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SHIFTS IN BELIEFS, KNOWLEDGE AND SKILLS: TEACHERS' EXPERIENCES OF INSTRUCTIONAL ROUNDS PRACTICE

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A thesis submitted to the Faculty of Education, University of the Witwatersrand, in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Education

Johannesburg, 2017

Declaration

I declare that this thesis is my own unaided work. It is being submitted for the Degree of Doctor of Philosophy at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other university.

_____

Signed on the _____day of _____2017 in Johannesburg.

Abstract

Teachers' beliefs may provide them with the resources necessary to maintain and improve their instructional practices. Christie, Butler and Potterton (2007) and City, Elmore and Fiarman (2010) point to the difficulties associated with bringing about changes in the teachers' instructional practice, despite professional development interventions. Social developmental theories provide understanding of teacher learning and new teacher development models that frame interventions differently to support longer-term, ongoing teacher development. One particular intervention that is consistent with the social development theory provides teachers with a lens for understanding their instructional practices and a reference point for shifting their existing instructional practices, which are linked to their beliefs. The researcher in this study collected data from four teachers at a private school in Johannesburg, who participated in the Instructional Rounds practice. An instructional core (City et al. 2010) provided the key theoretical resource for understanding how teachers constructed their instructional practice before the intervention and after the yearlong intervention. The instructional core refers to the relationship teachers establish with learners around learning content.

The study proceeded to investigate the beliefs teachers used to craft roles for themselves, their learners and the content in their instructional practice before and after the intervention. It is argued that teachers' beliefs about instruction frame their instructional practice. It is further argued that, in collaborating with other teachers and by gathering data from their instructional practice, teachers are in a better position to change their beliefs by understanding the actual roles that they, their learners and the content of their lessons play in their classrooms.

Instructional Rounds is a disciplined form of intervention designed to equip teachers with the tools to begin the process of systematically shaping the theories of practice that will form the foundation for future development of their instructional practices. The intervention focuses teachers' beliefs in the instruction core and on shifts in critical

beliefs to improve practice. While all teachers' professional development programmes target shifts in teacher beliefs, knowledge and skills, few succeed in shifting the roles of the teacher, the learner and the content. Are teachers making causal links between their roles in the classroom and the learning that occurs in the classroom?

Dedication

I dedicate this thesis to the Almighty for allowing me to grow and become a better person along this journey. He challenged my nature and shaped the person I am today through this journey.

This thesis is also dedicated to my wife, Pushpakanthi Somnath and daughter, Gyana Somnath, who make life a dream and who adds meaning to every moment. This dream will not be possible without them.

I further dedicate this thesis to my late parents, who put the educational needs of their children ahead of their material comforts. They instilled the values and ideas that carried me through difficult times. As I am the youngest of five, my siblings Sarus, Sushila, Danny and Basel have also lent a helping hand throughout my life, and ultimately, through my PhD journey. It also gives me great pleasure to extend this dedication to my brothers-in-law and sisters-in-law, to all my nieces and nephews and to all my teachers, from school to university.

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The road that I walk on has been built for me by the many people who made my difficult journey possible and without their assistance and support; my voice would have been drowned by many viewpoints and competing ideas.

When no one else believed in me, my supervisor, blessed with a rare talent to see in others what they don't see in themselves, gently nurtured me to this end. Professor James E.M. Stiles built bridges to enable me to walk across difficult terrains. Professor Stiles also opened my thinking to multiple possibilities that I could not have imagined in the past. He embodies the ideals of a better today and a greater tomorrow for all. His work continues to inspire me to think deeply and entertain possibilities that are both realistic and far-reaching.

I would like to acknowledge the school where I conducted this study. I admired them in the past for their innovation and I now admire them as a group of dedicated, hardworking, selfless people who exemplify the human spirit. The leaders at the school, who embraced an unknown student, and the teachers who participated in the Instructional Rounds, giving me access to their incredible practice, which never ceases to amaze me. They are a group of great teachers for the magnificent work that they do in the classroom and for their contributions to knowledge. The parents are indeed blessed to have them teaching their children.

I stood on the shoulders of my family to make my journey possible and this has made the destination even sweeter. When I reflect on this journey, I see each of my family members paving the way ahead for me to fulfil my dream.

We are nothing without the people we meet along our journey and my wish is to emulate all of them in some way.

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List of Abbreviations

ACE	Advance Certificate in Education
CAPS	Curriculum and Assessment Policy Statement
DBE	Department of Basic Education
FDE	Further Diploma in Education
IEB	Independent Examination Board
IR	Instructional Round
IQMS	Integrated Quality Management System
MSSI	Mpumalanga Secondary Science Initiative
RNCS	Revised National Curriculum Statement
WMC–S	Wits Maths Connect - Secondary

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

As a classroom teacher, I struggled to implement changes in my teaching practice. Participating in the professional development programmes initiated by the school, non-government organizations, the Department of Basic Education (DBE) and education faculties at universities, I acquired many new ideas and felt that I had gained a deeper understanding of my professional practice. However, I found it difficult to make the requisite shifts in my classroom practice, given the administrative and other demands I was required to meet.

