, and a non-conventional approach, was being reshaped by the prescribed methods in a new context that dictated specific strategies to be implemented.

### **5.2.5 Theme Synthesis**

The key theme that emerged was: Negotiating challenges as a developing as a math teacher. The argument presented in response to the inquiry, "*What professional experiences have shaped Corah's everyday practices in mathematics classrooms?*" emphasises the significant impact that these experiences had on her teaching methodology. Corah's educational journey is marked by her continuously adaptation to new challenges and the development of innovative strategies to accommodate change. Transitioning from a hesitant novice educator to instructing a matriculation mathematics class for the first time, while also pursuing her honours and master's degrees and relocating abroad, illustrates Corah's commitment to professional growth and adaptability. Dedicated to the principles and standards associated with being a scholar, researcher, and lifelong learner, Corah has recognised opportunities for further enhancement in her teaching practices. These experiences have fostered her commitment to creating a more supportive and interactive learning environment. Corah's professional background has not only informed her pedagogical approaches but has also inspired her engagement in research aimed at deepening her understanding of her learners' needs.

### 5.2.6 Synthesis of Section B

Upon reflecting on section B, I created a haiku poem to guide me in synthesising the themes.

*Embraced the challenge*  
*A close-knit relationship*  
*Empowering minds*

In response to the research question, "What personal and professional experiences shape secondary school teachers' everyday practice in mathematics classrooms?" I noted that Corah's personal experiences significantly contributed to her professional journey as a mathematics teacher. She shared a close bond with her sisters, which translated into her interactions with her learners in the classroom. Despite having a negative experience with her high school math teacher, Corah transformed that experience into a positive lesson, focusing on creating a comfortable environment for her learners. Furthermore, she identified specific characteristics in her economics teacher that helped her develop resilience in the face of challenges. Initially, Corah began her career as a nervous novice teacher; however, through her interactions with learners and colleagues, and by pursuing her honours and master's degrees, she was able to fill gaps in her mathematics classrooms.

Although she later chose to move abroad, her experiences in a different country made her realise that she thrives in a learning environment that promotes flexibility in teaching methods and fosters strong connections with learners. Thus, Corah's personal and professional experiences have profoundly influenced her approach to everyday teaching as a mathematics teacher. She chose to transgress the boundaries of conventional teaching while maintaining respectful and professional boundaries. Corah displayed a commitment to "self-actualization" which aims to empower learners by creating a space for mutual participation, risk-taking, and shared learning (Hooks, 1994).

### 5.2.7 Interpretation and Analysis of Corah's Everyday Experiences

In this section, I offer an interpretation and contextualisation of Corah's narratives, specifically addressing research question 3: "*How do secondary school teachers foster engaged pedagogy in mathematics classrooms?*" To tackle this research question, I employed Bell Hooks' concept of "Engaged Pedagogy" together with Weaver and Wilding (2013) as a critical framework to

scrutinise the day-to-day experiences of mathematics educators, examining how these experiences influence their pedagogical approaches and how the dynamic interplay between personal and professional experiences spurs introspection, ultimately fostering engaged pedagogy within mathematics classrooms.

#### **5.2.7.1 Working closely with my learners**

Palmer (1998) argues that teaching originates from a teacher's inner self and suggests that it intertwines three inseparable dimensions: intellectual, emotional, and spiritual. Hooks (1994) refers to connecting with learners through mind, body, and spirit. Corah was placed in a matric mathematics class as a novice teacher in a new school. However, she acknowledged the need for connecting and working closely with her learners to guide and support their learning.

*With unwavering determination, I embraced the challenge, dedicating myself to daily study and working closely with my learners. I studied the curriculum every day and practiced different methods to best help my learners understand. When my learners corrected me, I didn't feel embarrassed, but I embraced the learning and was proud of them for displaying their understanding of unpacking solutions in mathematics. I also encouraged peer learning and assessment, and moved away from being the central focus. I poured my heart and soul into this endeavour, and my efforts bore fruit as my learners excelled under my guidance.*

Corah was able to connect with her learners on all three levels, as suggested by Palmer (1998) and Hooks (1994). By dedicating herself to daily study and exploring “different methods”, she engaged with her learners intellectually. Through close collaboration and encouragement, she connected with their hearts emotionally. Additionally, by not feeling embarrassed rather “proud” of learners correcting her, she fostered a spiritual connection, which resulted in positive outcomes. Corah effectively nurtured intellectual, emotional, and spiritual connections with her learners, guiding their learning in an interactive mathematics classroom.

#### **5.2.7.2 Applying differential learning in mathematics classrooms.**

Differential learning is an instructional approach designed to accommodate a variety of teaching methods that meet the diverse needs, abilities, and learning styles of learners in the classroom (Schöllhorn, Hegen & Davids, 2012). Corah adopted the differential learning approach from her experience abroad in her mathematics classroom. She acknowledged the

need for a different approach from the traditional teaching approach, which constituted a “one-size fits all approach (Ardeleanu, 2019), to cater for the diversity of learners in her classroom by ensuring her lessons were customised for all learners

*From my experience abroad, the most important method I enjoyed practicing in my math classroom was differential learning...I have started using this method in my current school with my learners. I begin by observing how my learners prefer to learn mathematics, using various methods to identify their learning styles. Based on these observations, I tailor my lessons to accommodate their different preferences, incorporating worksheets, games, peer learning, group activities, and incentive-based strategies. This approach helps learners feel more confident in their ability to learn mathematics, alleviating any feelings of being overwhelmed by the subject's complexity. Learners are encouraged to work at their own pace and choose the learning methods that suit them best.*

Weaver and Wilding (2013) affirm that one of the key dimensions of an engaged classroom is engaging the “self-observer.” Corah was able to reflect on her experiences abroad and adopt the practices that she perceived would be most beneficial to her learners to understand mathematics and apply their understanding to solving problems in mathematics. Her stance to move away from the traditional “chalk and talk,” teacher-centered and non-engaging classroom technique (Ardeleanu, 2019) is evident in Corah’s implementation of creative and engaging methods to teach mathematics, such as “games, group learning, and incentive-based strategies.” This narrative highlights the importance of recognising learners' diverse backgrounds and expanding beyond traditional teaching roles to address their comprehensive needs.

### ***5.2.7.3 Creating a comfortable learning journey with my learners***

Palmer (1998) posits that effective teaching is not limited to specific methods; rather, it is shaped by the teacher's identity and authenticity. The display of closeness, care, and compassion involves cultivating an open heart (Weaver & Wilding, 2013). Corah recognised the importance of extending her teaching beyond the classroom, understanding that it was not merely about demonstrating a set of methods to her learners and completing the syllabus.

*I also maintain an open-door policy, inviting learners to come to see me during breaks or my non-teaching periods to seek help. I encourage them to ask questions and share*

*their understanding when solving mathematical problems. When learners visit me, I allow them to talk about their challenges, guiding them in a way that ensures they do not feel scared or anxious about mathematics. By creating a comfortable space for asking questions, I ensure that my learners don't feel alone in their learning journey, as I did in high school. I further encourage learners that mathematics is more than just rules and methods, but an exploration of different ideas to solve problems. I see myself as a symbol of hope for my learners, a guide to assist them in their academic journey.*

Corah's ability to cultivate compassion and care for her learners by offering support beyond the classroom creates an environment where learners feel comforted and supported. By establishing respectful boundaries while still showing compassion, she fosters an optimal climate for interactive learning (Weaver & Wilding, 2013). By affording learners a safe space outside classroom time to “ask questions” and “not feel alone,” Corah moves away from mathematics being perceived as isolating and daunting (Wright, 2017) but rather engaging and challenging. As a result, Corah successfully guides her learners in mathematics by demonstrating care and compassion within appropriate limits. This expression of care and support is vital in nurturing learners in mathematics classrooms.

### **5.2.8 Synthesis of Section C**

Corah's experiences prove that fostering engaged pedagogy requires a balanced approach incorporating intellectual rigor, emotional empathy, and spiritual commitment. Her practices demonstrate how secondary school teachers can create an inclusive and supportive learning environment that encourages active participation and growth. By employing reflective practices, differentiated instruction, and compassionate guidance, Corah shows how mathematics educators can nurture their learners' academic skills, confidence, and overall development. This holistic approach is essential for cultivating engagement, resilience, and a lifelong appreciation for learning in mathematics classrooms.

## **5.3 Section D: Conclusion**

In this chapter, I offered my analysis and interpretation of Corah's everyday personal and professional experiences as a secondary school teacher in mathematics classrooms. I analysed her storied narrative in Sections A, B, and C to respond to the three research questions. I presented a detailed account of her personal and professional experiences and how these experiences shaped her teaching in mathematics classrooms.

In section A, I created a drawing of Corah stepping up to challenges. She loved challenges and thrived in a challenging environment. When she was in a traditional setting in her mathematics classroom, she felt disconnected as she did not find it challenging. Her challenging character played out in her personal and professional experiences. From being a learner to a teacher to being committed as a lifelong learner and experiencing teaching abroad, Corah thrived through these challenging experiences.

In section B, I provided an analysis of how Corah's personal and professional experiences shaped her everyday teaching as a mathematics teacher. Noteworthy are the significant relationships she experienced with her sisters, her mathematics teacher, and her economics teacher. The love and care she received from her sisters are demonstrated in her compassion for her learners. The challenging character of her economics teacher evoked the same characteristic within her. Although she did not connect with her mathematics teacher, she transformed that experience positively when she became a teacher. She offered her learners a more comfortable and inviting environment.

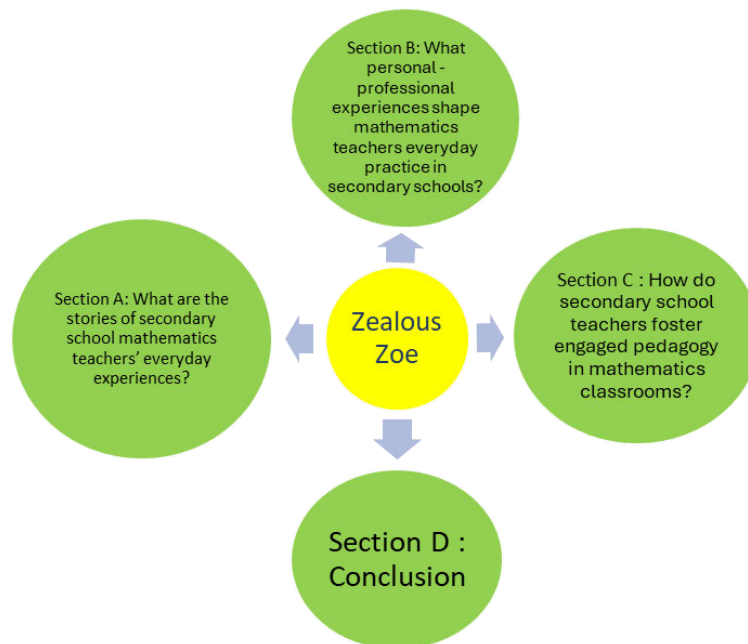
In section C, Corah's creation of a comfortable learning environment is highlighted. Her approach to applying differential learning and offering an open-door policy for her learners displays her passion for nurturing mathematics in a more connected and interactive way. She demonstrates her connection with the learners intellectually and emotionally (Hooks, 1994) whilst still maintaining respectful boundaries (Weaver & Wilding, 2013). Corah's embrace of challenges and thriving in a challenging environment contribute to her passion for creating a classroom that is nurturing and inclusive for all her learners. Her commitment to being a lifelong learner and teaching abroad highlights her willingness to continually develop as a mathematics teacher to provide an environment that is challenging for her learners.

# CHAPTER SIX

## ZOE'S STORY: TRANSFORMATION JOURNEY – FROM HELPLESSNESS TO HOPEFULNESS

### 6.1 Introduction

In the preceding chapter, I comprehensively analysed Carah's narrative using deconstruction and reconstruction to address three fundamental research inquiries. I delved deeply into her experiences to illuminate the valuable insights she gleaned to inform her approach to teaching in mathematics classrooms. This chapter presents my analysis and interpretation of Zoe's narrative. In May 2024, I asked Zoe if she would like to be a participant in my study, as I had experienced some communication issues with one of my participants. Zoe graciously offered to be a part of my study. Zoe is a novice mathematics teacher and has only 2 years of teaching experience. The concept map below illustrates the layout for analyzing and interpreting Zoe's responses to the research questions.



**Figure 6.1: My diagrammatic analysis of Zoe's narrative**

In Figure 6.1, you can see the different sections I developed to represent and analyse Zoe's experiences as a mathematics teacher that address each research question. In section A, I present Zoe's reconstructed stories, titled in response to research question one, "*What are Zoe's*

*stories of her everyday experiences as a mathematics teacher in a secondary school?”* In section B, I draw on Zoe’s storied narratives as a researcher to present an analytical response to research question two, “*What personal-professional experiences shape Zoe’s everyday practice as a mathematics teacher in a secondary school?*” In section C, I offer interpretive responses to research question three, “*How do secondary school mathematics teachers foster engaged pedagogy in the mathematics classroom?*” Lastly, section D is an overall synthesis and conclusion.

### **6.2.1 Section A: Transformation Journey: From helplessness to hopefulness**

In this section, I present a reconstructed storied narrative of Zoe’s experiences in response to the first key research question: *What are the stories of secondary school mathematics teachers’ everyday experiences?* The story was reconstructed after working with the storied data generated from Zoe’s memory drawings, object inquiry, self-portrait, and unstructured interview to yield thick descriptive data (van Maanen, 1979; Leeds-Hurwitz, 2020). In this section, I offer the nuances and complex experiences of Zoe’s everyday life as a secondary school mathematics teacher.

#### **Zoe’s Story**

I met Zoe in May 2024 at her school, Sage Secondary School. One of my participants ignored my messages and calls to finish up the data collection. Zoe graciously accepted to be one of my participants.

Zoe is a 25-year-old African female who is passionate about mathematics education. She is a novice teacher and holds a degree in mathematics and life sciences. Her teaching journey began in 2021 when she worked as an educator assistant at a quintile 2 school in the Pinetown district. Masitry and Africa (2016) describe quintiles as a classification method used by the South African government to categorise schools based on socioeconomic factors and resource availability. Currently, she is appointed at Sage Secondary School, where she has two years of teaching experience. Zoe teaches grade 8 mathematics as well as mathematical literacy for grades 10 and 12.

#### **Personal Stories**

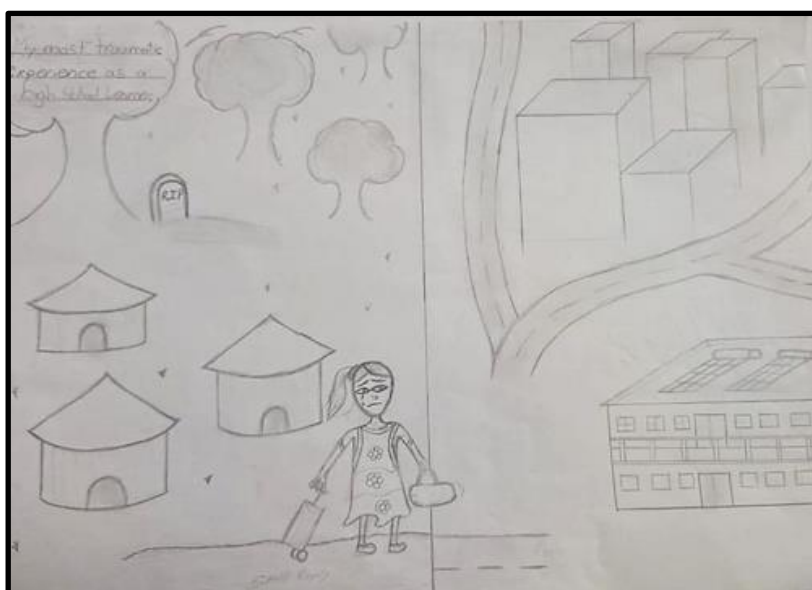
### **Under my grandfather's care**

*I come from a family of five siblings, consisting of four sisters and a brother. We lived in a rural area, where my parents faced significant financial hardship. Consequently, my mother made the brave decision to send us to live with my grandfather in the urban area of Greytown. My grandfather, being the sole provider for our family, worked as a municipal employee, ensuring that we received the best care and education possible. Under my grandfather's care, we were privileged to attend a private school, where we were equipped with new uniforms, school shoes, bags, and stationery, and provided with daily meals. Despite my mother's regular visits, she had to return to the family farm to tend to my father's needs.*

### **School instilled us with important values and discipline**

*I cherished my time in primary school, as the dedicated teachers not only imparted knowledge but also instilled us with important values and discipline. The school possessed a well-stocked library, a place I frequented to indulge in reading. I always kept a dictionary close by, eager to enhance my proficiency in English. Additionally, the school provided us with a stimulating playground, where I enjoyed the company of my friends during breaks.*

### **Going back to the farm scared me**



**Figure 6.2: Zoe's memory drawing as a learner**

*The most traumatic experience I ever had in my life was losing my grandfather at the age of 13. I loved my grandfather so dearly, and he cared for us and loved us unconditionally. My entire world fell apart the day I lost my grandfather; I couldn't believe the news. This meant my siblings and I had to return to the rural area and live with my parents. The thought of going back to the farm scared me, as I did not know how I would adjust to that lifestyle. In the rural area, there was no electricity or water, and often we would go to bed starving. The schools didn't have good facilities and resources, and they were very far from our home. Following my grandfather's death, I lost my brother. My brother was the eldest, and he was involved in the taxi association in Johannesburg. My brother was tragically shot due to the taxi violence. At that point, I felt like my whole world was caving in. All I could think about and ask myself was, why did my grandfather die?*

*As Zoe reminisced about her grandfather, her eyes sparkled with warmth and affection. Seizing the moment, I recounted how my mother, as a single parent, entrusted my upbringing to my grandfather. It was a remarkable revelation to recognise the profound impact our grandfathers had on nurturing us with unwavering love and a sense of security.*

*Journal Entry (May 2024)*

### **Back to poverty**

*My siblings and I had no choice but to move back to the rural area to live with my parents. My worst fears were confirmed. We had to attend a public school that was very far from my home. We had to walk long distances barefoot as my parents could not afford to buy school shoes or pay for transport. They couldn't afford to buy us clothes or uniforms. I wore old, torn uniforms given to us by the school and donated by other learners. And since they were also poor, they wore them until they were worn out or didn't fit. I missed my grandfather so much and wished he could come back.*

### **I survived on one meal a day**

*My grades dropped, and I couldn't focus in school because my stomach growled with hunger every day. It became increasingly difficult to focus at school as we struggled financially at home. I survived on just one meal a day, which was provided at school. Additionally, I had to deal with poor discipline in the classroom, where classes were*

often suspended due to fights, forcing us to go home early. There were no libraries or resources available for me to study independently. It felt like a nightmare just to be alive.