The demand for change in practice was consistent with broad shifts in the education sector at that time, including the curriculum changes introduced by the South African government. These demanded that teachers explore different strategies including shifting from teacher-centred to learner-centred lessons. In teacher-centred lessons, the teacher assumes primary responsibility for the communication of knowledge to students; in student-centred lessons, learners take responsibility for constructing their understanding of the world through their own actions and may take greater responsibility for their learning (Mascolo, 2009). In practice, teacher-centred and learner-centred lessons form part of a continuum rather than a polarised positioning of teaching and learning.

Other colleagues in school were in a similar predicament because they could not visualise the practical implications of the new approach in terms of classroom practice. In the end, small, token attempts were made to comply with official requirements, and these were often subverted by the need to respond to the prior demands of the school, such as completing the curriculum, meeting assessment requirements and reporting to stakeholders. Description of failure to realize the connection between practice, beliefs and school context may illuminate this problem (Cobb,McClain,Lamberg & Dean, 2003). We seldom consider making critical links between professional development learning and classroom expectations.

I started at this point to think about changes in relation to my own growth and development and those of other teachers in the school. As a teacher, I played a small role in teacher growth and development, mainly through conducting workshops and participating in the Integrated Quality Management System (IQMS), the official quality assurance system in South Africa. Engaging in IQMS is currently an administrative requirement in South African schools. Reflecting on the IQMS processes, I recalled teachers collecting information and discussing the same lessons from classroom observation in very different ways, although, in some instances, the IQMS was little more than an exercise in compliance.

I also gained teacher development experiences in different occupational roles at school. I supported teachers' growth and development in my roles as head of department, deputy principal and acting principal. I supported teachers with ideas that enriched their work but who struggled to understand and implement ideas implicit in Curriculum 2005 and later, the Revised National Curriculum Statement (RNCS), to promote teachers' growth and development. I often reverted to the tried and tested ideas that I had developed over the years, which satisfied the school's needs and the demands for learner assessment.

As a manager, I developed a different perspective on teacher growth and development, partly because ensuring that staff members met the school requirements was a priority, and partly because I developed a better understanding of teaching and learning through my formal education. Ultimately, I hoped to transmit my own understanding of teaching and learning, and I attempted to organize the school and its structures within my own framework. I wanted teachers to see the world through my eyes and paid little attention to how they practised in their classroom and what they understood, or their own trajectory of growth and development.

Since then, my professional role has changed. I support a teacher stakeholder group with professional development, working mainly within an in-service growth and development space. In this context, I struggle with locating teachers' growth and

development in relation to their work, their own affinities or interests, and the schools' growth and development needs.

Except for higher university degrees, most teacher growth and development initiatives are of a short duration and take the form of once-off short courses, seminars, conferences and workshops. These professional development interventions give little recognition to the systematic and ongoing stages of development of the teachers, to the teachers' role in his or her professional workplace, or to identifying teachers' core roles and responsibilities and their need for growth and development. Although teachers participate in university courses that are of longer duration, the framework of lectures and assignment gives little attention to how this is carried out in practice.

In my current work and for my personal development, I explore the relationship between current forms of learning in professional development and learning. I am interested in how teachers learn to enhance their professional roles. How they become more informed about professional practice. How teachers understand competing ideas about their work, and how teacher focus, grow and develop in their core business, which is teaching and learning?

Government and private providers populate professional development spaces with a wide variety of courses, which are organised around different interests and domains of knowledge. Their purpose is to support teachers in improving their work performance. Adler (2015), Adler & Reed (2002) and Reed, Davis and Nyabanyaba (2002) argued that a lack of content knowledge is the main factor responsible for poor learning. Rollnick, Bennett, Rhemtula, Dharsey and Ndlovu (2008) have found that teachers who focus on content knowledge tend to emphasise procedures as opposed to developing concepts. It is possible that, while providers attempt to develop one area of understanding, other critical areas are pushed to the background, ignored or distorted. The relationship between teacher practice and developing teachers' content knowledge opened questions about how knowledge was used to construct their instructional practice.

In planning this study, I wished to understand the professional development of teachers, especially when they are required to implement new ideas. This led me to explore professional development in other professions and the ways in which these professions support transition in the work place. I investigated professions like architecture, engineering, law, accountancy, social work and medicine to gain insights into how their professional growth and development was organized (Azapagic & Perdan, 2011; Eraut, 2007; Howieson, 2003). All these professions were linked to specialized educational training in a body of knowledge, which was a legal qualification. All the professional fields supported occupational roles, to a greater or lesser extent. In law, for example, students were trained to participate in court proceedings and to argue cases in court as one aspect of their training (Weisbrot, 2002). In architecture, prospective architects were progressively initiated into the work (Eastman, 2001). All these professional development processes were effective but none of them could guarantee success.

Professional development in the medical field provided insights that were illuminating and relevant to an understanding of teacher growth and development. Teaching during medical rounds is a strategy for transforming training in basic science into training doctors in the knowledge that is useful for diagnosing and managing treatment. Making diagnoses requires medical students to reorganize their knowledge around patient care: and medical rounds is an ideal form of work-based learning (Walton & Steinert, 2010) since it supports students in making appropriate decisions based on prior knowledge (Kriewaldt & Turnidge, 2013). The literature on clinical and diagnostic reasoning points to a level of application that transforms knowledge from different domains to prepare doctors and support patient care.

The medical profession utilizes medical rounds with the purpose of preparing future doctors and enhancing skills of practising doctors and specialists. Small groups get opportunities to develop their formal occupational roles in different, real-life settings.

> *Combining the seclusion of the conference room with the rich interaction of a hospital ward, attending rounds allows for small-group interaction on immediate and compelling problems* (Weinholtz & Edwards, 1992:3).

In medical rounds, medical students solve real problems in their occupational roles and future work contexts, working in collaboration with others, including medical teachers, with the goal of developing a common understanding of the problem and the solution. These students develop a common language using science to describe and solve problems in their professional roles; this offers opportunities for thinking about how they make decisions (Croskerry & Nimmo, 2011) and, in turn, supports the students' learning agenda by integrating scientific theory and medical practice. It also fills in missing elements in their knowledge and understanding (Weinholtz & Edwards, 1992). They develop skills based on real-time interactions and data. Reflecting on these interactions, students discover how to discern what is important, how to solve work-related problems and how to improve their practice generally.

While investigating how other professions deal with the problem of professional development, I was introduced to the concept of Instructional Rounds (hereafter referred to as IR) a professional development practice for teachers based on the model of medical rounds. This intervention was developed in the United States of America, and implemented there and in Australia, New Zealand and Scotland. The intervention grounds professional development in the core professional work of teachers, which is improving learner engagement around content (Roberts, 2012).

The literature on IR understands teacher growth and development at a deep level. The practice of IR is a systematic approach to collaboratively shifting teacher thinking around their core business. In the process, it taps into development and growth of the school as an organization.

1.2 Research Aim

The aim of the study was to find answers to the research question in relation to how

teacher conceptualize and shape their professional work. In this study, it was posited that teacher beliefs, strengthened by knowledge and skills to develop and construct their instructional practice (Pajares, 1992). The beliefs of four teachers participating in a year-long professional development program of Instructional Rounds are examined to understand how these beliefs supported them in constructing their own roles, their understanding of roles of learner and of content in the classroom. Using the constructed beliefs, the study looked at four teacher's views about themselves, their learners, the content they were teaching and the relationship between them, for each teacher who participated in the study.

1.3 Rationale

The practice of teaching is complicated and entails both implicit and explicit dimensions of teacher thinking (Cook & Brown, 1999). Investigating how these dimensions of understanding work together to inform teachers' instructional practice is difficult. Argyris and Schön (1974) have referred to the implicit and explicit dimensions as the teachers' "theory of practice". The teachers' theory of practice describes the complexity of teacher thought that shapes their action. Argyris and Schön (1974) argued that it is not possible to map out a teachers' theory of practice because of its complex and elaborate nature. The key to shifting teachers' theory of practice may be through their beliefs, by means of professional development.

> *Professional development programs are systematic efforts to bring about change in the classroom practices of teachers, in their attitudes and beliefs, and in the learning outcomes of students* (Guskey, 2002:381).

How the four teachers understand their teaching practice and their roles as professionals provides clues about how change in the larger teaching profession may be possible especially through formal professional development strategies.

Most professional development activities are intended to influence teaching practice; however, few succeed because teachers' underlying beliefs and assumptions about their work as professionals remain unchallenged (Kegan & Lahey, 2001).

> *Teacher belief is defined broadly as tacit, often unconsciously held assumptions about students, classrooms, and the academic material to be taught. After summarizing the heterogeneous research on teacher belief, I point out that we lack direct evidence concerning the processes that effect change in teacher belief* (Kagan, 1992:25)*.*

This study examines a professional development programme that took place in a private school in Johannesburg, South Africa. This programme, known as Instructional Rounds in Education (IR), brought together twelve high-school educators in a year-long learning process. The aim was for the teachers to better understand and implement elements of good teaching practice.

Consistent with the IR protocol, it located the development process within the school; the content focus was driven by questions that emerged from the school. The researcher tracked shifts in the four teachers' beliefs in relation to their experience of IR principles. At the heart of the application of this strategy was the clear description of practice and of the common development, by and for the participants themselves, of ways to describe, question and analyse good teaching practice.

It has been suggested that shifts in the teachers' beliefs are the first step in effecting complex changes in their practice (Polly, Mcgee, Wang, Lambert, Pugalee & Johnson, 2013). How teachers understand their teaching practice and implement their learning was an integral part of this study.

1.4 Research Questions

Although teachers are exposed to a variety of professional development activities, the approach by means of which teacher utilize learning depends on how they make shifts

in their beliefs, especially in relation to the roles they create for learners and engage them around content to effect sustainable change in their practice. The relationship between professional development and its contribution to changing instructional practice is poorly understood. Teaching and learning takes place in complex contexts and often teacher development efforts focus on a narrow set of abstract ideas for development and determine success within the context of the training. How this knowledge interacts with teachers' existing understanding and how it features and is sustained in the classroom remain unclear.

The questions that this study sought to answer were as follows:

1. How is knowledge organized around learning?
2. How do four teachers, participating in a professional development programme, conceptualize their practice as professionals?
3. How does professional development help these teachers to grow in their role?