### **I received the mathematics certificate for the highest mark**

After receiving my first term results in grade 8, I realised that I had to become stronger and work harder. Life was not going to change if I didn't change my mindset. I decided to take an oath to honour my grandfather and work hard. I began to excel in school, and my teachers noticed that I was a bright learner. I received the math certificate for the highest mark in math. When you do well in school, teachers acknowledge you, and that motivates you to do better. I began to improve my results, and most of the time, I either came out first or second in my grade. The teachers were very supportive and compassionate; they would give us money for transport and share their lunch. However, I noticed that the male teachers were kinder and more supportive compared to the female teachers.

*I was completely engrossed in Zoe's narrative and hung onto every word. I was truly astounded by how she found inspiration in her grandfather's legacy and turned it into a driving force for achieving better outcomes. Zoe's resilience and determination painted a picture of a triumphant individual rather than someone defeated by circumstances.*

*Journal entry (May 2024)*

### **The Big Decision**

In matric, I received a bachelor's pass with three distinctions. My first choice was to study medicine; however, due to not achieving excellent results and financial reasons, nursing was my second option and teaching was my third. I got a firm acceptance for teaching at UKZN with approved NSFAS funding. I decided to accept the offer and complete the registration for teaching. NSFAS paid for my first and second year, and in my third year of studying, I received a FUNSA LUSHAKA bursary. The proudest and most fulfilling moment for me was graduating CUM LAUDE and having my parents present. I knew at that moment that my grandfather would have been so proud of me. I am the first person in my family, thus far to have completed a degree.

### **Pushing myself beyond my limits**

*I always felt that I had to work very hard to achieve excellent results. I felt inferior and needed to prove myself. The fear of struggling to survive in a rural area strengthened my determination to study and work very hard. In my first math test at university, I achieved the highest mark in the class. This motivated me to keep pushing myself beyond my limits. I used to create charts with math rules and laws to help me remember them. This learning method ensured that I received distinctions for my math modules. The highest point of my academic career was graduating Cum Laude. Although my parents did not understand what this meant, to me, it meant everything. I chose to hold my academic record and certificate close to my heart because I was proud to be the first person in my family to complete a degree with high honours despite the difficulties I faced. This achievement made me feel accomplished and whole for the first time since I lost my grandfather.*

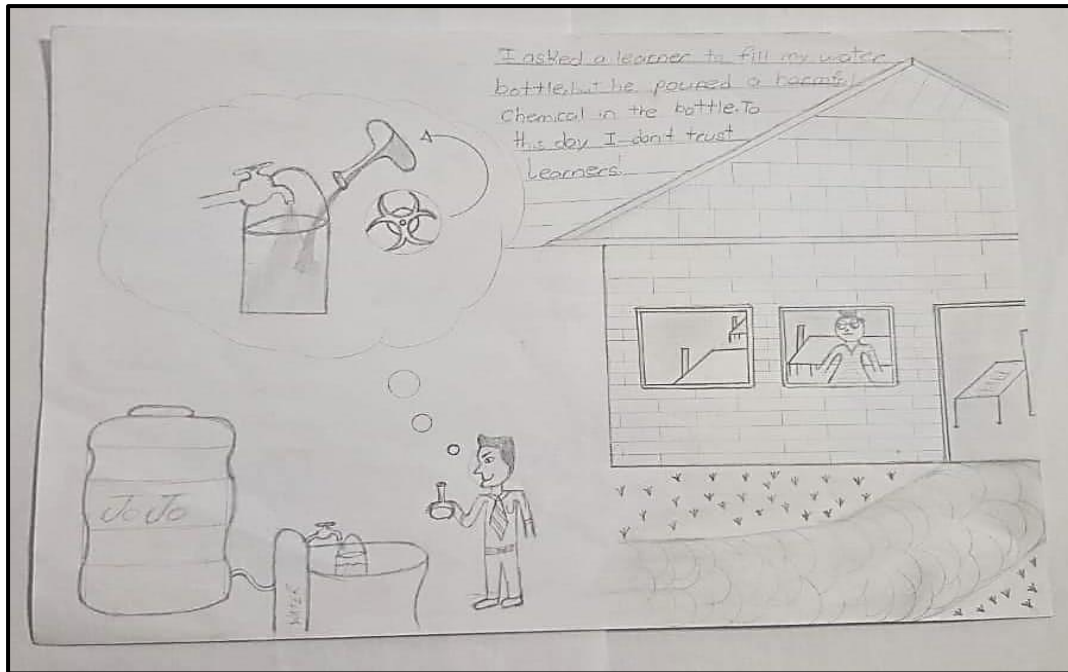


**Figure 6.3: Zoe’s object that she holds close to her heart**

**Becoming a teacher: A full workload to teach Mathematics and Life Science**

*After completing my graduation, I was excited to start my career as an Education Assistant at a school in Tongaat. The school had a learner population of 150, which meant it did not qualify for additional teachers. Despite my primary role being to support the teachers, I was entrusted with a full teaching workload in mathematics and life science. Fortunately, the school provided me with on-site accommodation, relieving me of the stress of finding a place to stay and commuting to work. The learners were respectful and well-disciplined. Corporal punishment was practiced to maintain discipline and ensure learners understood the consequences of not following the school code of conduct.*

**Enduring an unpleasant experience**



**Figure 6.4: Zoe's memory drawing as a teacher**

*I had an unpleasant experience at the school in Tongaat. While I was helping learners with an experiment, I asked one of them to fill my water bottle in the lab. However, he chose to pour a chemical into the bottle instead. I became suspicious when the other learners alerted me about his actions. Since that day, I've felt the need to impose some restrictions regarding my learners.*

### **My first appointment at Sage Secondary School**

#### **Mixed feelings: Teaching a subject I knew nothing about**

*On July 8th, 2023, the principal at Sage Secondary School informed me telephonically that I had been appointed as a first-time educator due to my FUNSA LUSHAKA bursary, and that I needed to report to the school. Upon arriving at the school, I was both happy and sad. I was happy to have received a permanent post, but saddened by the large class sizes and the prospect of teaching mathematical literacy to a grade 12 class as a first-time teacher.*

### **Feeling Overwhelmed to teach Mathematics Literacy**

*I felt overwhelmed and scared to teach mathematics literacy for the first time, especially to a matric class. How was I supposed to teach a subject I knew nothing about to a grade 12 class? Fortunately, the syllabus had already been covered, and I only needed to revise before they wrote their trial examinations. I still felt that I was responsible for these learners and their results. I spent sleepless nights learning and practicing examples so that I wouldn't look unprepared or foolish when I went to class. I made sure to be well-prepared when guiding the matric learners. Additionally, I encouraged the learners to teach topics that they understood better than I did, and I learned from their teaching. By adopting this approach, I gained a wealth of knowledge by remaining open to learning, rather than assuming I knew everything.*

### **Teaching mathematics to a grade 8 class was a daunting task**

*Teaching mathematics to the grade 8 class proved to be quite a daunting task. I found myself responsible for instructing 60 learners, and I quickly realised that maintaining discipline would be a significant challenge. The school's policy prohibiting corporal punishment meant that I had to find alternative methods to manage the classroom. Unfortunately, my initial attempts at enforcing discipline using detention and getting learners to write letters on ways to improve their behaviour were unsuccessful, and the learners seemed resistant to my authority. Growing frustrated with the situation, I resorted to using a defaulters' book in an attempt to instill some fear in the learners. While this tactic had a temporary effect, it soon became clear that it was not a sustainable solution.*

### **Seeking assistance to manage discipline**

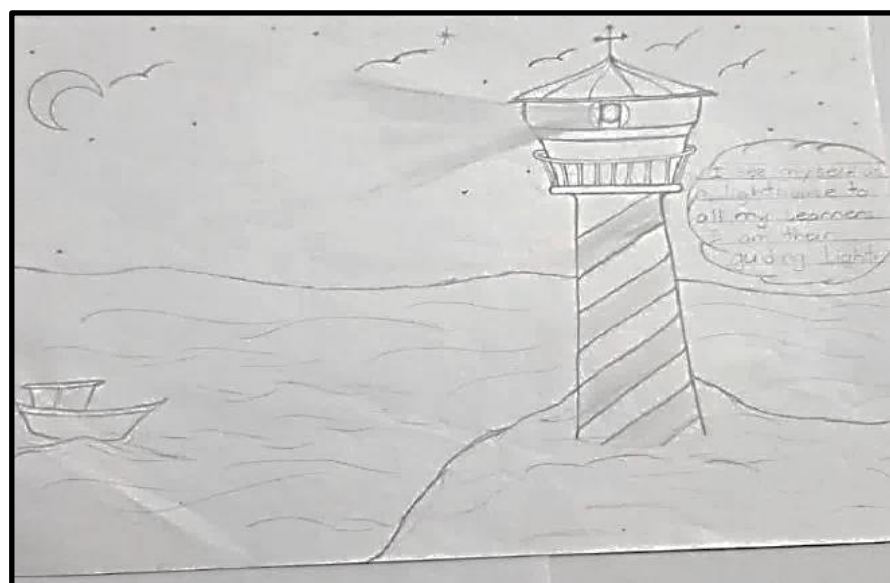
*I decided to seek assistance from the form teacher and grade head. Together, we identified the disruptive learners, and with their guidance, we implemented strategies to address their ill-discipline. We reached out to management and contacted parents and community members to counsel learners on their behavior. Additionally, learners were required to report to the grade head during every break for detention and sign a book to confirm their attendance. It was evident that learners were testing my authority*

as a new teacher. Following our interventions, I began to notice a marked improvement in the learners' behavior and their attitude toward their schoolwork in my mathematics class. It was a gratifying experience to witness the transformation in the classroom environment. The learners became more attentive, interruptions were minimised, and their academic performance showed promising signs of improvement. This positive outcome served as a testament to the effectiveness of collaborative intervention and the importance of addressing discipline in a proactive manner.

### **Deep passion for teaching mathematics**

As a new teacher in a secondary school in the middle of an academic year, I initially felt scared and overwhelmed. However, my passion for mathematics and desire to work with my learners have helped me form strong relationships with them. I make an effort to get to know each learner and learn about their backgrounds using registration and breaks to have conversations with the learners. When learners were absent, I would take the opportunity to ask them about the reasons for their absence upon their return. As a result, the learners began to trust me and share their personal challenges related to home and school issues. Understanding their personal struggles allows me to reflect on my own past experiences and offer them advice, emphasising that education will open doors they never knew existed.

### **A lighthouse tower to my learners**



**Figure 6.5: Zoe's self-portrait**

*I see myself as a lighthouse tower that shares the light of knowledge, growing brighter with every learner I enlighten. My everyday interaction with my learners is aimed to foster motivation and direction, helping learners navigate uncertainties. Each day, I strive to create an environment where learners feel empowered to explore mathematical concepts and enhance their problem-solving abilities. By allowing learners to ask questions without fear or embarrassment, I foster an open and inviting atmosphere for sharing ideas, discussing challenges, and finding solutions to any hurdles they may encounter in understanding mathematics. I encourage my learners to teach each other, engage in peer learning, and remain open to new perspectives and problem-solving methods. With my improved classroom management approach, which emphasises mutual respect, I allow learners to sit in groups to discuss and share solutions. This promotes interaction and makes mathematics more enjoyable, rather than a subject that is viewed as intimidating or dull.*

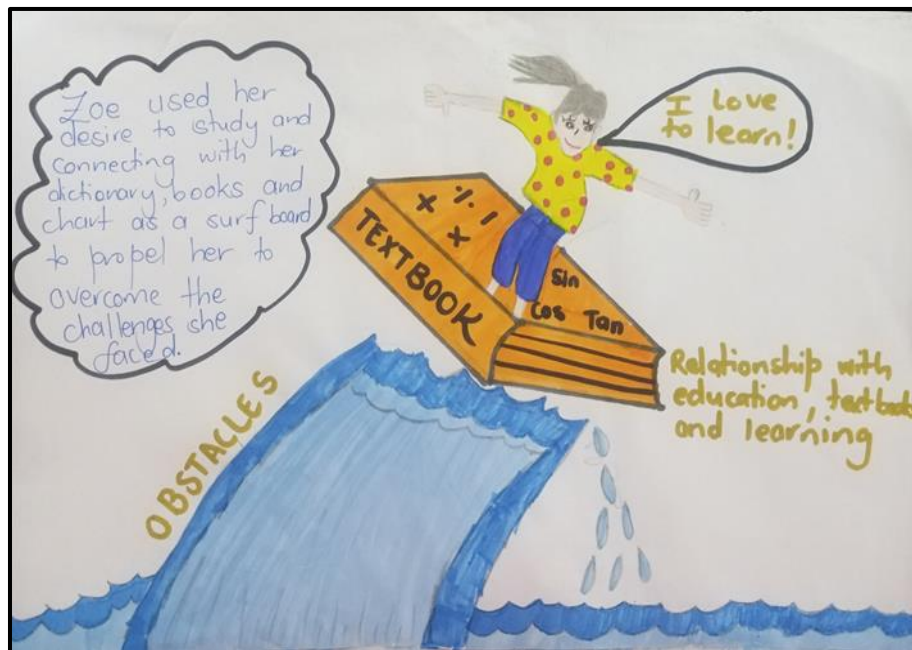
### **Aspiring to inspire my learners**

*Through my experiences over the last year, I have come to realise that understanding our learners' hardships and emotions is crucial as teachers. This understanding is vital in identifying pedagogical approaches in mathematics that can be customised to meet the diverse needs of learners. Currently, my primary focus lies in establishing profound connections with my learners, and understanding their individual challenges, and preferred learning styles to cultivate critical thinking, creativity, and collaboration. By designing a variety of lessons that includes games, mathematics puzzles, and peer learning, I try to ensure learners with different learning styles enjoy and participate in my mathematics classroom. My aspiration is to inspire learners by sharing my life's journey, instilling in them the confidence to strive for personal excellence.*

#### **6.2.2 Synthesis of Section A**

To summarise Section A of Zoe's reconstructed story, I created the above drawing to encapsulate the key points from Zoe's experiences as a secondary school Mathematics teacher. The drawing of Zoe standing on top of her textbooks and using them as a surfboard to ride the

waves of life represents her connection with education, learning, and resources to overcome the obstacles she faced



**Figure 6.6: Drawing showing analysis of Zoe's narratives**

I chose the surfboard as a tool to show how Zoe was able to find balance, establish resilience, get back up if she fell behind, and develop trust in the learning process. The stories provided by Zoe offer valuable insights into her developmental journey from early childhood through her transition from student to teacher. These recollections shed light on her personal challenges, accomplishments, and emotional experiences. Zoe's transition from a comfortable urban environment to a rural area facing economic challenges underscores her adaptability to resource limitations both at home and in educational settings. Throughout her academic journey to becoming a secondary school mathematics teacher, she has cultivated significant relationships with various educational resources, including books, charts, and her teachers. Furthermore, she has developed meaningful connections with her learners and colleagues. The themes that emerged from her experiences highlight the importance of relational dynamics in education, learning, and access to resources. Zoe's commitment to her academic pursuits exemplifies her zeal, resilience, and perseverance. Particularly noteworthy are the central themes that emerged, highlighting the significance of her relationships with education, learning, and resources.

### 6.2.3 Section B: Interpretation and analysis of Zoe's story

In this section, I analyse and interpret Zoe's storied narrative. I respond to key research question 2: *What personal-professional experiences shape secondary school teachers' everyday practice in Mathematics classrooms?* I selected a pantoum poem, which originates in Malaysia, due to its distinctive structure and the repetition of lines. According to Brannon (2011), the repetitive nature of a pantoum poem facilitates the exploration of significant themes. The Pantoum poem helped me identify key themes that respond to the research question and make explicit meanings of Zoe's experiences.

Under my grandfather's care  
I had to become stronger and work harder  
My stomach growled with hunger  
The teachers were very supportive and caring

I had to become stronger and work harder  
I received a Funsu Lushaka bursary  
The teachers were very supportive and caring  
Entrusted with a full teaching workload

I received a Funsu Lushaka bursary  
Teaching mathematics was a daunting task  
Entrusted with a full teaching workload  
Maintaining discipline was a significant challenge

Teaching mathematics was a daunting task  
Foster an environment where learners feel empowered  
Maintaining discipline was a significant challenge  
Under my grandfather's care

The pantoum poem was developed to highlight key themes within Zoe's personal and professional experiences, emphasising the relationships, contexts, and circumstances that have shaped her identity as both an individual and a professional educator (Beauchamp & Thomas, 2009). These influences have also profoundly influenced her practice as a mathematics teacher in her daily teaching practice and is presented and analysed in the following sections.

### ***6.2.3.1 Attending a private school under my grandfather's care***

Grandparents play a crucial role in families by providing childcare, financial support, and guidance. They often take on full-time caregiving responsibilities, which is especially important for children facing challenges such as parental divorce, loss, or poverty (Dolbin-MacNab & Yancura, 2018). The bond between grandparents and grandchildren is beneficial for both, as it offers emotional and social support. According to Mtshali (2015), black grandparents are frequently involved in caring for young children in African cultures and do not view this responsibility as a burden. Zoe benefited from the care and guidance of her grandfather, who recognized the importance of education and fulfilling the needs of Zoe and her siblings. He valued education and made sure that they received the best support possible.

*My grandfather, being the sole provider for our family, worked as a municipal employee, ensuring that we received the best care and education possible...Under my grandfather's care, we were privileged to attend a private school, where we were equipped with new uniforms, school shoes, bags, and stationery, and provided with daily meals.*

Despite being the sole provider for the family, Zoe's grandfather prioritised his grandchildren's education and needs, exemplifying unwavering sacrifice and commitment. He embraced his role with pride rather than viewing it as a burden (Mtshali, 2015). Taking full responsibility for caring for Zoe and her siblings, he actively instilled important values and principles related to education and family relationships. His steadfast dedication to providing an enriching education for his grandchildren clearly demonstrated his resolve to leverage education as a powerful tool for breaking the cycle of poverty and ensuring they have maximum opportunities for their future.