The research was guided by the following sub-questions:

1. What beliefs do the four teachers at a South African Independent high school discuss in relation to their practice of teaching?
2. How do the four teachers conceptualize their work as professionals?
3. To what extent does participating in IR practice create observable shifts in teacher beliefs?
4. How does participating in a network with other professionals shift the notion of the profession of teaching for the participating teachers?

1.5 Site Selection

The study was conducted at a prestigious private school in Johannesburg, South Africa. The school was established in 1889 as a boys' high school and later became co-educational. It caters to a diverse learner population in terms of ethnic, religious and economic backgrounds. The school writes the Independent Examinations Board (IEB) examinations, maintaining a one-hundred-percent pass-rate for the past ten

years. Teachers and learners in the school subscribe to an ethos of thinking critically, finding solutions and succeeding in life.

The school offers subjects covered by the national curriculum of South Africa, namely the Curriculum and Assessment Policy Statement (CAPS). The school has a mixture of experienced teachers (with more than twenty years' experience) and new teachers (with less than twenty years' experience). The staff prides themselves on being innovative and their practice is strongly values-based.

This site was selected because this school was the first known school in South Africa to explore IR as a strategy for improving teaching practice, and the school authorities agreed to allow an investigation of its efficacy. Attempts to get other schools involved and thus develop a wider network proved challenging, and in the end only this school participated in the study. It should be noted that the site does not represent the norm in the South African context with obvious implications for the lack of generalizability of this research.

1.6 Conceptual Framework

The conceptual framework of the study provided the means of understanding how teachers may construct and shift their conceptions of instructional practice: their beliefs about themselves and their roles, the learners and their roles and the role of content. This kind of shift is based on an understanding of four teachers' conceptions of their professional practice, how they function as professionals and how their conceptions shape their views about themselves, their learners and the content they teach.

Most professional development initiatives for teachers' target shifts in teachers' beliefs and are crafted to attack teacher beliefs through knowledge and skill. Belief is "a messy concept" (Pajares,1992); nevertheless, the correlation between teachers' beliefs and instructional practice is strong (Pajares, 1992; Polly et al., 2013). Beliefs

are associated with other concepts such as attitudes, commitment, values, knowledge and skills (Pajares, 1992).

Teachers' beliefs are also shaped by the knowledge and skills that they possess or are in the process of developing. Despite teachers having knowledge and skills, it is their conceptions of their work as professionals that shape their instructional practice (Guskey, 2002; Prawat, 1992). This is sometimes described as the "psychological resource" or the missing dimension (Maclellan, 2016) of the teachers' professional work, which includes knowledge and skills that influences teachers' behaviours in the classroom (Lyons, 1990).Teachers' behaviours are also linked to their emotions.

> *It is generally agreed that teachers' personal theories, beliefs, and assumptions need to be uncovered before development can occur, development enabling critical reflection and then change. Beliefs about teaching, learners, or a teacher's role, for example, guide teachers in their practice, and are derived from sources such as experience and personality* (Donaghue, 2003:344).

In this study, the concept of teacher beliefs was used to elicit and understand key ideas of the teachers' professional work. In a regular school context, the notion of the teachers' professional work is susceptible to multiple interpretation and influences without necessarily being explicit about how this shapes the work of the professional in the classroom (Adoniou, 2013; City et al. 2010). In this study, a view was adopted where the professional work of the teacher was grounded in the instructional tasks or the actual work that learners were asked to do in the classroom. Because of the teachers' understanding of the relationship between their beliefs about their roles, the learners' roles and the role of content, the problem of practice was linked to classroom observation through the intervention, IR. The above links are intended to shape learning differently from lecture-hall training.

Teachers hypothesize the relationship between their beliefs about their roles, the roles of learners and of the content of the curriculum, with the intention of making broad

causal links between the instructional tasks they design and the potential learning within the IR protocol. Teachers begin the formal process of matching their thinking to their actions in the classroom (Fowler-Finn, 2013; Roberts, 2012). Hypothesising is a step in explicating their professional work.

Explicating the professional work of the teacher is a step towards understanding a teachers' theory of practice. The teachers' deeper understanding of their professional work occurs when a stronger relationship between how teacher think between their instructional practice and how they actually teach is supported. IR is designed to explicate the teachers' instructional practice or the instructional tasks that learners are engaging in so that teachers have a glimpse of their own professional work as they function in the classroom. IR enables teachers to develop their theories about instruction in practice so that they develop a better understanding of the decisions they make in the classroom.

This study looked at professional work on three levels. On the first level, the twelve teachers participating in IR had opportunities to interrogate their own practice so they could identify and "inform" ideas about their professional practice. On another level, the teachers were allowed to "transform" their instructional practice, and in this particular study, engage learners in critical thinking (Argyris, 1976). These teachers might develop an understanding of their current practices and an understanding of their professional work. At the same time, they might innovate and develop new ideas within their work. On the final level, they got opportunities to practise new ideas in their classrooms, so that they could close the gap between their thoughts about their professional work in the area of teaching critical thinking and their actual instructional practice or behaviours in the classroom. They can also develop new ideas and establish new behaviours consistent with their ideas on critical thinking (theories-in-action and theories-in-use). They had opportunities to practise, but obviously this did not guarantee that the teachers actually used those opportunities.