### ***6.2.3.2 Enhancing my Proficiency in English***

Turkle (2007) explores how individuals form connections with objects and how these objects help us gain a deeper understanding of ourselves. In line with Turkle's views, Mitchell (2017) emphasises that objects are essential learning tools that play a significant role in fostering connections within education. In her narrative, Zoe shares that she enjoyed reading and decided to enhance her English vocabulary by keeping a dictionary nearby. The following excerpt illustrates the bond Zoe developed with her dictionary and the library.

*The school possessed a well-stocked library, a place I frequented to indulge in reading. I always kept a dictionary close by, eager to enhance my proficiency in English.*

Drawing from the insights presented by Turkle (2007) as well as Zoe's personal experiences, it becomes clear that physical objects are instrumental in enhancing the learning process. These objects serve as tangible tools that facilitate interaction, stimulate curiosity, and promote deeper understanding among learners. This hands-on approach ultimately leads to a richer and more meaningful educational experience, highlighting the critical role that objects play in creating a vibrant learning environment.

### ***6.2.3.3 Holding my academic record and certificate close to my heart***

Objects reveal insights into our identities and the differences across generations, social classes, cultures, and gender roles (González-Monteagudo, 2018). They also carry memories that deepen our understanding of the human experience, illustrating how individuals are influenced by their social environments and how cultural identities are formed (González-Monteagudo, 2018). The academic achievements and certificates that Zoe chose to keep close to her heart reflect her strong attachment to her education and the special relationship she shared with her grandfather, who played a pivotal role in advocating for the importance of a good education in her life.

*The highest point of my academic career was graduating Cum Laude. Although my parents did not understand what this meant, to me, it meant everything. I chose to hold my academic record and certificate close to my heart because I was proud to be the first person in my family to complete a degree with high honors despite the difficulties I faced. This achievement made me feel accomplished and whole for the first time since I lost my grandfather.*

Zoe's story demonstrates how objects play a significant role in shaping cultural identity (González-Monteagudo, 2018). Her degree is not just her personal achievement; it also reflects the hopes and values her grandfather instilled in her. Zoe's connection to her certificates highlights how important her grandfather was in shaping her beliefs. This shows how cultural and personal values are passed down through generations, particularly the importance of education as a way to succeed. The certificates are more than just papers, they carry emotional meaning. They link Zoe to her late grandfather and remind her of his support and influence.

## **6.2.4 Theme Synthesis**

### ***6.2.4.1 Significant relationships that nurture the value of learning in mathematics classrooms***

Upon analysing the narratives, I discerned the recurring themes that support the significance of relationships that nurture the value of learning in mathematics classrooms. Zoe's personal experiences as a child, learner, and student have had a profound influence in shaping her approach to teaching mathematics. The memories she shared provide a deep insight into the love and support she received from her grandfather, the comfort she found in reading, and her approach to studying. The foundation of a good education set by Zoe's grandfather underpins the values Zoe places on education. These values are reflected in how she connects with her dictionary, books, and resources for studying. She placed much emphasis on how she enjoyed reading and studying, and used education to propel her out of poverty. Zoe's personal experiences play out in the classroom as she places learning as a valuable tool in guiding learners to overcome the challenges they face.

In addressing the question: How did Zoe's professional experiences shape her everyday teaching in mathematics classrooms? The following themes were identified.

### ***6.2.4.2 Seeking assistance to manage discipline in a proactive manner***

Classroom management and discipline present significant challenges for schools today (Tarman, 2016). Novice teachers, in particular, must navigate these issues to foster a productive learning environment. Tarman (2016) identifies two key approaches: the psychoanalytic method, which focuses on the teacher's attitude, and behavior modification, which involves various strategies to manage behaviour. One effective approach is peer collaboration (Tachie, 2022). Zoe, a new teacher, faced difficulties with poorly disciplined grade eight learners and sought help from her colleagues.

*I decided to seek assistance from the form teacher and grade head. Together, we identified the disruptive learners, and with their guidance, we implemented strategies to address their ill-discipline. We reached out to management and contacted parents and community members to counsel learners on their behavior. Additionally, learners were required to report to the grade head during every break for detention and sign a book to confirm their attendance. It was evident that learners were testing my authority as a new teacher. Following our interventions, I began to notice a marked improvement in the learners' behaviour and their attitude toward their schoolwork in my*

*mathematics class... This positive outcome served as a testament to the effectiveness of collaborative intervention and the importance of addressing discipline in a proactive manner.*

Zoe's story shows how working with colleagues can help new teachers find practical solutions to problems. Collaborating also helps teachers feel supported and share in the responsibilities of managing challenges. With the help of management, parents, and community members in offering counselling and support, Zoe was able to better manage her classroom rather than using corporal punishment, which results in harming learners (Tarman, 2016). When they addressed discipline problems respectfully and proactively, learners' behaviour improved, and learners became more interested in their schoolwork (Tarman, 2016). This shows that managing behavior and encouraging learning go hand in hand. By asking for help, Zoe demonstrated her willingness to learn and grow as a teacher. Working with others created a sense of teamwork and showed the importance of collaboration in schools (Tachie, 2022).

#### ***6.2.4.3 Preparing to Teach a New Subject to Grade 12 Learners***

Loewenberg Ball et al. (2008) highlight the gap between theoretical knowledge acquired at tertiary institutions and the practical skills needed for classroom teaching. Toor and Mgombel (2016) emphasise that teachers must have a strong grasp of their subject to engage learners effectively. This places the responsibility on teachers to develop their specialised SCK and PCK through workshops, resource engagement, peer mentoring, and collaboration (Harringfield et al., 2021). Zoe, a new teacher assigned to teach a Grade 12 subject she had never studied, had to rely on self-study to prepare herself for the classroom, illustrating the challenges teachers face in bridging this gap.

*I felt overwhelmed and scared to teach mathematics literacy for the first time, especially to a matric class. How was I supposed to teach a subject I knew nothing about to a grade 12 class? I spent sleepless nights learning and practicing examples so that I wouldn't look unprepared or foolish when I went to class. I made sure to be well-prepared when guiding the matric learners. Additionally, I encouraged the learners to teach topics that they understood better than I did, and I learned from their teaching. By adopting this approach, I gained a wealth of knowledge by remaining open to learning, rather than assuming I knew everything.*

While Loewenberg Ball et al. (2008) highlight the disconnect between academic preparation

and classroom needs, Zoe's experience illustrates this gap. Zoe, who lacked prior knowledge of Mathematical Literacy and faced the pressure of teaching a Grade 12 class, embodied the stress and self-doubt that can occur in such situations. Her determination to self-study and prepare reflects teachers' responsibility for their professional development, as noted by Harringfield et al. (2021). Zoe's approach of allowing "learners to teach" serves as a valuable resource for her education. It showcases her dedication to ongoing professional development and her trust in her learners to share their knowledge. While her efforts demonstrate resilience and commitment, they also reveal the need for better support systems to help teachers develop their SCK and PCK. This experience emphasises the importance of practical training, mentoring, and accessible resources to connect academic learning with real-world teaching demands (Korthagen, 2017).

#### ***6.2.4.4 Reflecting on my past experiences to guide my learners***

To manage emotions effectively, teachers should enhance their emotional intelligence, broaden their emotional range, and set emotional boundaries. This can be achieved by helping learners improve their emotional expression and self-regulation skills (Weaver & Wilding, 2013). Weaver and Wilding also introduce the concept of the "self-observer," encouraging teachers to reflect on their thoughts and actions. This awareness of their beliefs and biases leads to more thoughtful teaching decisions and helps learners understand and manage their emotions. Zoe allowed learners to share their backgrounds and feelings while maintaining boundaries. This sharing helped Zoe reflect on her experiences and guide learners in their academic journeys.

*I make an effort to get to know each learner and learn about their backgrounds, used registration and breaks to have conversations with the learners. When learners were absent, I would take the opportunity to ask them about the reasons for their absence upon their return. As a result, the learners began to trust me and share their personal challenges related to home and school issues. Understanding their personal struggles allows me to reflect on my own past experiences and offer them advice, emphasising that education will open doors they never knew existed.*

Teachers can manage their emotions by cultivating emotional intelligence and nurturing a supportive classroom environment. Enhancing emotional awareness allows teachers to connect with learners while maintaining professional boundaries (Tarman, 2016). The concept of the "self-observer" emphasises reflection (Weaver & Wilding, 2013). When teachers examine their

thoughts and actions, they make more informed decisions, modeling emotional awareness for learners and encouraging them to express themselves effectively. Zoe created a safe space for learners by allowing them to share their backgrounds and emotions while maintaining boundaries. This supported her learners and helped her reflect on her experiences and improve her teaching. Understanding learners' struggles and sharing personal insights can inspire them to see education as a pathway to new opportunities, fostering trust and motivating emotional and academic growth.

### **6.2.5 Theme Synthesis**

Upon analysing the narratives, I identified themes that best support Zoe's professional experiences shaping her everyday teaching in mathematics classrooms. The key theme that emerged to encapsulate her professional are: committing to adaptability, collegial support, and learning to enrich teaching in mathematics classrooms. Zoe demonstrates her commitment to creating the optimal climate for learners in mathematics classrooms. By seeking help from colleagues to manage discipline in her class, she adapts to change and accomplishes proactive measures to guide her learners. In preparing to teach a new subject to grade 12 learners for the first time, she demonstrates her willingness to learn and improve her subject content knowledge and pedagogical knowledge. Using reflection as a tool to guide her learners, she links learners' current situations to her past experiences, using this to motivate her learners. Zoe's professional experiences have therefore significantly influenced her everyday practice as a secondary school mathematics teacher.

### **6.2.6 Synthesis of Section B**

Upon reflecting on section B, I created a haiku poem to guide me in synthesising the themes. A haiku is a form of Japanese poetry consisting of three simple lines that evoke powerful meaning (Harr, 1975).

*My grandfather's care  
Graduating Cum Laude  
Reflect on my past*

In response to research question two: "*What personal-professional experiences shape secondary school teachers' everyday practice in mathematics classrooms?*" it was evident from Zoe's personal experiences that her relationship with her grandfather, books, and accolades shaped her beliefs and attitudes as a mathematics teacher. As her grandfather valued a sound education for her and her siblings, she chose to improve herself by reading and

expanding her vocabulary and later pursuing her tertiary education, obtaining a *cum laude* pass. Her dedication to her education despite the poverty she faced after her grandfather passed away, is further exemplified by her qualification as a mathematics teacher. She chose to seek help from colleagues, study daily to teach a new subject and use reflection to understand her learners' challenges. Her actions as a novice teacher highlight the importance, she placed in assisting her learners and developing as a new teacher in a new school. Her commitment to understanding the content and finding innovative ways to manage discipline through collegial support demonstrates how professional experiences shaped her everyday practice as a math teacher.

### **6.2.7 Interpretation and Analysis of Zoe's Everyday Experiences**

In this section, I offer an interpretation and contextualisation of Peter's narratives, specifically addressing research question 3: *“How do secondary school teachers foster engaged pedagogy in mathematics classrooms?”* To tackle this research question, I employed Bell Hooks' concept of "Engaged Pedagogy" together with Palmer (2008) as a critical framework to scrutinise the day-to-day experiences of mathematics educators, examining how these experiences influence their pedagogical approaches and how personal and professional experiences are critical in fostering engaged pedagogy within mathematics classrooms. Complementing the conceptual framework of engaged pedagogy, I also developed a concept map to visually elucidate Zoe's personal and professional narratives, highlighting the substantial interplay between experiences necessitating deep reflection, and illustrating how she adapted her teaching methods to promote engaged pedagogy in mathematics classrooms.

#### **6.2.7.1 Understanding learners' hardships and emotions**

Weaver and Wilding (2013) emphasise that cultivating an open heart and emotional capacity are vital for engaged teaching. An "open heart" embodies kindness, care, and compassion, crucial for building trust and inclusive learning communities. Palmer (2008) advocates for teaching from the "heart." Palmer (2013) states that teaching is more than just applying concepts and methods; it is about being able to connect with learners and the subject by acknowledging the trust within themselves. Zoe learned that getting to know her learners' backgrounds and struggles is important. She encouraged her learners to share their hardships, which helped her understand their emotions. This understanding allowed her to see how their challenges affect their ability to learn mathematics.

*Through my experiences over the last year, I have come to realise that understanding our learners' hardships and emotions is crucial as teachers...Currently, my primary focus lies in establishing profound connections with my learners, understanding their individual challenges, and preferred learning styles to cultivate critical thinking, creativity, and collaboration. By designing a variety of lessons that include games, mathematics puzzles, and peer learning, I try to ensure that learners with different learning styles enjoy and participate in my mathematics classroom.*

The realisation and practice of emotional capacity and empathy in teaching, particularly in mathematics classrooms, is important. Weaver and Wilding (2013) highlight those qualities, such as kindness, care, and compassion—defined as having an "open heart"—are essential for building trust and creating inclusive learning environments. These traits strengthen connections between teachers and learners and promote an atmosphere that values emotional expression. Emotional intelligence is crucial for teachers, as it enhances their emotional awareness and management, leading to better student engagement. This includes recognising emotional boundaries and helping learners develop self-regulation skills. Such support is vital in diverse classrooms where learners may face various challenges. Zoe's strategy of understanding her learners' backgrounds exemplifies this approach. By encouraging them to share their challenges, she gains insights into how emotional barriers impact learning, particularly in stressful subjects like mathematics. This understanding allows her to adapt her teaching to better meet her learners' needs. Overall, the analysis underscores the role of emotional intelligence in fostering responsive and empathetic learning environments that address both the emotional and academic needs of learners.

#### ***6.2.7.2 Facilitating an empowering environment for learners to explore mathematics***

Thich Nhat Hanh introduced "engaged pedagogy," emphasising "freedom, self-actualization, and empowerment" for learners and teachers (Chahine, 2013, p. 24). Hooks (1994) built on Freire's concept of "conscientization," advocating for education that fosters critical awareness and active participation. Hanh's guidance on pedagogy stresses the connection between mind, body, and spirit, promoting a holistic approach to learning. By facilitating an environment where learners feel empowered Zoe fosters awareness and active participation.

*Each day, I strive to create an environment where learners feel empowered to explore mathematical concepts and enhance their problem-solving abilities. By allowing learners to ask questions without fear or embarrassment, I foster an open and inviting atmosphere for sharing ideas, discussing challenges, and finding solutions to any hurdles they may encounter in understanding mathematics. I encourage my learners to teach each other, engage in peer learning, and remain open to new perspectives and problem-solving methods. With my improved classroom management approach, which emphasises mutual respect, I allow learners to sit in groups to discuss and share solutions. This promotes interaction and makes mathematics more enjoyable, rather than a subject that is viewed as intimidating or dull.*

Engaged pedagogy emphasises mindfulness, critical awareness, and empowerment, creating meaningful learning experiences for both teachers and learners. Thich Nhat Hanh highlights the holistic connection between the mind, body, and spirit, advocating for freedom and “self-actualization”. Hooks (1994) supports this perspective by promoting education that fosters critical thinking and active participation, which is influenced by Paulo Freire’s concept of “conscientization.” Zoe’s teaching approach aligns with these principles by fostering an empowering and engaging environment that encourages student participation. Her methods promote peer learning and collaboration, allowing learners to take ownership of their educational journey. This not only enhances their mathematical understanding but also cultivates critical thinking, creativity, and confidence, which are key components of engaged pedagogy.

### **6.2.8 Synthesis of Section C**

Understanding learners' hardships and fostering an empowering environment is central to cultivating engaged pedagogy in mathematics classrooms. Weaver and Wilding (2013) emphasise the importance of teaching with an “open heart,” embodying kindness and compassion to build trust and inclusivity. Similarly, Palmer (2008, 2013) highlights the role of emotional connection and self-awareness in teaching. Zoe's approach of engaging with her learners’ backgrounds and encouraging them to share their challenges helps her understand how emotional barriers affect learning, enabling her to tailor her teaching to their needs. Furthermore, Thich Nhat Hanh’s concept of engaged pedagogy, supported by Hooks (1994) and Freire, advocates for empowerment, mindfulness, and critical awareness. Zoe fosters this by promoting peer learning, collaboration, and active participation, empowering learners to

take ownership of their learning. Together, these practices illustrate the transformative power of emotional intelligence and engaged pedagogy in creating responsive and empowering learning environments.

### **6.3 Section D: Conclusion**

In this chapter, I provided my analysis and interpretation of Zoe's personal and professional experiences of her practices as a secondary school mathematics teacher. The discourse in this chapter, as in the preceding two chapters, was to respond to three research questions. This helped me to understand Zoe's storied experiences as a mathematics teacher fostering engaged pedagogy. I focused on making meaning of her personal and professional experiences that shaped her everyday practice and how she negotiated challenges to nurture an interactive classroom with respectful boundaries being a novice teacher.

In section A, I created a drawing that demonstrated how Zoe negotiated her challenges by forming a connection with her dictionary, books, and charts. Zoe's connection with education propelled her journey as she was able to overcome poverty and the social ills that plague most rural areas. Her commitment to her academic journey is evident in her zeal to escape poverty by means of excelling academically.

In section B, the pantoum poem is used to highlight how her personal and professional experiences shaped her practice as a mathematics teacher. The loving and supportive relationship her grandfather displayed is evident in her compassionate and empathetic role as a teacher. Her love for reading and connection with books, and creating charts is shown in her quest to support her learners academically and emotionally. The support of her high school teachers shaped her emotional capacity to better understand her learners in mathematics classrooms. In addition, the supportive relationships she shared with her colleagues and learners equipped her to create a more connected but respectful environment in her mathematics classroom.

In Section C, I presented Zoe's zeal and dedication to providing a caring, comfortable, and supportive environment in the mathematics classroom for her learners. She allows her learners to share their challenges and guides them through reflecting on her past experiences. Zoe's connection with her learners intellectually (providing support in mathematics) and emotionally

(caring for her learners) is evident in the love and support she received as a child from her grandfather and her teachers as a learner (Hook, 1994).

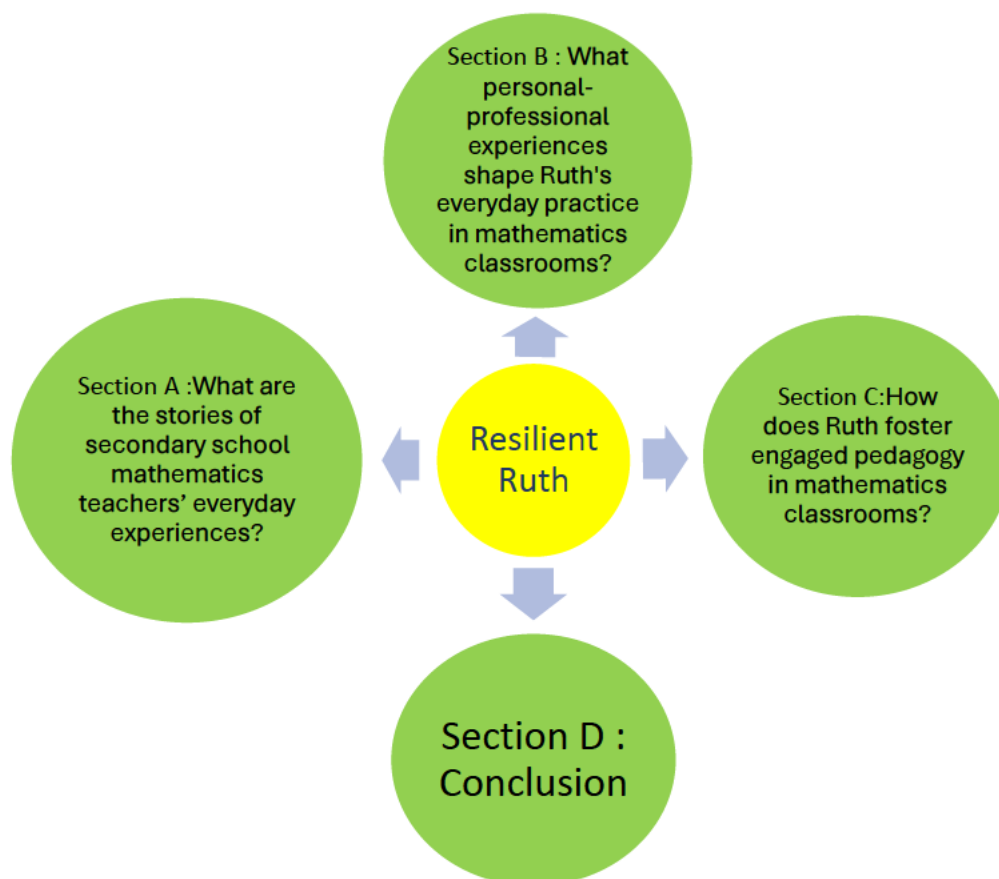
Although Zoe experienced challenges growing up, she chose to focus on her academic journey by connecting with her dictionary, and books and developing charts to achieve success. Her passion for overcoming poverty drove her dedication and hard work as a learner and student. The same passion and dedication is displayed in her practice as a mathematics teacher. She recreates the same connection with her learners and encourages them to realise their full potential.

## CHAPTER SEVEN

### RUTH'S STORY: RESILIENT RUTH – FINDING MY BELONGING IN THE CLASSROOM

#### 7.1 Introduction

In the previous chapter, I presented Zoe's reconstructed narratives. The focus of this chapter is to present and analyse Ruth's reconstructed stories of cultivating engaged pedagogy in mathematics classrooms. Using memory drawing, object inquiry, self-portraiture, and an unstructured interview, I reconstructed Ruth's story. I use the pseudonym Ruth to refer to this participant. Throughout this chapter, excerpts from my reflective journal are referred to as I present my experiences as the narrative inquirer in conjunction with the data that I generated and collected from Ruth. The concept map below shows the conceptualisation and organisation of the chapter in response to the three research questions.



**Figure 7.1: Diagrammatic summary of my analysis of Ruth's narrative**

In Figure 7.1 above, one can see the different sections that I developed to represent and analyse Ruth's stories of experiences as a mathematics teacher that will address each research question.

In section A, I present Ruth’s reconstructed stories, titled in response to research question one, “*What are Ruth’s stories of her everyday experiences as a mathematics teacher in a secondary school?*” In section B, I draw on Ruth’s storied narratives as a researcher to present an analytical response to research question two, “*What personal-professional experiences shape Ruth’s everyday practice as a mathematics teacher in a secondary school?*” In section C, I offer interpretive responses to research question three, “*How do secondary school mathematics teachers foster engaged pedagogy in the mathematics classroom?*” Lastly, section D is an overall synthesis and conclusion.

### **7.2.1 Section A: Ruth’s reconstructed storied narrative: Finding My Belonging in the Classroom**

In this section, I offer a reconstructed, recounted narrative of Ruth's experiences in response to research question one: *What are the everyday experiences of math teachers in secondary schools?* Following the creation of extensive descriptive data from Ruth's memory sketches, object inquiry, self-portrait, and unstructured interview, the narrative was rebuilt (van Maanen, 1979; Leeds-Hurwitz, 2020). I describe the subtleties and intricate experiences of Ruth's daily life as a math teacher at a secondary school in this section.

#### **Ruth’s Story**

I met Ruth in January 2024 at her school, Silvercrest Secondary School.

I'm a 37-year-old Indian female who is passionate about teaching mathematics. I've been a teacher for eleven years, teaching in both the GET and FET phases. I have a B.Ed Honors, a PGCE, and a BSc. I began my teaching career in 2013 in a school in the Umlazi district that was in quintile 5, and I am now in a quintile 4 school. I have had the chance to teach mathematics to learners in grades 8 through 12 during my career, which has given me a thorough understanding of the curriculum at different levels. In addition to the change in schools, I have had the opportunity to experience different contexts and how learners' attitudes and behaviours differ in these contexts.

#### **My grandparents raised me as their child.**

*My single mum and her parents raised me. My dad left when I was almost two, and I barely knew him as I was growing up. My grandparents raised me as their own while*

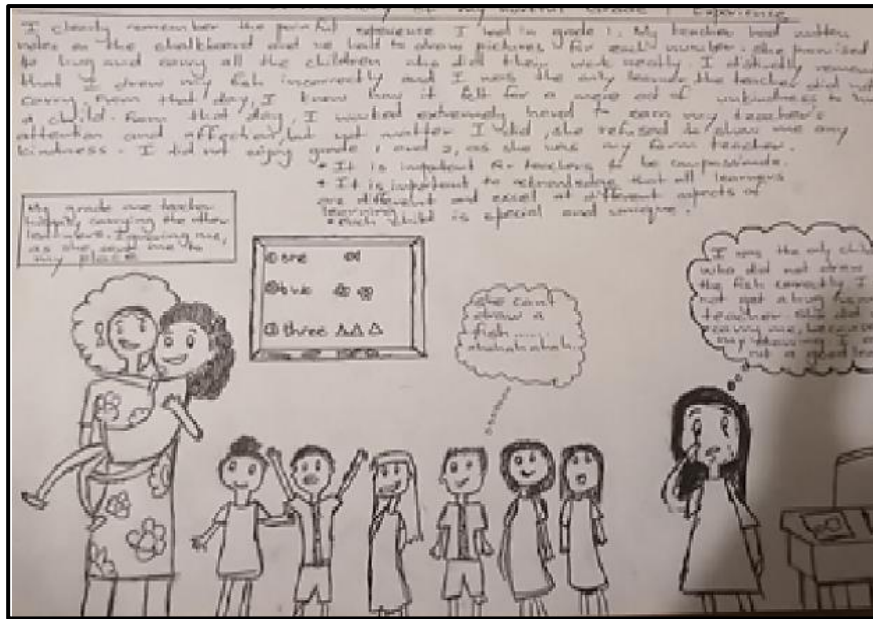
*my mum started a new family. Being born out of wedlock and growing up as a child to a single mum, we faced marginalisation from both family and society. In the Indian community, single mums and their kids were treated with little or no respect. I faced oppression in the form of sexual abuse at a young age, which led to helplessness and low self-esteem. I found comfort in teaching my dolls and teddy bears, turning my room into a vibrant classroom. In that role, I felt a strong sense of belonging and importance as I guided my toys through a world of imagination.*

### **I did not like my grade one teacher**

*Preschool was a lot of fun, but I started to dislike grade one. I remember feeling sad when the teacher didn't carry me after I drew a fish incorrectly. Later that year, during a phonics test, my friend didn't know the answer. Excited that I did, I shouted it out without raising my hand, and the teacher hit me on the head with a duster. It was a painful and embarrassing moment. Unfortunately, she was also my teacher in second grade. That year, the head of the department, Mrs. Govender, noticed me and allowed me to participate in a prose competition titled "Mrs. Pepperpot at the Bazaar." Despite my hard work and excellent results, I did not receive an award. My grandfather recognised my disappointment and visited the school to inquire about the awards. He was my source of support and always defended me. I felt loved and protected by him, and he reassured me that I had the potential I to excel academically.*

*I was amazed at the intense detail Ruth presented as a primary school learner. From her grade 1 teacher to her prose recital and appreciating the support of her grandfather, I sat and intently listened to her share her precious memories.*

*January (2004)*



**Figure 7.2: Ruth's memory drawing as a learner**

**My grade 8 math teacher did not teach us**

*While most of my teachers were amazing and caring, my grade 8 math teacher did not teach us and was more absent than present. We often found ourselves free during math lessons because our teacher also taught Information Technology and spent most of his time in the computer room. He would only teach us right before exams. During my breaks, I used to spend time with learners from higher grades, asking them for help and tutoring in math. I made a friend who was in grade 9, and she gave me her grade 8 math textbooks so that I could study on my own. Fortunately, in grade 9, we were assigned a dedicated math teacher, which ignited my passion for mathematics.*



### **Figure 7.3: Ruth's objects that she holds sentimental**

#### **My dedication to academic success**

*Despite facing challenges at home, I focused on my academics and persevered. The most surreal moment for me was receiving my matric results. I chose to keep the newspaper in which they were published as a memory of my accomplishment. The highlight of my schooling career was achieving a distinction pass. Additionally, I placed first in my class and received the Dux Award, Good Fellowship, and awards for English and Afrikaans. I take pride in overcoming the abuse I faced at home, studying while hungry, and managing multiple responsibilities. These achievements and accolades gave me renewed hope, and I looked forward to the next chapter of my life.*

*At this moment, Ruth began to get emotional, recalling these memories was painful. I wanted to stop but Ruth reassured me that she was fine and as she continued to share her experiences I sat in awe and drew such inspiration from her resilience.*

*January(2024)*

#### **Navigating University Alone**

*On the 6th of February 2005, I lost my grandmother, just days after receiving my awards and at the same time as university registration. My grandmother raised me, so her passing filled me with grief and anxiety. Whilst mourning the loss of my grandmother, I had to navigate the university registration process alone, which was quite daunting as I wasn't familiar with the procedures. Despite initially enrolling in electrical engineering, I found the modules challenging and decided to switch my degree to BSc (Bachelor of Science) in mathematics and statistics. While I enjoyed the subjects and passed, I still felt unsatisfied. The following year, I changed my degree to a BSc in Biochemistry and Microbiology, which seemed more manageable and appealing.*

#### **Discovering my passion for teaching**

*In my quest for employment, I faced challenges that led me to pursue a Postgraduate Certificate in Education (PGCE). During this time, I discovered my passion for teaching. My first teaching practice provided valuable skills and insights into*

*effectively interacting with learners and educators. However, I encountered significant obstacles when my daughter fell critically ill with bronchial pneumonia during my second practice while I was also working on a major assignment. Despite these difficulties, I balanced my studies with her recovery. Completing my PGCE was immensely fulfilling, as I was pursuing a career that truly brought me joy.*

### **First Appointment: Initially nervous about teaching mathematics**

*After completing my PGCE in 2013, I applied to several schools. With the help of a relative, I secured an interview at Aspen Secondary School and was appointed as an SGB (School Governing Body) mathematics teacher, responsible for grade 8 and grade 9 mathematics. Shortly after starting the job, the principal recommended that I apply for a vacant position. I did so successfully and joined the OPTIMA/EPOCH math classes on a Saturday, earning extra income. In April 2013, I was appointed as a state-paid Mathematics teacher. Although initially nervous about teaching mathematics, I was also excited to pursue my passion and earn a living.*

### **I received mentorship to teach mathematics**

*I dedicated many sleepless nights to studying the content and practicing examples before entering the classroom. I reached out to the acting deputy principal for guidance on the math curriculum and strategies to teach certain topics, and he kindly agreed to mentor me during my first year of teaching. I identified topics I struggled to understand. He unpacked the concepts of the topics and demonstrated interactive methods I could use to teach my learners. The interactive and engaging strategies employed by the instructor facilitated a deeper comprehension of mathematical concepts. He initially encouraged me to articulate my understanding and collaboratively developed teaching methods that prioritised simplicity, ensuring that learners could enjoy and grasp mathematical principles effectively. The diagrams and objects he used to demonstrate how to teach geometry and measurement gave me great insight and I still use some of these techniques to teach mathematics.*

### **Working Together with my learners**

*I was deeply moved by the learners' eagerness to learn, so I assisted them during breaks, after school, and on weekends. They were enthusiastic about learning mathematics, and I was committed to helping them achieve their potential. I wanted my learners to understand math in a way that I hadn't when I was their age. I sat with learners in groups and explained topics they struggled and together we discovered and developed strategies to respond to mathematical problems. Working together with my learners boosted their confidence in mathematics and made them feel excited to attend mathematics classes. By the end of the year, all my classes achieved a 100% pass rate.*

### **I was declared Surplus**

*In 2014, I was one of seven teachers identified as additional to the establishment. The process was emotional and stressful as we needed to find schools with vacancies. A colleague and I ended up at Caspian Lake Secondary School, where the culture shock was significant. We were warned to keep our belongings close due to petty theft, and the atmosphere felt tense because of classroom violence. I taught math for grade 9 and math literacy for grades 10 and 11. Despite wanting to quit due to the challenges, I stayed committed for my two kids and financial responsibilities, determined to adapt to the new environment.*

### **Returning to Aspen Secondary**

*A few weeks later, my friend and I found ourselves seeking safety in a room because two gangs were fighting at the school. It was the scariest moment, trying to stay calm and survive as they walked by the room with guns and daggers. I left that school that day and took leave because I was scared to return. Unfortunately, while on my leave, my one-year-old son was severely burned and had to undergo a graft procedure. After seeking medical treatment for my son, I had to face going back to that school. To my surprise, they had already replaced me, and I was required to return to Aspen Secondary School.*

*Totally gob smacked by this experience of Ruth as a teacher. I could not help but ask the question: do teachers have to face such crimes in school and become victims? It broke my heart to hear about the hardships some teachers endure.*

*January (2024)*

### **The challenge of teaching new subjects in a new school**

*In August 2015, I learned that Silvercrest Secondary School was hiring teachers for vacant positions. Although the subjects did not match my qualifications, I welcomed the opportunity to teach Economic and Management Sciences, Life Orientation, and Creative Arts with support from the Head of Department. I found it challenging to engage with these subjects since I was mainly following the curriculum. I didn't enjoy teaching these subjects as it brought me no joy, and I struggled to relate to the content and provide a better understanding for the learners. However, the principal reassured me that I would be given more math classes the following year, as it was too late to disrupt the existing timetable.*

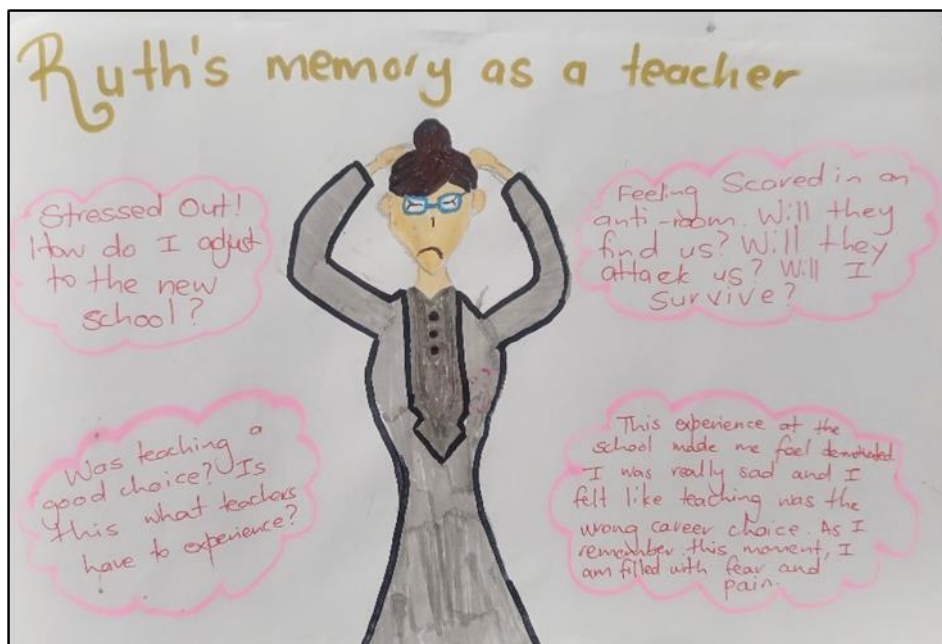
### **Growing in the mathematics department**

*I encountered difficulties during my first week at Silvercrest School, including large class sizes and discipline issues. The primary reason for the discipline was that I was a new teacher, and the learners were trying to test me. The poor discipline was also due to the subjects I was initially allocated, as learners did not take it seriously. To improve this, I sought guidance from colleagues and successfully implemented new discipline strategies. The deputy principal assisted me in calling parents and detaining learners during breaks. In addition, she identified certain learners who repeated a grade and influenced the poor discipline in classrooms. She counselled the learners and gave me the contact numbers of their parents should they not improve their behaviour. However, each year, I was given more math classes, which encouraged me to attend additional workshops, grow within the mathematics department, and take on FET mathematics. I also had the opportunity to convene the mathematics in grades 9 and 10 and moderate it at the school and cluster levels.*

### **Challenges during the COVID-19 Pandemic**

*The COVID-19 pandemic in 2020 forced schools to close, making it challenging to teach via WhatsApp and Zoom, especially since many learners couldn't afford data. I missed interacting with my learners and decided to pursue an Honours degree in*

*Teacher Development Studies. In 2021, I began my postgraduate studies while teaching a matric mathematics literacy class. This year was marked by both sorrow and success, as my entire family and I contracted COVID-19. This was a critical time because my grade 12 learners were writing their trials. When I returned to school, the love and support of my learners strengthened me, and I was able to guide them through their finals. When they received their results, it was a surreal moment, as we achieved a 90% pass rate.*