The theories led to two questions: the first was concerned with how teacher conceive of their professional work and the significant ideas that shape their instructional practice or behaviours in the classroom. What are the resources that teachers use to construct their instructional practice prior to the intervention?

The second relates to developing new resources for changing teachers' beliefs about themselves, learners and content to build a stronger relationship between the teacher's theory-of-action and theory-in-use. In a general sense, how could these teachers match their thoughts to their action and develop ideas to unknown problems and solutions? How did teachers make sense of and implement new ideas in their classrooms so that they became a legitimate and sustainable part of their instructional practice, "transforming practice"?

This study was not about teachers sharing effective ideas for teaching and learning, but about teachers developing their own beliefs in order to be effective in their classrooms (Marzano, 2009). High-yield strategies do not work in all classrooms (Marzano, 2009), but effectiveness is not necessarily associated with high-yield strategies. In this context, effectiveness related to developing a repertoire of ideas for potentially crafting instructional practice.

In South Africa many professional development initiatives commonly underestimated what it took to change their instructional practice (Dixon Excell & Linington, 2014). The limited workshop framework generally ignored the deeply embedded nature of teachers' thinking about their professional work.

In other studies, Pournara, Hogen, Adler and Pillay (2015) reported limited gains from targeted subject knowledge interventions, although the interventions did have some impact on learner outcomes. Steyn, G.M. (2000) identified external factors like facilitator competency and logistical arrangements that led to intervention limitations. Such studies have led to speculation about why teachers struggle to implement new ideas in their classroom. It is difficult to know whether to look at the external factors

that contribute to the poor quality of training, or whether the framework of delivery restricts the learning, making it difficult for teachers to implement different techniques in the classroom.

This study examined the professional work of the teacher, how teachers constructed their instructional practice and how they attempt to change it. An aim of this research was to understand the problem of linking learning interventions and the professional work of the teacher. Data was collected by observing teachers in the IR intervention; interviews before the intervention and a year later, and observations of the IR debriefing sessions and teachers conducting lessons in their own classroom. Two of the teachers had participated in an earlier experience of IR at this school, while the other two were new to the practice during this research.

1.7 Organization of the Thesis

This is an outline of the chapters:

Chapter One provides a general overview of the study, giving an account of the motivation for it, summarizing the problems linked to professional development interventions, the role of teachers in the IR intervention and the question of whether the intervention succeeded in shifting the teachers' instructional practice. Questions are posed about the beliefs that teachers use to construct their instructional practice, what it means for teachers to gain insights into their own practice and the opportunities that this brings about for changing their beliefs and their views of their professional work.

Chapter Two covers the literature on teacher professional development in the South African context, the role of teacher beliefs and ways of shifting these with the intention of influencing teaching practice. The literature also focuses on key beliefs implicated in the way teachers conceptualize and construct their instructional practice. The literature focuses on beliefs related to the instructional core and the role of IR practice in explicating and transforming teacher beliefs. Finally, the chapter traces studies

related to IR practice with a view to understanding IR as a professional development strategy.

To understand how the four teachers, retain their conceptions of their instructional practice within their beliefs, this chapter outlines IR practice and the process designed to direct teacher beliefs and conceptions towards the instructional core. This chapter further locates IR practice within a larger framework of theory of action.

Chapter Three presents the design of the research to understand teacher conceptions of their work or instructional practice, before and after a year of IR intervention. The chapter covers the aims of the study, the selection of participants, the methods of data collection and exploration of the intervention. The latter included interviews with participants, observations of IR debriefing sessions and classroom observations. This chapter also outlines how the data was analysed. To ensure the credibility of the study, the chapter addressed issues of significance, trustworthiness and access.

Chapter Four presents the findings of the study, including those generated from interviews conducted before the intervention. These are described as Vignette 1 for Jenny, Anika, Ayanda and Linda. The findings generated from the second interview and represented as Vignette 2. In addition to the findings generated before and after a year of IR intervention, the findings generated from the debriefing sessions and classroom observations are presented. These findings highlighted insights that are discussed in full in Chapter Six.

Chapter Five presents the analysis of findings in relation to the four teachers' beliefs about themselves, learners and content before and after a year-long IR intervention. Before the intervention, the four teachers' beliefs focused on content knowledge, with a number of internal and external influences. After a year-long intervention, the four teachers seemed to retain their beliefs relating to learning, with fewer far-reaching external determinants of their instruction.

Chapter Six, the concluding chapter, presents an overview of the study, outlining its purpose, the literature relating to teacher professional development in South Africa, international experiences, adult learning and IR practice, the research design, its results, a critical evaluation of the study, recommendations and key messages.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Numerous studies have documented that teachers experience difficulties translating learning from professional development activities into classroom practice or instructional practice. Despite huge teacher professional development investment both in terms of time and finances, the shifts experiences in classroom practice remains marginal. This literature review sets out to understand the nature of current teacher professional development activities in South Africa, the nature of teachers' experiences of these activities, the possible blind spots in professional development and approaches to professional development that could potentially create more meaningful spaces for teacher engagement around their instructional practice.

This chapter therefore covers relevant literature related to professional development within the South African context, the role of teacher beliefs in professional development and how these could potentially be shifted, the need to focus on the instructional core to foster instructional change and experiences with instructional rounds practice in other countries.