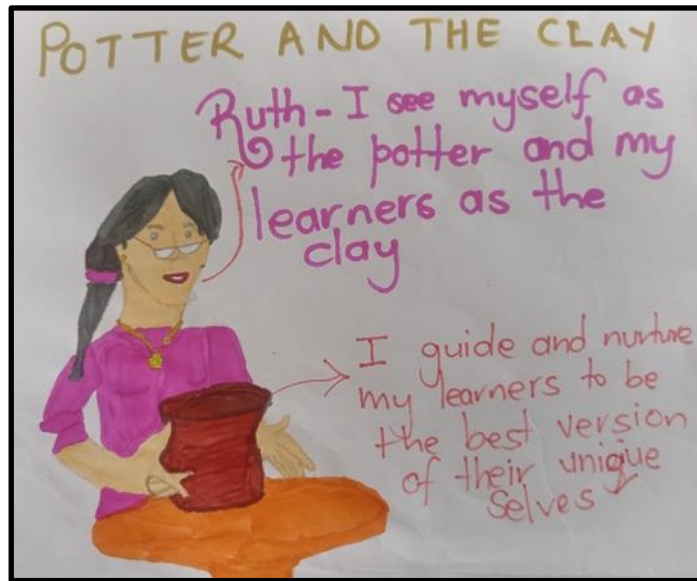


**Figure 7.4: Ruth's memory drawing as a teacher**

### **Creating a culture of learning to enjoy mathematics**

*The COVID-19 experience, including the loss of loved ones and isolation, helped me realise how important it is to value people and build strong relationships. I started thinking about how to help my learners create a culture of learning that helps them understand and enjoy math. Working closely with my learners made me see how important it is to learn from them and let them teach and learn from each other. By allowing learners to share their solutions on the board and take on both roles as learner and teacher I was empowering them to navigate problems in math. It was heartwarming to see learners who have trouble with math gain confidence and share their solutions to problems. Giving my learners independence and creating a comfortable environment*

*in math class opened up communication and led to more creative learning in math.*



**Figure 7.5: Ruth's self-portrait**

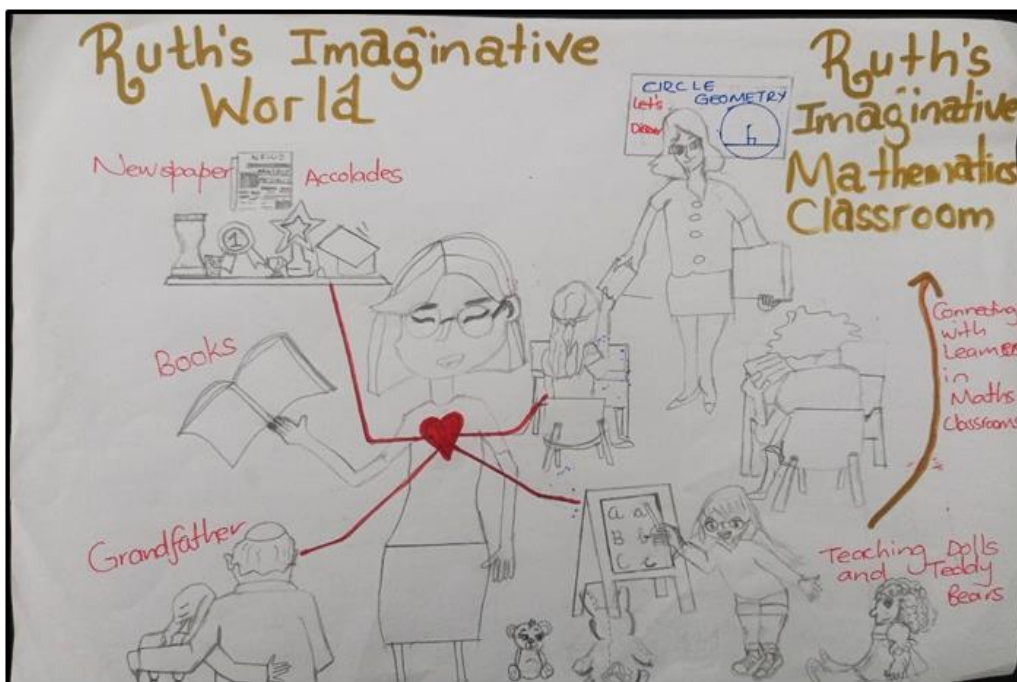
### **Shaping and nurturing my learner's growth**

*As a teacher, I see myself as a potter, entrusted with holistically shaping and nurturing my learners' growth. Just as each pot is unique, each learner possesses their individuality and potential, requiring care, patience, and compassion to develop. By getting to know each of my learners on a personal level, I can understand their difficulties and provide the necessary support to help them, thus building strong relationships with them. Apart from my learners having the opportunity to seek my support during breaks and after school, I have created WhatsApp groups to keep in contact with my learners. Learners have reached out to me for help with problems in mathematics and the challenges they face at home. Just like the potter feels pride when the vessel is completed, I feel pride and joy when my learners are successful in their endeavors.*

#### **7.2.2 Synthesis of Section A**

To summarise Section A of Ruth's reconstructed stories, I have created a diagram that best describes Ruth's personal and professional experiences. I selected keywords and phrases that highlight how Ruth displayed resilience by connecting with objects and people who gave her a sense of belonging and purpose. In the diagram, Ruth's heart is the primary focus. Through her connections with her dolls and teddy bears, she enters an imaginative world where she feels

a sense of belonging. Her bond with her grandfather makes her feel loved and protected. When she faces challenges at home, she focuses on her academic work, and her accolades and achievements give her a sense of purpose, looking forward to the next chapter of her life, which is her tertiary educational journey. Although Ruth completed a BSc, she found her belonging once she entered her PGCE and rediscovered her passion for teaching. Once appointed as a teacher, Ruth's love for teaching is demonstrated through her connections with her learners and her passion for guiding her learners to success by recreating the same imaginative environment she experienced as a child with her dolls and teddy bears.



**Figure 7.6: Drawing to analyse Ruth's narratives**

### 7.2.3 Section B: Interpretation and analysis of Ruth's story

In this section, I analyse and interpret Ruth's narrative. I respond to key research question 2: *What personal-professional experiences shape secondary school teachers' everyday practice in Mathematics Classrooms?* I selected a pantoum poem, which originates in Malaysia, due to its distinctive structure and the repetition of lines. According to Brannon (2011), the repetitive nature of a pantoum poem facilitates the exploration of significant themes. The Pantoum poem helped me identify key themes that respond to the research question and make explicit the meanings of Ruth's experiences.

*I found comfort in teaching my dolls and teddy bears  
I guided my toys through a world of imagination  
I felt loved and protected by my grandfather  
My achievements and accolades gave me renewed hope*

*I guided my toys through a world of imagination  
I was pursuing a career that truly brought me joy  
My achievements and accolades gave me renewed hope  
I was committed to helping my learners achieve their potential*

*I was pursuing a career that truly brought me joy  
Sought guidance from colleagues to manage discipline  
I was committed to helping my learners achieve their potential  
The love and support of my learners strengthened me*

*Sought guidance from colleagues to manage discipline  
Build strong relationships with my learners  
The love and support of my learners strengthened me  
I found comfort in teaching my dolls and teddy bears*

Noteworthy from the pantoum poem are the central key themes embedded in loving and supportive relationships with Ruth's teddy bears and dolls, her grandfather, and, professionally, her learners and colleagues. The key theme of the creation of an imaginative world underscores Ruth's spiritual connection in mathematics classrooms that makes her feel whole and content.

### ***7.2.3.1 Relationships offering a strong sense of belonging***

Turkle (2007) argues that individuals actively develop connections with objects, which are vital in deepening our self-understanding. Additionally, Mitchell (2017) highlights that objects are essential learning tools that greatly enhance connections within the educational sphere. Ruth found comfort in pretending to be a teacher with her dolls and teddy bears. These toys gave her a sense of belonging and enabled her to immerse herself in her imaginative world. In this imaginative world, she could feel heard, play, and belong. She connected differently in this world, where there was no judgment, no teasing, and no abuse.

*I found comfort in teaching my dolls and teddy bears, turning my bedroom into a vibrant classroom. In that role, I felt a strong sense of belonging and importance as I guided my toys through a world of imagination.*

The act of connecting with objects illustrates how they can enhance our understanding of ourselves and our learning experiences. Turkle (2007) and Mitchell (2017) argue that objects can foster personal connections and stimulate educational curiosity. Ruth's experiences of teaching her dolls and teddy bears highlight the insights presented by Turkle and Mitchell. These toys provided Ruth with a sense of belonging and purpose. Through imaginative role-play, she created an engaging environment that encouraged exploration. This desire to cultivate a comfortable space to connect with objects can shape the meanings of self, identity, and learning about the world.

#### ***7.2.3.2 Relationships offering emotional and social support***

Grandparents are important in families because they provide childcare, financial help, and advice. They often take on full-time caregiving roles, which is especially valuable for children facing difficulties like divorce, loss, or poverty (Dolbin-MacNab & Yancura, 2018). The bond between grandparents and grandchildren benefits both, offering emotional and social support to each generation. In the excerpt provided by Ruth, she acknowledges the significant role her grandfather played in her life, especially since her parents were separated. She emphasises the special bond she shared with him, highlighting how he made her feel loved and protected, while also recognising her academic potential.

*My grandfather recognised my disappointment and visited the school to inquire about the awards. He was my source of support and always defended me. I felt loved and protected by him, and he reassured me that I had the potential to excel academically.*

This narrative underscores the important role that grandparents play in providing support and stability within families, especially during difficult times. Dolbin-MacNab and Yancura (2018) emphasise how grandparents contribute to care, guidance, and emotional support, particularly for children facing challenges such as divorce or poverty. Ruth's experience exemplifies this dynamic, illustrating how her grandfather's unwavering support helped her during her parents' separation. His actions, like advocating for her at school and affirming her abilities, strengthened their bond and nurtured her confidence and sense of belonging. This illustrates

the mutual emotional and social benefits of strong grandparent-grandchild relationships.

### **7.2.3.3 Academic spaces as sites for affirmation and renewed hope**

Akabor (2021) notes that many South African schools reward learners for outstanding academic performance with visible tokens such as badges, trophies, and certificates. This practice recognises achievements and aims to motivate learners extrinsically, which may enhance their intrinsic motivation for better performance (Akabor, 2021). Ruth prioritised her academics in school instead of dwelling on the challenges she faced at home. Her recognition for her academic achievements inspired her to continue pursuing her career.

*I chose to keep the newspaper in which they were published as a memory of my accomplishment. The highlight of my schooling career was achieving a distinction pass. Additionally, I placed first in my class and received the Dux Award, Good Fellowship, and awards for English and Afrikaans. I take pride in overcoming the abuse I faced at home, studying while hungry, and managing multiple responsibilities. These achievements and accolades gave me renewed hope, and I looked forward to the next chapter of my life.*

Robinson, Gallus, Lee and Rogers (2019) describe retrospective awards as unexpected recognitions given after a task is completed, which can motivate recipients to strive harder by affirming and reinforcing their abilities. The extract from Ruth's narrative shows this clearly. She faced serious personal challenges, such as abuse, hunger, and many responsibilities, but she made her studies a priority. The awards she received, like the Dux Award and honours in several subjects, represented her strength and determination. These honours boosted her self-esteem and gave her hope for a better future. Her academic success became a powerful source of motivation for overcoming her difficulties.

## **7.2.4 Theme synthesis**

### **7.2.4.1 Positive relationships that provide love, support, and a sense of belonging**

Ruth's experiences highlight the importance of relationships and environments in nurturing belonging, emotional support, and hope. She used imaginative play with dolls and teddy bears to create a safe, judgment-free space where she felt connected. Her relationships with important figures like her grandfather provided significant emotional support. Her grandfather's love and belief in her academic potential boosted her confidence. Academic spaces also became sources of affirmation and motivation for Ruth, with her awards instilling pride and reinforcing her

determination to succeed. The connection Ruth shared with her toys, her relationship with her grandfather, and the focus on her academic journey and accolades illustrate the interconnectedness of belonging, support, and resilience in overcoming challenges.

In addressing the question: *How did Ruth's professional experiences shape her everyday teaching in mathematics classrooms?* The following themes were identified.

#### **7.2.4.2 Collaborative/Supportive professional relationships**

Ambrosetti and Dekkers (2010) describe mentoring as a supportive relationship in which mentors and mentees collaborate to achieve specific goals for the mentee's personal and professional development. Mentoring provides an opportunity in different contexts for novices to learn how to teach (Wang, 2001). Ruth, a novice teacher, sought assistance from the acting deputy principal to help her navigate the math curriculum and identify effective teaching strategies for specific topics. The deputy principal's willingness to mentor her underscores the importance of supportive relationships in fostering the development of novice teachers in the mathematics classroom.

*I reached out to the acting deputy principal for guidance on the math curriculum and strategies to teach certain topics, and he kindly agreed to mentor me during my first year of teaching. I identified topics I struggled to understand. He unpacked the concepts of the topics and demonstrated interactive methods I could use to teach my learners. The interactive and engaging strategies employed by the instructor facilitated a deeper comprehension of mathematical concepts. He initially encouraged me to articulate my understanding and collaboratively developed teaching methods that prioritised simplicity, ensuring that learners could enjoy and grasp mathematical principles effectively. The diagrams and objects he used to demonstrate how to teach geometry and measurement gave me great insight and I still use some of these techniques to teach mathematics.*

Mentoring is a collaborative relationship that promotes personal and professional growth for the mentee (Ambrosetti & Dekkers, 2010). This is particularly beneficial for novice teachers, who face numerous challenges as they begin their careers. Mentoring offers new educators' opportunities to learn and enact better teaching practices, develop pedagogical skills, and build confidence (Wang, 2001). The willingness of the deputy principal to guide Ruth in teaching mathematics and demonstrate interactive and engaging methods that *prioritised simplicity and*

*encouraged enjoyment of mathematics* encouraged Ruth and ensured she didn't feel isolated or fearful as a novice mathematics teacher. Ruth's experience exemplifies effective mentoring. She sought guidance from her acting deputy principal, recognising that his expertise would aid her development as she *still practices these techniques to teach mathematics*. His commitment to mentoring her highlights the importance of supportive relationships in a new educator's growth.

#### **7.2.4.3 Survival Mode in a violent schooling environment**

Violence in schools has detrimental effects on the culture of teaching and learning (Zulu, Urbani, Van der Merwe & Van der Walt, 2004). Acts of violence or criminality negatively affect both teachers and learners and thus interfere with the functionality of the school, including curriculum delivery. Le Mottee and Kelly (2017) point out that teachers play a pivotal role at all levels in the development of learners, but their safety is understated and often overlooked. Shields, Nadasen, and Hanneke (2015) concur with Le Mottee and Kelly (2017) regarding the lack of research on violence experienced by teachers and the influence it has on their well-being. Ruth had to endure a threat to her safety in a new environment that presented with theft and violence.

*A colleague and I ended up at Caspian Lake Secondary School, where the culture shock was significant. We were warned to keep our belongings close due to petty theft, and the atmosphere felt tense because of classroom violence. A few weeks later, my friend and I found ourselves seeking safety in a room because two gangs were fighting at the school. It was the scariest moment, trying to stay calm and survive as they walked by the room with guns and daggers. I left that school that day and took leave because I was scared to return.*

Drawing on Zulu et al. (2004) and Shields et al. (2017), violence at schools has a profound impact on teaching and learning and due to minimal intervention to support teachers, their well-being is adversely affected. Ruth, being a novice teacher with only two years' experience had to face a new school environment, where crime and violence were prevalent. The lack of intervention from both the school management and community is apparent, according to the evidence provided, such that outsiders entered the school with weapons to harm both learners and teachers. Ruth had to face crime within her classroom and the school environment whilst trying to teach and adapt to new learners in a new environment. Her choice to apply for leave

due to her safety being threatened satisfies the notion that there is minimal intervention to protect the well-being of teachers (Shields et al., 2017)

#### ***7.2.4.4 I sought guidance from colleagues to manage discipline: Classroom management knowledge***

Classroom management and discipline pose significant challenges for schools today (Tarman, 2016). One effective approach to improving classroom discipline is by employing various strategies to manage learner behavior (Tarman, 2016). Additionally, strategies for effective classroom management can be gained through peer collaboration (Tachie, 2022). Recognising that discipline was a challenge, Ruth decided to seek assistance from her colleagues to effectively manage large classrooms and improve learner behaviour.

*During my time at the school, I encountered difficulties, including large class sizes and discipline issues. To improve this, I sought guidance from colleagues and successfully implemented new discipline strategies. The deputy principal assisted me in calling parents and detaining learners during breaks. In addition, she identified certain learners who repeated a grade and influenced the poor discipline in classrooms. She counselled the learners and gave me the contact numbers of their parents should they not improve their behaviour.*

Managing classrooms and maintaining discipline are major challenges in schools, especially with large class sizes (Tarman, 2016). To tackle these issues, effective methods often include personalised behaviour management and working together with peers (Tachie, 2022). Ruth showed how important it is to collaborate by seeking advice from her colleagues to improve classroom discipline. By using strategies from her peers, she successfully managed challenges and improved learner behaviour and the use of “counselling” and forming partnerships with “parents” helped to positively remedy classroom discipline (Tarman, 2016). Ruth’s willingness to seek help and try new strategies shows how teamwork and getting feedback can help better classroom management challenges.

#### **7.2.5 Theme Synthesis**

The key theme that was identified upon analysing the narratives in response to research question 2: What are the professional experiences of secondary school teachers that shape their everyday teaching in mathematics classrooms is: *Negotiating challenges in mathematics*

*classrooms*. Ruth had to initially adjust to teaching mathematics as a novice teacher to learners who had multiple mathematics teachers. She had to bridge the knowledge gap and develop confidence in learners. She achieved this by seeking help from her senior colleague to better understand the curriculum and find appropriate methods to convey the content to learners. After being declared surplus in that school, she had to navigate herself in a new school environment that was prevalent in crime and violence. Her only option was to try and adjust; however, her safety was threatened. She finally found her niche in Silvercrest Secondary School, but also had to adapt to large class sizes and poor discipline. She sought assistance from her experienced colleagues and found strategies to better manage discipline in her classroom. Ruth's actions in negotiating challenges with pedagogical approaches, violence, and discipline shaped her resilient nature as a mathematics teacher.

### **7.2.6 Synthesis of Section B**

Upon reflecting on section B, I created a haiku poem to guide me in synthesising the themes. A haiku is a form of Japanese poetry consisting of three simple lines that evoke powerful meaning (Harr, 1975).

*Sense of belonging*

*World of imagination*

*Creative learning*

In response to research question two: "*What personal-professional experiences shape secondary school teachers' everyday practice in mathematics classrooms?*" I identified themes that are intertwined between personal and professional experiences. Connections with toys, her relationship with her grandfather, and valuing achievements and accolades shaped Ruth's personal experiences which have also influenced Ruth's approach to everyday teaching in mathematics classrooms. Despite facing marginalisation and abuse as a child, Ruth still displays her resilience by overcoming these challenges and thriving through them. Her act of creating an imaginative world with her toys and connecting with them through teaching them reflects when Ruth finds the same connection with her learners in mathematics classrooms. Her passion and joy for teaching are demonstrated in Ruth's creative methods to connect her learners with math and each other. She finds her belonging when she is in the classroom and her purpose to create an imaginative world in mathematics classrooms is realised.

### **7.2.7 Section C: Interpretation and Analysis of Ruth's everyday experiences**

In this section, I offer an interpretation and contextualisation of Ruth's narratives, specifically

addressing research question 3: “*How do secondary school teachers foster engaged pedagogy in mathematics classrooms?*” To tackle this research question, I employed Bell Hooks' concept of "Engaged Pedagogy" together with other scholars that support the conceptual understanding to scrutinise the day-to-day experiences of mathematics educators, examining how these experiences influence their pedagogical approaches and how the dynamic interplay between personal and professional experiences spurs introspection, ultimately fostering engaged pedagogy within mathematics classrooms.

#### ***7.2.7.1 Nurturing my learners' sense of purpose and self-worth***

Tack (2022) emphasises the importance of creating an engaged classroom space that allows learners to connect and collaborate freely with the teacher. Ruth identified her intellectual connection with her learners as they showed enthusiasm for learning mathematics and gave them a platform to share their learning with respectful boundaries (Weaver & Wilding, 2013). Ruth therefore chose to go beyond the prescribed time for teaching to assist her learners and help them realise their full potential. Her emotional connection is shown by her being “deeply moved” as presented in the excerpt.

*I was deeply moved by the learners' eagerness to learn, so I assisted them during breaks, after school, and on weekends They were enthusiastic about learning mathematics, and I was committed to helping them achieve their potential. I wanted my learners to understand math in a way that I hadn't when I was their age. I sat with learners in groups and explained topics they struggled and together we discovered and developed strategies to respond to mathematical problems. Working together with my learners boosted their confidence in mathematics and made them feel excited to attend mathematics classes.*

Ruth's dedication to helping her learners during and outside school hours demonstrates her commitment to their intellectual growth. Her emotional connection is evident in her empathy and care, “deeply moved” and her commitment to helping her learners (Tack, 2022). Ruth understood the learners' desire to learn mathematics as she was just as enthusiastic and hardworking as a learner. By dedicating her time beyond school hours, Ruth demonstrates her commitment to guiding her learners in achieving their potential and connecting with the subject beyond the curriculum. By further “working together with learners” Ruth shows that teaching beyond technique and methods is significant in mathematics classrooms (Jojo, 2019).

### **7.2.7.2 Creating a comfortable environment in math class**

The demonstration of “self-actualization” from teachers creates a climate for optimal learning that promotes mutual participation, risk-taking, and working together in the space of shared learning (Hooks, 1994). In the practice of freedom in education, both teachers and learners are allowed to share and confess. Engaged pedagogy seeks to empower both teachers and learners. Ruth, in her narrative, explains how she chose to work closely with her learners to create an engaged and comfortable learning environment in her math class.

*Working closely with my learners made me see how important it is to learn from them and let them teach and learn from each other. By allowing learners to share their solutions on the board and take on both roles as learner and teacher I was empowering them to navigate problems in math. It was heartwarming to see learners who have trouble with math gain confidence and share their solutions to problems. Giving my learners independence and creating a comfortable environment in math class opened up communication and led to more creative learning in math.*

This excerpt highlights the transformative potential of engaged pedagogy in fostering a collaborative and empowering learning environment. Teachers’ pursuit of “self-actualization”, as discussed by Hooks (1994), sets the tone for mutual participation, risk-taking, and shared learning. In this context, both teachers and learners are encouraged to contribute openly, creating a practice of freedom in education (Tack, 2022). Ruth’s narrative illustrates this approach in action, where she emphasises the value of learning from her learners and enabling them to learn from one another. By granting learners independence and fostering a comfortable and communicative atmosphere in her mathematics classroom, she facilitated more creative and meaningful learning experiences (Naidu, 2014).

### **7.2.7.3 Building strong relationships with learners**

The study conducted by Chauraya and Brodie (2017) resonates with Hooks' (1994) advocacy for a holistic approach to education that allows for interaction and collaboration. This holistic framework emphasises the integration of mind, body, and spirit, fostering an educational environment that nurtures the whole person and cultivates deep, meaningful engagement in the learning process. Soldaat (2019) states the significance of connecting with learners through forming relationships with them.

*By getting to know each of my learners on a personal level, I can understand their difficulties and provide the necessary support to help them, thus building strong relationships with them. Apart from my learners having the opportunity to seek my support during breaks and after school, I have created WhatsApp groups to keep in contact with my learners. Learners have reached out to me for help with problems in math and the challenges they face at home.*

This excerpt from Ruth's storied narrative highlights the importance of relationships with teachers and learners. Drawing on Chauraya and Brodie (2017) and Soldaat (2019), building holistic connections between teachers and learners fosters a learning environment that nurtures the whole person, promoting deeper engagement. The comparison of building relationships with learners to a potter shaping a vessel illustrates the teacher's role in carefully supporting learners, understanding their challenges, and providing the necessary guidance to help them succeed. Ruth's approach, inspired by Adler (2021), emphasises reaching beyond traditional classroom boundaries to form meaningful, supportive connections with learners.

### **7.2.8 Synthesis of Section C**

The themes presented highlight the transformative role of engaged pedagogy in fostering meaningful connections, empowering learning environments, and building strong relationships. Ruth exemplifies connecting with learners to recreate a more engaging, interactive, and collaborative mathematics classroom that transgresses the traditional mode of teaching (Hooks, 1994). Through her dedication to nurturing learners' potential, fostering their sense of purpose and self-worth, and creating a supportive atmosphere for collaborative learning (Naidu, 2014), Ruth embodies the principles of engaged pedagogy. Inspired by Hooks' (1994) concept of freedom, which emphasises mutual participation and risk-taking with respectful boundaries (Weaver & Wilding, 2013), Ruth's approach allows learners to develop independence and confidence (Adler, 2021). Additionally, she extends her care beyond the classroom by building personal relationships and providing holistic support. This aligns with the principles of engaged pedagogy and plays a crucial role in creating meaningful connections and supportive learning environments. Ruth nurtures the learners' sense of purpose and self-worth while fostering teamwork (Tack, 2022). By encouraging learners to participate and take risks, she helps them grow into more independent and confident individuals (Chauraya & Brodie, 2017)

### **7.3 Section D: Conclusion**

In this chapter, I presented a detailed analysis and interpretation of Ruth's personal and professional experiences as a secondary school mathematics teacher. The discussion in this chapter, as in the previous three chapters, responds to the three research questions guiding my understanding of Ruth's everyday experience as fostering engaged pedagogy in mathematics classrooms.

In section A, I accompanied the analysis of Ruth's narratives with a diagram of her recreating her imaginative world as a child in her mathematics classroom. Ruth found belonging when she was free to live in the imaginative world she created with her dolls and teddy bears. She felt a connection with her toys that made her feel loved and appreciated (Turkle, 2007). Ruth feels the same belonging when she is able to connect with her learners in her mathematics classroom.

In section B, I analysed and interpreted Ruth's narratives in response to research question two. Ruth's personal and professional experiences through her relationships with her grandfather, toys, teachers, colleagues, and learners shaped her everyday practice as a mathematics teacher. Her ability to cultivate an open heart whilst maintaining respectful boundaries is evident from the love and values she received from her grandfather and her teachers. Despite experiencing challenges as a child, learner, and teacher, Ruth successfully used her experiences to positively influence her connection with her learners in mathematics classrooms. The landscaping of her "teacher-self" is influenced by the various contextual factors she experienced, together with teaching diverse learners in different schools (Beauchamp & Thomas, 2009)

In section C, I presented a detailed analysis of how Ruth fosters engaged pedagogy in her mathematics classrooms. Her ability to create a comfortable environment by working closely with her learners and affording them autonomy to teach others is evident in her willingness to take risks and recreate the same imaginative world she experienced as a child. Ruth's imaginative world as a child inspired her passion and commitment to creating a comfortable and interactive classroom for her learners. She utilises the mathematics classroom as a space to connect with her learners. Intellectually, she engages with her learners by offering extra classes and dedicating time to learning and practicing new concepts before teaching them. Her emotional capacity is evident in the care and support she provides to her learners and the various emotions she experiences while teaching. Additionally, her spiritual connection shines through in the joyful moments she shares with her learners as they explore and make sense of mathematics together.

# **CHAPTER EIGHT:**

## **SYNTHESIS AND CONCLUSION**

### **AN ENGAGED MATHEMATICS CLASSROOM**

#### **8.1 Introduction**

This research study, titled: *Stories of Secondary School Teachers Cultivating Engaged Pedagogy in Mathematics Classrooms* was undertaken to explore the everyday experiences of secondary school teachers cultivating engaged pedagogy in mathematics classrooms. This study aimed to understand the stories of secondary school teachers and interpret how their personal and professional experiences shaped their everyday practice in cultivating engaged pedagogy in mathematics classrooms. Motivated by both a personal and research rationale, an interpretivist paradigm using a qualitative methodology was used as most appropriate for understanding the reality of the participants and the meanings they brought to the research context.

In this chapter, I revisit the personal, professional, and contextual rationales, emphasising how this study is situated within each component. I also present my insights and conceptual understanding derived from the literature review, alongside the conceptual framework and the narrative methodology employed. Key findings from the data analysis are discussed as well. Furthermore, I offer suggestions for future research and address policy implications. The chapter concludes with my reflective insights, culminating in a summary of the main themes presented.

The study composed of four secondary mathematics teachers' stories and highlighted their personal (past-present-future) experiences in mathematics classrooms. I explored the narratives of teachers' daily lives and practices to deepen my understanding of the specificities of each person's beliefs and how they may have enabled or not worked with and alongside learners to create a sense of care and connectedness for a meaningful and engaging mathematics classroom.

In doing this master's study and navigating the various research methods and processes, I have gained a deeper understanding of teachers working intently to cultivate an engaging pedagogy and develop interactive and inclusive mathematics classrooms. Teachers cultivating engaged pedagogy in mathematics classrooms teach beyond skills and techniques (Palmer, 1997). This

connected approach to teaching alleviates learners' fears and moves away from the traditional, isolating methods of mathematics instruction.

This narrative study gave me glimpses into the personal self of the teacher and the self-knowledge that was productively used to break down traditional barriers in mathematics classrooms where learners felt isolated, fearful, and demotivated. Teachers' daily struggles – personal, contextual, and professional – include the multiple forces pulling and pushing teachers and how each found personally meaningful ways to negotiate more engaged approaches to teaching mathematics, thereby transforming isolating and disconnecting classroom environments. I learned how teachers navigate challenges within diverse mathematics classrooms to foster connections with their learners in the mathematics classroom. Through the stories of four secondary mathematics teachers, I was able to understand the emotional and personal efforts they made to create opportunities that are joyful, playful, curious, and challenging by using both themselves and their learners as resources.

In the following section, I highlight the research processes I undertook in this study to generate a scholarly stance and positionality to develop a research focus, engage reflexively with the selection of literature I included, problematise the research design and methodology for generating teachers' stories and making scholarly sense of the storied narratives. I end the study with an interpretive understanding of secondary school teachers cultivating engaged pedagogy in mathematics classrooms. Drawing on teacher narratives as tools for my professional learning was critical for my everyday life as a practicing Mathematics teacher. Below, I offer a reflective glance at the scholarly processes I engaged with as a teacher-researcher and research participant.

## **8.2 Review of the Dissertation**

**8.2.1 Chapter One** offers an overview of the study and problematises the issue of mathematics classrooms and what teachers think, know, and do to teach differently and inclusively. As Jojo (2019) emphasises, the focus on mathematics results in South Africa places mathematics teachers under constant scrutiny. Chapter one traces the shift I made from a classroom practitioner to a teacher researcher theorising mathematics classrooms and has impelled my passion for rethinking mathematics teaching in diverse public schools. Importantly, I argue for opening the dominant understandings of strategies and skills that Mathematics requires to explore teachers' personal and professional experiences as a site for reimagining everyday teaching practices in mathematics classrooms. This chapter highlights

the need to surface teachers' stories and mundane everyday experiences as potent spaces for expanding what is possible.

**8.2.2 Chapter two** draws on relevant scientific articles and book chapters to generate scholarly conversations with key scholars to provide guidance and support for this study. Engaging with the scholarly ideas, debates, and methodological approaches used enables me to generate a complex understanding of the everyday lives of secondary school mathematics teachers.

The thematic nodes highlighted the importance of teachers' lived experiences, Mathematics teachers' experiences connecting with SCK and PCK. Teacher-learner relationship experiences, and Teachers' experiences of engaged pedagogy in mathematics classrooms. Discussing these themes helped develop the conceptual framework for the study. This chapter illustrates why I chose to go beyond studying teaching skills and techniques to focus on the teacher self as the site for understanding what Hooks (1994) refers to as "engaged pedagogy." Drawing on Beauchamp and Thomas (2009) that teacher's identity is fluid and multifaceted and is continuously shaped and reshaped through experiences and varying contexts, this study highlights how the interplay of the personal identity (values and beliefs) and professional (contexts) are inextricably interwoven and continues to be landscaped through lived experiences. While Hooks (1994) argues for engaged pedagogy in a connected classroom, Weaver and Wilding's five dimensions of engaged teaching assist me in explaining what elements are required to engage pedagogy in a mathematics classroom.

### **8.2.3 Chapter Three**

In this chapter, I adopted a narrative inquiry approach within the interpretivism paradigm, which allowed me to understand the experiences of secondary school teachers and how these experiences influence their practice in promoting engaged pedagogy in mathematics classrooms. The stories were derived from data I collected from different teachers using various methods and strategies to make meaning of the stories. These arts-based methods included memory drawing, artifact inquiry, and self-portraiture, along with unstructured interviews. Generating the field texts for the narrative inquiry evoked emotions for me as a researcher and the teacher participants who reflected on experiences as learners and teachers in mathematics classrooms. I utilised artefacts inquiry, memory drawings, collage inquiry, and interviews to create a space for the teachers to recall and revisit their past, enabling them to share in-depth stories about their daily experiences. Arts-based methods were chosen as they best suited this

study that adopted a narrative inquiry approach to evoke memories of past-present-future of teacher participants. This methodological approach enhanced my understanding of the world of secondary school mathematics teachers and their teaching practices. Additionally, the diverse methods of data generation helped ensure that the stories conveyed were richly textured with the complexity of everyday experiences and served as authentic sources to make narrative texts valid, believable, and credible. This methodological approach enhanced my understanding of the world of secondary school mathematics teachers and their teaching practices.

#### **8.2.4 Chapter Four, Chapter Five, Chapter Six, and Chapter Seven**

These four chapters comprise the data analysis for this study. Each chapter focused on a separate participant and was divided into four sections: Section A, Section B, Section C, and Section D. In Section A, I presented the reconstructed narratives of the participants in response to the first research question: *What are the stories of secondary school mathematics teachers' everyday experiences?* In addressing the research question, participants shared their past and present experiences in mathematics classrooms. All four participants reported challenges such as feelings of separation, isolation, embarrassment, and a lack of connection with their mathematics teachers. Interestingly, none of the participants initially chose to become teachers. However, as learners, they developed a passion for the subject, which ultimately influenced their decision to pursue a career in teaching mathematics. Additionally, all four participants experienced challenges in mathematics classrooms but chose to negotiate these challenges to create more connected, interactive, and joyful spaces for learners to participate freely.

In Section B, I provided a discussion interpreting the narratives from Section A, aimed at addressing the second research question: *What personal-professional experiences shape secondary school teachers' everyday practices in mathematics classrooms?* In analysing the narratives, several key themes related to relationships were identified. Peter's connections with his sister, mathematics textbook, math teacher, learners, colleagues, and parents influenced his transition from a traditional approach to a more playful style, creating a more engaging environment in mathematics classrooms. Corah's relationships with her sisters, mathematics and economics teacher, and her learners across different schools and countries enabled her to recognise her ability to embrace challenges, ultimately fostering classroom spaces that encouraged critical thinking in mathematics. Zoe's bonds with her grandfather, dictionary, charts, learners, and colleagues enhanced her understanding of creativity and enthusiasm for

teaching mathematics. Similarly, Ruth's connections with her grandfather, toys, teachers, learners, and colleagues shaped her daily teaching practices by creating imaginative spaces to engage her learners in mathematics classrooms.

In Section C, I analysed the reconstructed narratives using the conceptual framework applied in this study to respond to the third research question: *How do secondary school teachers foster engaged pedagogy in mathematics classrooms?* In analysing the participants' narratives in response to this research question, it became clear that there is a need to connect with learners beyond the confines of the curriculum. Peter, Corah, Zoe, and Ruth reflected on their experiences and discussed how they had to transform their mathematics classrooms to be more playful, challenging, creative, and imaginative. This approach enabled learners to engage actively and construct their own understanding of mathematics.

Finally, Section D offered an overall synthesis and conclusion for each chapter and summed up the key learnings from the scholarly perspective and the conceptual framing.

**8.2.5 Chapter Eight** This chapter serves as a conclusion to the entire research study and provides an overall study. I also articulate interpretations and learnings from the study. My reflections are provided alongside key personal and professional insights obtained from this study. Additionally, I provide recommendations and considerations for future inquiries in this field.

### **8.3 Methodological Reflections**

This study drew on a narrative inquiry approach. My objective as a narrative inquirer was to collect rich, descriptive qualitative data in the form of participant stories. In this endeavour, I acknowledged how addressing three key tenets of narrative inquiry gave me access into the everyday life of secondary school mathematics teachers:

- Temporality - provided insight into how the past and present experiences of participants have shaped their everyday teaching as mathematics teachers.
- Sociality - underscored the importance of the relationships between the participants and me, a thorough understanding of these dynamics was essential for grasping the nature of the stories shared.
- Place - highlighted the necessity of establishing a welcoming environment that encouraged participants to share their narratives without fear of judgment. Furthermore,

the setting played a significant role in influencing the depth and detail of the stories articulated by participants.