2.2 The Nature of Professional Development in South Africa

The National Policy Framework for Teacher Education and Development in South Africa guides the professional development of teachers in this country (Steyn, T., 2009). Within this framework, government, private sector, researchers, universities, teacher developers, non-government organizations and teachers invest in teacher professional development activities. However, the policy framework guiding teacher development is recent, dating back to 2006. The integrated national framework was introduced in 2011, following a teacher development summit in 2009 hosted by the national government.

In addition, the Department of Higher Education and Training and the Department of Basic Education have played a significant role in determining the qualification framework for teachers in this country. Many teachers in South Africa attended universities and colleges before the country introduced post-apartheid education policies. Teachers were exposed to contrasting experiences, with the intention of shaping their conceptions of classroom practices. Before the establishment of the framework, teacher development was fragmented and constructed during a time of division in South Africa. Funding based on race played a pivotal in determining the quality of teacher development provision.

For historical reasons and to fill vacant posts in the country after apartheid, the Departments employed teachers who lacked formal qualifications. To ensure that all teachers were qualified in the public education system after 1994, the Department of Basic Education formulated policy to fast-track qualifications by creating an in-service training qualification, the National Professional Diploma in Education (NPDE), intended to professionally qualify unqualified teachers. This qualification was offered mainly by means of distance education and other part-time modes (Mukeredzi, 2013). It was an interim measure adopted to provide unqualified teachers an opportunity to upgrade their qualification.

The Department of Education tasked tertiary institutions with developing and delivering courses for Further Diplomas in Education (FDE) and Advanced Certificates in Education (ACE) were a series of in-service courses with various specializations, intended to deepen teachers' understanding and knowledge in subject and disciplinary areas. Each university structured its programmes differently. The University of Witwatersrand, for example, built in a reflective component to the FDE course and found that reflection support richer engagement but argued for school-based support. Aluko (2009) and Reed et al., (2002) found that the ACE impacted on teacher practice, but little evidence for this is presented in the study. Tertiary institutions utilized different modes to deliver the course including face-to-face or distance modes.

In the current framework, teachers may participate in variety of professional development activities that range from short, school-based workshops to longer university courses. The framework currently allows developers to introduce a wide range of courses in topics ranging from financial management to school governance. Teachers begin their growth and development with initial teacher qualifications and continue with them while practicing as teachers, in the form of in-service training. While the initial teacher-training courses focused on creating the interaction between teacher and learners with related knowledge domains, in-service training courses targeted wider variety and domains of knowledge. This review outlines pertinent factors that influence teachers' instructional practice, attempting to support teachers and their efforts to change their instructional practice. Some professional development courses also strengthen existing forms of teaching, while others attempt to transform teaching.

Since the first democratic election in South Africa, a wave of changes has taken place in all sectors in this country. The education sector underwent unprecedented changes, from restructuring the National Education Department to restructuring the provincial education departments. In addition, there were waves of policy changes. Reforms took place in finance and governance, rationalization and redeployment of teachers and the creation of new legislative frameworks for policy across a wide spectrum (Robinson, 2002).

In search of a quick solution to bring about changes, the Department adopted the "cascade" model of training to prepare practicing teachers for the implementation of the new curriculum, and the cascade model is currently still utilised. It involves officials from the National Department of Education training officials from the provincial departments, who, in turn, train officials from the districts, until the teachers receive training at school-level in what must be implemented in the classroom (Robinson, 2002). As Robinson pointed out, this pedagogical model is flawed because it waters down the information as the training moves from one level of training to the next.

In South Africa, the content was misrepresented and the trainers were ill-prepared for their role. Ultimately, the Department of Education used a model to train teachers that was far removed from the curriculum that was being promoted and failed to embed the complexities of the new curriculum in classroom practice (Dichaba & Mokhele, 2012). Critically for the teachers who participated in this study, they functioned in a school environment with competing priorities, like other teachers in other schools. They had to maintain a balanced practice in the wake of existing and new demands. All these changes happened within a relatively short space of time. Related reforms included the introduction of the integrated quality management system (IQMS), whole school evaluation, inclusive education, curriculum changes and governance changes (with the introduction of school governing bodies). School management teams were assigned extended roles in the running of schools. These competing priorities in some instances diverted teachers' attention from their core responsibility, which was enhancing teaching and learning and focusing on their instructional practice.

South Africa introduced changes after the first democratic election to unify the education system, address past imbalances and create an education system for the future. The Department of Education revised and introduced a national curriculum. First they introduced Curriculum 2005 and this was later revised and presented in the form of the Revised National Curriculum Statement; the last revision resulted in the Curriculum and Assessment Policy Statement. These innovations and revisions impacted directly on teachers' instructional practices. Each revision focused on different roles for teachers. In addition to the curriculum changes, the Department of Education also introduced White Paper 6 on inclusive education and White Paper 7 on e-education.

Although these policies had a direct impact on teaching and learning, the implications for actual instruction were often ignored in the training process. Teachers relied on their belief systems to organize their work rather than on the latest pedagogic demand of the national curriculum (Handal & Herrington, 2003). Teachers utilized their intuition to support their implementation of ideas in the classroom. They learnt new ideas within

limited professional development frameworks such as workshops and had to implement these ideas in the complexity of the school system, the school and classroom context.