In line with the three key principles, I prioritised creating safe and comfortable spaces for my participants to share their personal and professional stories of self. I reached out to them in advance to schedule meetings at times that suited their availability. Additionally, I allowed participants to choose locations where they felt at ease and free from intimidation. Most importantly, I presented myself as both a researcher and a mathematics colleague genuinely interested in their experiences. As I reflect on the study, I realise that I would have appreciated more time to engage with my participants on both a personal and professional level. Meeting in a social setting would have created a more conversational and informal atmosphere compared to our interactions at school. However, I needed to respect their preferred space and social dynamics.

My reflective knowledge of their stories, along with rich descriptions of secondary school mathematics teachers, enabled me to deepen my understanding and create an authentic representation of each participant's experiences and everyday practices as mathematics teachers in secondary schools.

As a narrative inquirer, I continuously questioned my subjective positioning and beliefs that seeped through to shape what I was selecting and leaving out and considered how they might influence the stories I constructed based on each participant's input. After transcribing the stories, I asked each participant to review their narrative to ensure its authenticity and drew on the support of my critical friends to give me feedback on the storyboards I developed for each participant.

Through conducting this narrative inquiry, I have gained a deepened awareness and understanding of how mathematics classrooms can become spaces of possibilities for all learners. Employing arts-based methods opened up imaginative spaces for teachers to express themselves and their feelings in tangible ways. Thinking creatively about what they are and do in the face of various challenges, inspired by them to strive to move beyond traditional, singular approaches to teaching mathematics.

During my interactions and conversations with the participants, they expressed their appreciation for the arts-based methods I employed and found them interesting and creative.

They also emphasised the importance of sharing their personal stories and discussing in an artful way their ideas and desires for what is possible in the future for mathematics teaching and how these experiences have influenced their classrooms. Participants were appreciative of the openness and care they experienced, which enabled them to reflect deeply on their memories and share their feelings in a way that they felt comfortable. As the researcher and insider in this master's study, I learned the importance of drawing on personal and professional stories that broadened my thinking, allowing me to reach new understandings beyond my current perspective.

## **8.4 Summary of Key Personal and Professional Learnings**

The research questions guided my understanding and interpretation of the key personal and professional learnings for this study.

### **8.4.1 Teachers' storied lives as critical tools for teacher professional learning about Mathematics Classrooms in public schools**

In the process of composing narratives of secondary school mathematics teachers' experiences, it was vital to prioritise the voices of my participants in the development of their stories. To underscore the significance of their perspectives (Polkinghorne, 1995), I presented their accounts in the first person and italicised the text. I was deeply aware of the social context in which the retelling happened, ensuring the narratives were detailed, nuanced, and contextually rich. The dimension of time and space further enriched the relational text that was generated and represented by the narrative inquirer. This dynamic contributed to the creation of narrative texts that are detailed, nuanced, and contextually rich.

The descriptive narratives with personal artefacts and drawings provide readers with an opportunity to engage with the complex realities, feelings, and emotions expressed in narrative and artful modes. Through the reconstruction of these storied narratives, I developed a more three-dimensional understanding of how four secondary school teachers' stories of self and their derived meaning played out in their position as teachers in their everyday teaching practice. My analysis of these stories facilitated an appreciation for the diverse personal and professional identities of the teachers, as well as the nuanced values, beliefs, and perspectives that significantly influenced their efforts to cultivate engaged pedagogy within mathematics classrooms. Furthermore, these narratives allowed me to establish an emotional connection with the participants as I listened to the stories and made sense of their lives, and their past-present-future experiences. In this study, the future experiences of mathematics teachers, which

remain unexplored, are shared and presented to potentially enhance how they cultivate engaged pedagogy in their classrooms. The insights provided by participants in this study indicate that fostering relationships with learners and implementing pedagogical techniques beyond the standard curriculum can significantly enhance collaboration and engagement within mathematics classrooms.

This study has augmented my comprehension of the significance of storytelling in revisiting and reflecting on past, present, and future experiences as valuable opportunities for developing an understanding of engaged pedagogy in mathematics education (Adler, 2021).

#### **8.4.2 Personal-Professional experience of secondary school teachers that shape everyday practice in mathematics classrooms**

The second research question I addressed was, *What personal - professional experiences shape secondary school teachers' everyday practice in mathematics classrooms?*

Chen (2024) points out that many current studies often neglect the connection between past and present experiences, as well as how this connection affects teachers' everyday practices and their desires for the future. Palmer (1997) argues that teaching stems from the “heart” and transcends mere technique. Hooks (1994) supports Palmer's viewpoint, asserting that teachers need to move beyond traditional teaching methods and strive for “self-actualization.” Weaver and Wilding (2013) assert that to establish engagement, teachers must be compassionate and reflective and allow risk-taking whilst maintaining respectful boundaries.

Peter's first year of teaching was significantly influenced by observing his high school mathematics teacher. As he reflected on his own teaching practice, he embraced his playful nature, which became a prominent feature of his math classroom. Additionally, his informal mentoring relationship with his supportive and caring sister played a crucial role in shaping his nurturing approach as a mathematics teacher. Corah's curious, challenging personality and her relationship with her sisters played out in her professional experiences as she thrived on challenges and recreated herself in the mathematics classroom to create a challenging environment for her learners.

Zoe's creative and independent thinking and connection with her books and handmade charts as a learner shaped her interaction with her learners in mathematics classrooms. She guided her learners to be self-reliant, resourceful and develop charts using textbooks to connect with

mathematics concepts. Learners engaging in self-inquiry and as sources of knowledge opened up engagement and participation. Ruth's imaginative world, created by her love for fiction during her traumatic childhood experiences, is prevalent in the creative and interactive classroom she develops to create a sense of belonging. Her interweaving personal and professional experiences shaped the relationships she shared with her learners in the safety and comfort of her mathematics classrooms. Learners experiencing a sense of care in the safe classroom space could imagine themselves differently in Ruth's sacred classroom.

Teachers' self-knowledge offers an affirmative and ethical space to reimagine teacher-learner relationships beyond just being content deliverers. Hooks (1994) suggests that teachers should connect with their learners beyond just the lessons in the classroom. Teachers can draw on their embodied feelings and tacit ways of knowing to be different kinds of teachers. Teachers' personal experiences and connections with (soccer balls, books, and charts) help to create alternate ways for more engaging, joyful, and imaginative mathematics classrooms.

#### **8.4.3 Secondary School Mathematics: Navigate complex educational spaces to cultivate engaged pedagogy in mathematics classrooms**

The third research question focused on how secondary school teachers' personal and professional experiences influenced their everyday teaching practices in mathematics classrooms. Adler (2001) emphasises the importance of teachers using their experiences to engage with learners and navigate the complexities of mathematics teaching. Similarly, Xie and Cai (2021) highlight the strong link between teachers' beliefs and their teaching experiences. Graven and Lerman (2020) suggest that these experiences play a key role in shaping teachers' personal and professional identities. By analysing teachers' stories of their everyday lives, this study was able to make critical links with how teachers' personal and professional experiences shape their everyday teaching. Drawing on key scholars, this study enabled me as a researcher to understand how teachers negotiate challenges to form relationships with their learners to recreate a safe, connected, and interactive mathematics classroom for their learners. Upon interpreting the narratives, critical links of reimagining self to create playful, joyful and imaginative mathematical classrooms were made.

- Peter's playful nature, which was initially masked by traditional approaches in a constraining and conservative school culture, ultimately serves as a source for fostering a joyful and engaging learning environment in a different school. He connected with his learners on an emotional level by reaching out to them, on an intellectual level by

focusing on assisting learners during breaks, after school, and weekends, and by enhancing his teaching methods. On a spiritual level, he felt a sense of joy and peace, and on an emotional level, he felt like part of the family, with a sense of belonging and connection (Hooks, 1994). It is important to note that while connecting with the learners, he maintained respectful boundaries and practiced reflection by engaging the self-observer (Weaver & Wilding, 2013)

- Corah's questioning nature and curiosity as a middle child were initially suppressed at home as well as at school by a conservative, traditional mathematics teacher. However, through the positive influence of her economics teacher, she draws on her curious ways as a powerful resource to transform her classroom into a space where learners experience the freedom to challenge, question, and be creative (Hooks, 1994). She connected with her learners both emotionally, by creating an inviting atmosphere, and intellectually (Hooks, 1994), by employing differentiated teaching methods, all while maintaining respectful boundaries (Weaver & Wilding, 2013).
- Zoe's profound commitment to education, driven by her aspiration to overcome poverty, has significantly shaped her academic journey. Even as a novice educator, she has successfully established a classroom environment that fosters interaction, creativity, and a dedication to learning. Her persistent guidance and encouragement enable her learners to reach their full academic potential, reflected in her emotional investment in their well-being and her intellectual preparations for teaching (Hooks, 1994). This is achieved through her openness and commitment to self-reflection (Weaver & Wilding, 2013).
- Ruth's sense of belonging is rooted in her caring and compassionate relationships with her learners. She feels connected to them emotionally through her support and care, intellectually by dedicating time to study and enhance her teaching methods, and spiritually as she feels joy when her learners succeed (Hooks, 1994). Ruth fosters this world by engaging in self-reflection, cultivating an open heart to value people, building strong relationships, and maintaining respectful boundaries (Weaver & Wilding, 2013).

It is important to recognise that mathematics teachers face ongoing pressure from the school

and provincial departments to achieve favourable results (Jojo, 2019). As a result, mathematics is often viewed as isolated, daunting, and intimidating (Wright, 2017). However, this study focused on the personal experiences of secondary school teachers and how they navigated challenges to create more interconnected mathematics classrooms and learners who experienced joyful learning. These teachers embraced playful approaches (Peter), challenged existing traditional beliefs (Corah), demonstrated zeal and creativity (Zoe), and created classrooms as imagination spaces for being different mathematics learners (Ruth).

### **8.5 Conceptual Contribution**

This study enhanced my understanding of how mathematics teachers' personal and professional experiences shape their everyday practices and how these experiences contribute to creating a more connected, interactive, and engaged mathematics classroom. Although mathematics teachers are often motivated externally by results, this study revealed that they can navigate challenges and foster engaged pedagogy in their classrooms.

The research found that secondary school teachers' past personal experiences are interlinked with their professional experiences, and both types of experiences influence their daily practices in mathematics classrooms. By employing a conceptual framework informed by Hooks (1994) and Weaver and Wilding (2013), I was able to analyse and interpret how secondary school teachers connect with their learners to promote engaged pedagogy.

This study highlights the shift from viewing teachers as the sole source of mathematical knowledge and implementers of curriculum to a broader view that enhances and recognises teachers' embodied feelings and stories of self, and their creative, challenging ways as valuable resources for enabling relationships of care and respect between teachers and learners, as well as among learners. Creating classrooms as imagination spaces, as spaces for curiosity, and playfulness, and breaking traditional top-down teacher-centered approaches makes for more connected and engaging experiences in mathematics classrooms. This narrative study of teachers' teaching mathematics in public secondary schools illuminates the nuanced, entangled personal and professional interconnections as productive spaces for self-knowledge creation and a source for cultivating engaged pedagogy. Through a deepened conceptual understanding in this study and the identification of spiritual components that remain underexplored in existing literature, I interpret Peter's *playfulness*, Corah's *curiosity*, Zoe's *zeal*, and Ruth's *imagination* as integral to fostering spiritual connections within mathematics classrooms.

These elements transform the classroom climate from one characterised by fear and isolation to an environment that is inviting and engaging. By cultivating these dispositions, educators create spaces in which learners develop a sense of connection to mathematics, thereby enhancing both their comfort and their engagement with the discipline.

### **8.6 Suggestions for further research**

The study conducted by Chauraya and Brodie (2017) investigates how teacher-learning communities support the professional growth of mathematics educators. They emphasise that collaborative discussions enhance teachers' and learners' understanding of and create meaningful learning experiences for learners and teachers. As Chen (2014) indicates, existing studies often neglect the exploration of the influence and interconnection between teachers' past and present experiences. This research specifically examines the personal and professional narratives of four secondary school teachers and analyses how these experiences inform their daily instructional practices in mathematics classrooms within South Africa. However, this study is a narrative inquiry and draws on four secondary school teachers and their lived experiences as teachers working in Chatsworth. While results cannot be generalisable, this study is generative to other teachers and their context-specific experiences. Further research may include both primary and secondary school teachers in both public and private schools in various regions of KwaZulu-Natal. Engaging with narratives from a broader sample size of teachers about their experiences in cultivating engaged pedagogy in mathematics classrooms can provide valuable insights. Further research could explore innovative teaching strategies, technology integration, and culturally responsive approaches to enhance learner engagement and deepen understanding of mathematics.

### **8.7 Implications for Policy**

The study conducted in public schools in South Africa emphasised the role of mediators as displayed by the four participants. According to the Education Labour Relations Council (ELRC, 1998), teachers are required to support learning by addressing the diverse needs of learners, particularly those facing challenges, and by creating engaging and contextually relevant environments. Moreover, teachers must communicate effectively while respecting individual differences and demonstrate strong subject knowledge along with appropriate teaching strategies for the South African context. The "Norms and Standards for Teachers" (SACE, 2018) highlight the crucial role of educators as facilitators of learning. They bear the responsibility of establishing environments that promote meaningful engagement and

comprehension, especially within mathematics classrooms. Reflecting on the findings of this study, the role of a mediator of learning goes beyond mere content delivery. It requires incorporating personal and professional experiences to foster connections, accommodate diverse learner needs, and navigate the complexities of classroom dynamics. This perspective underscores the importance of teacher identity, beliefs, and collaboration in shaping effective mediation practices.

To make this policy actionable, the findings advocate for the integration of structured professional development opportunities that prioritise reflective practice and the establishment of collaborative learning communities. Policymakers must understand that dictating content to be covered in a fixed timeframe cannot always be realistically implemented in all classrooms due to diverse learner needs. Furthermore, policies are often designed with a one-size-fits-all approach, which may not suit all mathematics classrooms. In addition, Jojo (2019) suggests that emphasis is placed on results solely in mathematics and teachers need to achieve these desired results within stipulated timeframes and protocols. Therefore, it is essential to recognise that teachers need time and space to cultivate environments that address the learning needs of all learners. By fostering environments where educators can share experiences, co-develop strategies, and critically analyse their roles, the policy will better align with the practical realities of mediating learning. Additionally, providing resources and frameworks that correspond to the various contexts of mathematics classrooms will ensure that the educator's role as a mediator is not merely an aspirational goal but rather a practical and impactful aspect of their profession.

### **8.8 Implications for Practice: School Level**

This study emphasises the importance of examining teachers' sharing their past-present experiences as part of professional learning and development taking place in workshops and professional learning communities. Creating space for the teachers' stories of the mundane everyday encounters creates a fertile platform for sharing, engaging in meaningful dialogues, and getting feedback expands the funds of embodied and tacit knowledge teachers have which can reconnect them to their love for mathematics content and mathematics knowledge (Adler, 2021). Reinventing themselves as passionate mathematics teachers can influence their teaching practices that connect with learners. Additionally, it advocates for a focus not only on skills and techniques that are recommended as the panacea for all challenges but also to go beyond one-size-fits-all to approaches that teachers find meaningful and essential for relational

connections with their learners. This focus on the classroom climate and conditions for inclusivity, engagement, and voice may transform the often isolated and intimidating environment of mathematics into a more interactive and engaging relationship with learners (Gailard, 2019). Department heads of Mathematics, or educators assigned on a rotational basis, should collaborate to develop interactive and engaging programs and practices. This collaboration will facilitate the exchange of ideas and the sharing of best practices. A variety of assessment tools should be employed, including classroom observations, teacher reflections, learner feedback, and measurements of classroom engagement levels.

## **8.9 Concluding Reflections**

After collecting data and generating storied data from the participants and addressing the three research questions, I created a Haiku poem to crystallise my understanding of how secondary school teachers cultivate engaged pedagogy in mathematics classrooms.

*Mathematics is challenging*

*Work together with learners*

*Forming connections*

According to the reviewed literature and my extensive experiences as both a learner and an educator, mathematics is frequently regarded as an isolated, intimidating, and challenging discipline. Nevertheless, through the findings of this study and my pedagogical experiences, I have come to understand that fostering collaboration with learners and establishing meaningful connections with them are vital components of engaging pedagogy within mathematics classrooms.

This study has provided me with a different perspective to make sense of teaching mathematics. I realised that a significant shift is needed from the traditional approach, where teachers serve as the sole source of mathematical knowledge, to one that engages learners as valuable resources. This change allows for stronger relationships between teachers and learners, as well as among learners themselves, creating a more connected and engaging environment in mathematics classrooms.

As I reflect on this journey, I am filled with a range of emotions. I have faced personal challenges, professional hurdles, and commitments while completing my master's studies. Through prayer and discipline, I made the conscious choice to prioritise my professional learning and to kindle a sense of

belonging as I reignite my passion for expanding my knowledge and considering how to foster engaging pedagogy in mathematics classrooms as a teacher coach and mentor.

One of my greatest achievements was allowing my children to become critical friends by reading my dissertation and sharing their opinions and thoughts about my study. Their understanding and positive feedback motivated me to complete my work. While I acknowledge my roles as a wife, mother, and teacher, this study has helped me recreate my love of learning and reimagining myself and realigning the personal-professional intersections in my new position and purpose as a researcher. In this study, I have learned that teaching mathematics involves more than simply understanding the curriculum and striving for high pass rates. It is essential to create classrooms that are playful, challenging, creative, and imaginative. By doing this, we can connect with our learners on intellectual, emotional, and spiritual levels, thereby enhancing the pedagogical experience in mathematics classrooms.



Figure 8.1: Memory Drawing – Reimagining my passion for Learning

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# **APPENDICES**

**APPENDIX 1: ETHICAL CLEARANCE - UKZN**

**APPENDIX 2: PERMISSION FROM THE DEPARTMENT OF EDUCATION**

**APPENDIX 3: DATA GENERATION GUIDELINES AND INSTRUMENTS**

**APPENDIX 4: LETTER TO THE PARTICIPANT**

**APPENDIX 5: PARTICIPANT INFORMED CONSENT DOCUMENT TO CONDUCT RESEARCH**

**APPENDIX 6: LETTER TO THE PRINCIPAL**

**APPENDIX 7: PRINCIPAL DECLARATION**

**APPENDIX 8: TURNITIN ORIGINALITY REPORT**

## APPENDIX 1: ETHICAL CLEARANCE - UKZN



05 December 2023

**Logandrie Beser (205519455)**  
School Of Education  
Edgewood Campus

Dear L Beser,

**Protocol reference number:** HSSREC/00006412/2023

**Project title:** Stories of secondary school teachers cultivating engaged pedagogy in mathematics classrooms.

**Degree:** Masters

### Approval Notification – Expedited Application

This letter serves to notify you that your application received on 08 November 2023 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

**Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.**

This approval is valid until 05 December 2024.