The Department of Education developed policies at national level and implemented these at provincial level. The South African education system currently comprises a Department of Basic Education (DBE), a National Department of Higher Education and Training (NDHET) and nine provincial Departments of Education. The National Department of Education is responsible for policy development and the provincial departments also develop and implement education policies.

To develop policies for the education system, the Departments of Education drew on approaches and models that were developed in countries like Australia, New Zealand and the United States of America (Harley, Barasa, Bertram, Mattson& Pillay, 2000). Teachers implemented the curriculum that was developed at a national level. Their roles were defined in it and it made stringent new demands on them (Carl, 2005). Teachers had little opportunity to interact with their own interpretations of the curriculum and to adapt what they did in their classrooms to comply with its demands. The national curriculum called for teachers to function at a higher level in order to produce the type of learners envisaged by the designers of the curriculum. This is expressed in the official CAPS document:

The National Curriculum Statement Grade R-12 as outlined in the CAPS document aims to produce learners can:

- *identify and solve problems and make decisions using critical and creative thinking;*
- *work effectively as individuals and with others as members of a team;*
- *collect, analyse, organize and critically evaluate information;*
- *communicate effectively using visual, symbolic and/ or language skills in various modes;*

- *use science and technology effectively and critically, showing responsibility towards the environment and health of others; and*
- *demonstrate an understanding of the world as a set of related systems by recognising that problem solving contexts do not exist in isolation* (DBE, 2011).

The Department of Basic Education included other education goals like awareness of human rights, inclusivity, environmental and social justice in the curriculum (DBE, 2011). Teachers were expected to base their instructional practice on complex ideas about learners and learning. Teacher educators, on the other hand, were assigned the task of assisting the teachers in changing their conceptions of their work and reconstructing their instructional practice. In addition, teachers were expected to work with complex models that were layered onto their work, such as implementing the Integrated Quality Management System (Tony & Derek, 2011).

Evers, Heijden and Kreijns (2016) supported the view that professional learning is influenced by work pressure, emotions and available forms of support. This includes dominant ideas and strong or weak commitments around which schools are organised.

With the curriculum change, the Department and the training providers introduced a number of professional development interventions. A notable large-scale intervention was the Curriculum and Assessment Policy Statement workshops, commonly known as CAPS Workshops. This resulted in the production of a training manual that was used to cascade training to all the teachers at public schools. Teachers participated in orientation training for sessions of between two hours and five days. After that, they had the task of planning and implementing the curriculum in their classrooms. As a national policy, private schools implemented CAPS as well.

The curriculum outlines the type of learner that the system aims to produce, and in a sense this represents the espoused role for teachers, learners and content. The provincial department of education requires that teachers introduce and enact certain

features of the curriculum in the classroom and it expects them to support learning that matches the espoused ideas of learning (Harley et al., 2000). The curriculum projects a view about teacher and learner interaction around content. After some level of support, teachers were expected to craft their instructional practice and shape interaction with learners according to the features of the curriculum.

Instructional practice determines the nature of interaction between the teacher and the learner. Christie, Butler and Potterton (2007) have argued that learner achievement emanates from the quality of this interaction.

> *Quality, according to these researchers, "stems from the smallest unit of the system, from the hard-to-reach core practices of classroom activities, from the quality of learning in interactions between teachers, learners and materials* (Christie et al., 2007:84).

This research on 'Schools that Work' stopped short of explaining what this interaction looked like in the classroom.

For various reasons, teachers struggled to take ownership of the "smallest unit" of the system. According to Tony and Derek (2011) this may be attributed to the school hierarchy, leadership roles that resided with school managers and teachers own resistance to change. Teachers' commitments have also been cited as a reason for the poor quality of their instructional practice. Obviously, there were also broader issues that impact on how teacher interact with learners, from the lack of basic services, professional development, teacher and administrator attitudes, learner characteristics and previous teaching experience (Swart, Engelbrecht, Eloff & Petti, 2002).

The Department of Education made the roles of teachers explicit in the national curriculum and articulated them in the norms and standards for teacher educators. Six core roles were listed:

- *Learning mediator*
- *Interpreter and designer of learning programmes*
- *Leader, administrator and manager*
- *Community, citizenship and pastoral role*
- *Scholar, researcher and life-long learner*
- *Learning area / phase specialist* (DBE 2011).

While Harley et al. (2000) pointed out that there was a disjuncture between the espoused roles and classroom realities and practices, the articulation of roles in the norms and standards document failed to focus on the central role of the teacher, i.e. their instructional role. These researchers argued that teachers could change their practice on a superficial level as a result of the interventions, but profound change needed to occur at the level of the teachers' beliefs tied to classroom practice.

These roles were articulated and described in documents but little attention was paid to the teachers' interpretations of their roles in relation to the way they functioned in schools. For example, teachers were told that they needed to function as facilitators in the classroom in order to be consistent with the national curriculum. Beeman-Cadwallader, Buck and Trauth-Nare (2014) argued that teachers adopt multiple roles in the classroom, and facilitation on its own, was inadequate to foster good teaching and learning.