To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

HSSREC is registered with the South African National Health Research Ethics Council (REC-040414-040).

Yours sincerely,



Professor Dipane Hlalele (Chair)

/dd

#### Humanities and Social Sciences Research Ethics Committee

Postal Address: Private Bag X54001, Durban, 4000, South Africa

Telephone: +27 (0)31 260 8350/4557/3587 Email: [hssrec@ulzn.ac.za](mailto:hssrec@ulzn.ac.za) Website: <http://research.ukzn.ac.za/Research-Ethics>

Founding Campuses:  Edgewood  Howard College  Medical School  Pietermaritzburg  Westville

INSPIRING GREATNESS

## APPENDIX 2: PERMISSION FROM THE DEPARTMENT OF EDUCATION



**KWAZULU-NATAL PROVINCE**  
EDUCATION  
REPUBLIC OF SOUTH AFRICA

OFFICE OF THE HEAD OF DEPARTMENT

Private Bag X9137, PIETERMARITZBURG, 3200  
Anton Lembede Building, 247 Burger Street, Pietermaritzburg, 3201  
Tel: 033 392 1051

Email: buyi.ntuli@kzndoe.gov.za

Enquiries: Mrs B.T. Ntuli

Ref.:2/4/8/7612

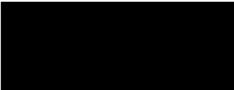
Mrs Logandrie Beser  
72 Road 726  
**MONTFORD CHATSWORTH**  
4092

Dear Mrs Beser

### PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: **"STORIES OF SECONDARY SCHOOL TEACHERS CULTIVATING ENGAGED PEDAGOGY IN MATHEMATICS CLASSROOMS."**, in the KwaZulu-Natal Department of Education institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the Intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from **23<sup>rd</sup> October to 31<sup>st</sup> December 2025**.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Mrs Buyi Ntuli at the contact numbers above.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report/dissertation/thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

  
Mr GN Ngcobo  
Head of Department: Education  
Date: 23<sup>rd</sup> October 2023

GROWING KWAZULU-NATAL TOGETHER

## APPENDIX 3: DATA GENERATION GUIDELINES AND INSTRUMENTS

### 3.1. Memory Drawing

**Prompt 1:** Think about a positive or negative experience you had as a learner in a mathematics class.

**Prompt 1:** Think about a positive or negative experience you had as a student teacher or early teacher teaching mathematics.

#### **Guidelines and Instructions**

Participants will be asked to recall their personal experiences as learners in primary school or high school and the others as mathematics teachers. Each participant will be required to make two separate memory drawings. The following instructions and prompts will aid in the drawing.

#### **Drawing One**

- ❖ Reflect on your primary or high school experience as a learner in your mathematics class.
- ❖ Think about a positive or negative relationship or experience you have had as a learner.  
Try to remember and revisit in detail your thoughts, feelings and personal meanings attached to this unique experience.

#### **Drawing Two**

- ❖ Reflect on your early teaching experience as a mathematics teacher.
- ❖ Think and link how the experience you had as a learner either influenced a positive or negative experience you had in your mathematics classroom. Try to recall in detail your thoughts, emotions, and personal meanings attached to this experience.

#### **Instructions for Memory Drawing**

- ❖ Two pages will be required for this activity.
- ❖ Using either a pen, pencil, or crayon of your choice draw an image for each experience described above separately on each page.
- ❖ You are allowed to add words, phrases, or speech bubbles to your drawings.
- ❖ Provide suitable titles for each drawing.
- ❖ Reflect on your thoughts, feelings, and choices of color or word uses and attach symbolic meanings to your memory drawings.
- ❖ Write a short paragraph to describe each memory drawing or send a voice note to explain the memory drawings.
- ❖ Participants can forward their drawings and write-up or voice notes using either WhatsApp or email.

### **Other Considerations**

- ❖ Neatness, accuracy, or expertise is not necessarily is not the focus of the memory drawing, but rather the experience and meaning attached to the drawing.
- ❖ Participants will be guided and reminded to make use of pseudonyms and not use real names and places to protect the rights and dignity of other individuals and institutions.

### **3.2. Artefact Enquiry**

#### **Prompt**

Choose one or two objects from either their classroom or school environment that you use every day.

#### **Guidelines and Instructions**

They will be asked to share why they chose those objects reflect and revisit both positive and negative experiences, and stories, and attach any sentimental meaning associated with their chosen objects. The participants will then be required to write – up about the objects they chose and share a short voice note or video. They will be reminded and reassured that they must only share experiences and stories that they are comfortable with sharing. The write–up must include a title and picture of the objects chosen.

**The following Prompts and Questions will assist to facilitate the activity with comfort and understanding.**

1. What significant meaning does each of the selected objects have with your relationship with learners in mathematics classrooms?
2. How does each object evoke memories and feelings of you working together with your learners in mathematics classrooms?
3. How do these objects symbolise the cultivation of engaged pedagogy in your mathematics classroom?
4. What is the link between these objects and the climate of your classroom and how mathematics, does it connect with how mathematics is taught and learned?

### 3.3. Self-Portrait

**Prompt: Consider yourself presently in a Mathematics classroom.**

#### **Guidelines and Instructions**

Participants will be asked to draw themselves as mathematics teachers presently in a classroom. Participants will be required to describe their present relationships with learners and how they work together with learners in mathematics classrooms. The following prompts and instructions will help to guide participants in this activity.

#### **Guidelines and Prompts for Self-Portrait**

- ❖ Using an A4 page and a pencil, colored pencils, or crayons create an image of yourself as a mathematics teacher.
- ❖ Add to the image any similarity or difference of your present self in comparison to being a learner.
- ❖ Write a few sentences to describe the relationships and context of working together with learners in Mathematics Classrooms. Alternatively, a voice note can be used.
- ❖ Participants will be asked to send images and write up or voice note using WhatsApp or email.

#### **Considerations**

- ❖ The focus is not on the neatness or accuracy of the drawing but the creativity in presenting oneself currently as a mathematics teacher and relating to the relationships they share with learners.

### 3.4. Unstructured Interviews

One interview will be conducted per participant in this study. In the unstructured interview, participants will be asked two main questions to gain an understanding of their stories and experiences of how they work together with learners to cultivate engaged pedagogy in mathematics classrooms and where they work together with their learners to cultivate engaged pedagogy. Additionally, in-depth questions are organized thematically to probe and guide participants to counter the challenge derailing from the focus of the study.

#### Main Prompts

1. Share memories as a learner in primary school and high school and as a university student in mathematics classrooms.
2. Share and describe your memories of your experiences as an early mathematics teacher and as a teacher who is “now experienced.”

#### **Additional Prompts and questions to probe and guide participants**

*Tell me and describe in detail your critical experiences as a mathematics teacher in the classroom and within the school context.*

- ❖ Recall and revisit critical incidents that influenced how you strategise working together with your learners in mathematics classrooms?
- ❖ Describe challenges that you experienced when working together in your mathematics classroom.
- ❖ What strategies did you employ to counter these challenges?
- ❖ Did the strategies work or did you have to seek assistance from peers or management?
- ❖ Recall and discuss positive experiences you encountered when working together with your learners in mathematics classrooms.
- ❖ Did these experiences influence the learning environment and engaging learners?
- ❖ Does the cultivation of engaged pedagogy occur formally or informally or both?
- ❖ Have the relationships you created with learners to cultivate engaged pedagogy gone beyond the classroom, for eg., extra lessons after school, on weekends, and during holidays?

## APPENDIX 4: LETTER TO THE PARTICIPANT

Dear Sir/Mam.

I, Logandrie Beser am a Master's student (full dissertation) at the University of KwaZulu-Natal, School of Education. My specialization is in Teacher Development Studies. As part of the requirements for the degree, I will be conducting a research study titled: *Stories of Secondary School Teachers Cultivating Engaged Pedagogy in mathematics classrooms*. The purpose of this study is to understand the lived experiences of teachers in cultivating connectedness with learners and between learners in Mathematics Classrooms.

The objectives of this study are:

1. To explore stories of secondary school teachers in cultivating engaged pedagogy in mathematics classrooms.
2. To understand how secondary school teachers cultivate engaged pedagogy in mathematics classrooms.
3. To identify and explore where secondary school teachers cultivate engaged pedagogy.

I selected you as one of my participants because you meet the selection criteria of being a Secondary school mathematics teacher at a school based in the Umlazi district.

I would like you to share your experiences as a learner, student, and early career teacher in a mathematics classroom and as a mathematics teacher. As this study uses narrative inquiry as a research method, I will be looking at past and present practices. I aim to use online platforms to meet with you have discussions and generate data that will only be used for the purpose of this study. The data production process will involve the generation of the novice teacher's stories of personal experiences using memory drawings, unstructured oral interviews, artifact inquiry, and self-portraiture.

Given that the study is drawing on the individual's memories of particular nodal moments and critical experiences of their classroom experiences as learner, student, and early career teacher, I assure you that the study will not compromise teaching and learning time as it will be conducted after school hours using online platforms such as WhatsApp / Zoom and will take place at a time convenient to the teacher as a participant. If your participation in the study awakens any feelings of discomfort, I will be providing my participants with the details of the UKZN psychologist Angeline Stephens Email: [stephensa@ukzn.ac.za](mailto:stephensa@ukzn.ac.za) Contact Number: 0800 800 017.

**Please note that:**

- Data will be stored in secure storage and destroyed after 5 years.
- The choice to participate, not participate or stop participating in the research is left on to the participant. He/she will not be penalized for taking such an action.
- All confidentiality will be guaranteed by using the pseudonyms to protect the school and the participant's anonymity.
- Any information given by the participant cannot be used against him/her, and the collected data will be used for purposes of this research only.
- The participant's involvement is purely for academic purposes only, and there are no financial benefits involved.
- If you require any information about this study upon its completion, I will be most willing to provide you with this at the end of my study.

For any enquiries regarding this study please feel free to contact me or my supervisor Professor Daisy Pillay. You may also contact me or the UKZN Humanities & Social Science Research Ethics Committee, contact details as follows:

<b>Name</b>	<b>Contact Number</b>	<b>Email address</b>
Professor Daisy Pillay (Supervisor- UKZN)	082 XXXXXX	XXXXXX.ac.za
<b>HUMANITIES &amp; SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION</b> Research Office, Westville Campus Govan Mbeki Building PrivateBagX54001 Durban 4000 KwaZulu-Natal, SOUTH AFRICA	<a href="tel:27312604557">Tel:27312604557-</a> <a href="tel:27312604609">Fax:27312604609</a>	Email: <a href="mailto:HSSREC@ukzn.ac.za">HSSREC@ukzn.ac.za</a>
Logandrie Beser (Researcher)	XXXXXXXXXX	XXXXXXXXXX.ac.za

Thank you



Mrs Logandrie Beser

## APPENDIX 5: PARTICIPANT INFORMED CONSENT DOCUMENT TO CONDUCT RESEARCH

### PARTICIPANT DECLARATION OF CONSENT

The title of the research dissertation: *Stories of Secondary School Teachers Cultivating Engaged Pedagogy in mathematics classrooms.*

I, \_\_\_\_\_ (Full name/s of Participant) have been informed about the study entitled: *Stories of Secondary School Teachers Cultivating Engaged Pedagogy in mathematics classrooms*, by Logandrie Beser. I hereby grant permission to be a participant in this study. I understand that I have willingly agreed to participate in this research study and that I am at liberty to withdraw from the research study at any time, so should I desire. I also understand that my name, name of the school, and my responses will be kept confidential. If I have any further questions/concerns or queries related to the study, I understand that I may contact the researcher or the supervisor.

If I have any questions or concerns about my rights as a study participant, or if I am concerned about any aspect of the study or the searchers then I may contact:

HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION  
Westville Campus  
Govan Mbeki Building  
Private Bag X 54001  
Durban  
4000  
KwaZulu-Natal, SOUTHAFRICA  
Tel: 27312604557 -Fax: 27312604609  
Email: [HSSREC@ukzn.ac.za](mailto:HSSREC@ukzn.ac.za)

I hereby **provide/ do not provide** consent to :

		Consent	Do not consent
1	Consent to Logandrie Beser conducting research.		
	Consent to Logandrie Beser to use artifacts provided by the participant.		
2	Consent to Logandrie Beser to use memory drawings provided by the participant.		
	Consent to Logandrie Beser to self-portraiture to generate stories of the participant's lived experiences.		
	Consent to Logandrie Beser to use unstructured interviews as a data generation method.		

Signature of Participant \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/2023

## APPENDIX 6: PRINCIPAL'S INFORMED CONSENT DOCUMENT TO CONDUCT RESEARCH

7X RXXX XXX  
XXXXX  
XXXXXX  
4XXX

The Principal  
XXXXXX Secondary School  
XXXXXXXX  
XXXXXX  
XXXX

### REQUEST FOR PERMISSION TO CONDUCT RESEARCH

Dear .....(Principal) of.....Secondary School

I trust you are well.

My name is Logandrie Beser. I am currently pursuing my studies towards a Master's of Education Degree (Full Dissertation) at the University of KwaZulu-Natal, School of Education, Edgewood campus. My specialization is in Teacher Development Studies. As part of the requirements for the degree, I will be conducting a research study titled: *Stories of Secondary School Teachers in cultivating engaged pedagogy in Mathematics Classrooms.*

The purpose of this narrative inquiry is to explore stories of teachers' lived experiences of teachers in cultivating connectedness with learners and between learners in Mathematics Classrooms.

Furthermore, the study will delve into teachers' experiences of engaging with learners and understand how engagement shapes relationships with learners and contributes to holistic development in mathematics.

The main research question I seek to answer is:

What are the stories of secondary school teachers cultivating engaged pedagogy in mathematics classrooms?

The sub-questions that appear hereunder will attempt to answer the main research question:

- 1.1 How do secondary school teachers cultivate engaged pedagogy in mathematics classrooms?
- 1.2 Where do mathematics teachers cultivate engaged pedagogy?

As this study uses narrative inquiry as a research method, I will be looking at past and present practices. I hereby request your approval to conduct a study with two Level One mathematics teachers from your school as participants in this study. The data production process will involve the generation of the primary school teacher's stories of personal experiences using memory drawings, unstructured oral interviews, collage inquiry, object inquiry, and letter writing. All data that will be collected will be used

for my research project report. Permission is also requested from you for the publication of the findings in the form of research reports and publication in research journals. You will be informed if such publications take place.

Given that the study is drawing on the individual's memories of particular nodal moments and critical experiences of their personal/lived experiences of secondary school teachers cultivating engaged pedagogy in mathematics classrooms, I assure you that the study will not compromise teaching and learning time as it will be conducted after school hours using online platforms such as WhatsApp/ Zoom and/or in-person interactions and will take place at a time convenient to the level 1 teacher as a participant.

The data collection and production will start from October 2023 and will take place at a time convenient to the Level One Teacher as a participant. The participant will be apprised of the research process, his/her participation, and his/her rights in the research processes, through the informed consent form. His/her permission will be sought prior to his/her participation in the data collection process. The research is scheduled to take place once you have granted permission and after ethical clearance from the university has been obtained. Permission is also going to be sought from the Department of Education to conduct the study.

**Please note that:**

- Data will be stored in secure storage and destroyed after 5 years.
- The choice to participate, not participate or stop participating in the research is left on to the participant. He/she will not be penalized for taking such an action.
- All confidentiality will be guaranteed by using the pseudonyms to protect the school and the participant's anonymity.
- Any information given by the participant cannot be used against him/her, and the collected data will be used for purposes of this research only.
- The participant's involvement is purely for academic purposes only, and there are no financial benefits involved.
- If you require any information about this study upon its completion, I will be most willing to provide you with this at the end of my study.

For any enquiries regarding this study please feel free to contact me or my supervisor Professor Daisy

Pillay. You may also contact the UKZN Humanities & Social Science Research Ethics Committee.

Contact details are as follows:

Name	Contact Number	Email address
Professor Daisy Pillay (Supervisor- UKZN)	XXXXXXXXXX	XXXXXXXXXX.ac.za
<b>HUMANITIES &amp; SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION</b> Research Office, Westville Campus  Govan Mbeki Building PrivateBagX54001  Durban 4000  KwaZulu-Natal, SOUTH AFRICA	<u>Tel:27312604557-</u> <u>Fax:27312604609</u>	Email: <a href="mailto:HSSREC@ukzn.ac.za">HSSREC@ukzn.ac.za</a>
Logandrie Beser (Researcher)	XXXXXXXXXX	<a href="mailto:XXXXXXXXXXXX.ac.za">XXXXXXXXXXXX.ac.za</a>  <a href="mailto:XXXXXXXXXXXX@gmail.com">XXXXXXXXXXXX@gmail.com</a>

Thank you



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Mrs Logandrie Beser

## APPENDIX 7: PRINCIPAL’S DECLARATION OF CONSENT

The title of the research dissertation: *Stories of Secondary School Teachers Cultivating Engaged Pedagogy in mathematics classrooms.*

I, \_\_\_\_\_ (Full name/s of Principal) have been informed about the study entitled: *Stories of secondary school teachers cultivating engaged pedagogy in mathematics classrooms* by Logandrie Beser. I hereby grant permission to the researcher to conduct research using a participant from my school. I understand that the participant has willingly agreed to participate in this research study and that she/he are at liberty to withdraw from the research study at any time, should they so desire.

I also understand that the name of the school, name of the participant and their responses will be kept confidential. If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher or the supervisor. I am aware that if I have any questions or concerns about my rights as the Principal of the study participant, or if I am concerned about any aspect of the study or the researcher then I may contact:

### HUMANITIES & SOCIAL SCIENCES RESEARCH ETHICS ADMINISTRATION

Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27312604557 -Fax: 27312604609

Email: [HSSREC@ukzn.ac.za](mailto:HSSREC@ukzn.ac.za)

I hereby **provide/do not provide** consent to:

		Do consent	Do not consent
1.	Consent to Logandrie Beser conducting research.		
2.	Consent to Logandrie Beser to use photographs/pictures/writings provided by the participant.		

SIGNATURE OF PRINCIPAL: \_\_\_\_\_

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

## APPENDIX 8: TURNITIN ORIGINALITY REPORT