Curriculum statements and assessment standards cannot disclose what instructional practice should look like (Shalem, Sapire, Welch, Bialobrzeska & Hellmann, 2011). Even the norms and standards for teachers failed to focus attention on the instructional roles of teachers.

The South African Council for Educators (SACE) currently captures points that teachers earn for attending professional development programmes. There are three types of activities, namely, activities initiated by the teacher, activities initiated by the school and activities initiated externally. While the intended purpose of continuous professional teacher development (CPTD) is to improve the quality of teaching, the

system makes provision for teachers to engage in many forms of teacher development activities that are directly or indirectly linked to their core role, teaching and learning (DBE 2012). For CPTD to work, Mestry, Hendricks and Bisschoff (2009) proposed a coherent and integrated professional development plan linked to the school vision and to teacher's commitment to improving learning.

Traditional formats of teacher development programmes such as workshops, seminars and conferences did not succeed in improving teachers' subject knowledge or pedagogical skills to any significant extent (Steyn, T. 2009). This resulted in an increased interest in approaches to teacher development that succeeds in shifting teachers' instructional practices.

> *We consider how the mode of the workshop currently presented as a form of professional development is inimical to knowledge acquisition and how it may even negatively impact a teacher's ability to reflect on pedagogical gaps* (Dixon et al., 2014:139).

Adler and Patahuddin (2012), Steyn, T. (2009) and Venkat and Adler (2012) argued that teachers' roles were reflected in the professional development activity, and, in this case, in the workshops they attended. Teachers valued professional development; however, they struggled to implement new learning strategies in the classroom or to make learning a part of their daily instructional practice. Many teachers failed to see the relevance of their training to the roles they performed (Korthagen & Kessels, 1999) since their professional roles and tasks were more complex than the neatly-packaged professional development activities.

Teachers believe that there are several reasons for the discrepancy between professional development activities and their effectiveness in practice. According to the findings of this research, teachers attributed the gap to the professional development research base, the need for better leadership, teacher motivation, the focus of the professional development activities, the suitability of the venues, the need

to utilize schools as sites for development, the skills of the presenters and the timing and duration of the professional development activities (Steyn, T. 2009). Many of these factors relate to external conditions that affect the quality of professional development.

Researchers and teachers introduce and participate in other forms of professional development: a structured cluster is an example of a one of them. The form and function of clusters yield positive outcomes for teachers because clusters have a structural and an interactional element (Jita & Ndlalane, 2009; Shalem et al., 2011). A cluster brings teachers together, and in a particular project, the Mpumalanga Secondary Science Initiative (MSSI), the science and mathematics teachers interact with pedagogic content to support teachers in improving their subject knowledge and classroom practice (Jita & Ndlalane, 2009). However, teachers interact with a specific set of ideas based on their experience of teaching content knowledge. They discuss topics in a meeting, as opposed to having real-time classroom experiences.

Structured clusters enable the teacher to deliberate about his or her instructional practice. However, the interaction is restricted to shared experiences about their practice and they do not observe actual practices. They work with recollections of their classroom experience as opposed to data that they collect from their classrooms. The interaction depends on the teachers' interpretation and description of their practice.

2.3 Teacher Beliefs and Theory of Action

The analytical framework for this study included two sets of constructs to examine the data collected. The purpose was to understand how teachers construct and develop their instructional practice. The first construct, beliefs, came from the literature on influencing the professional work of the teacher. The construct beliefs are closely associated with knowledge, skills, attitudes, values and commitment, therefore beliefs are the main construct for this study (Pajares, 1992).

The second set of constructs was also based on the literature relating to Instructional Rounds and pointed to the diversity of influences that shape teacher beliefs about teaching and learning; they included the constituents of the instructional core (City et al., 2010) and referred to a set of ideas about the central professional work of the teacher, namely engagement with the instructional core, or beliefs about the relationship between the teacher, learner and content.

Teachers' belief systems support them in constructing their instructional practice and have many sources of varying degrees of influence. These belief systems influenced and shaped behavioural choices that teachers make. Beliefs are tacit, implicit and explicit, and teachers utilize them consciously or unconsciously to make immediate sense of the teaching and learning situation and produce behaviours accordingly (Pajares, 1992). Beliefs cannot be determined from the sum total of the teacher's behaviours, but they play a critical role in how teachers act in the classroom and determine the nature of their professional practice.

This study focused on the beliefs that the teachers utilized to make sense of their work and to make behavioural choices based on those beliefs. The teachers themselves and teacher developers targeted beliefs to improve teachers' conceptions of their work to effect changes in their instructional practice. They targeted beliefs related to classroom management, content knowledge, pedagogic content knowledge and assessment practices, among other aspects affected by instructional change.

Teacher developers and researchers organize bodies of knowledge intended to influence the teachers' conception of their work. They deliver training, check whether teachers understand the ideas and rely on teachers' intuition to make instructional shifts (Eraut, 2000). Some teachers demonstrate deep understanding of the organized body of knowledge drawn from various domains or discourses in the professional learning context. However, they often struggle to implement the changes in practice, although some teachers do shift their instructional practice because of the learning.

The teachers' systems of beliefs act as filters to process knowledge originating from different sources, including teacher professional development courses (Pajares, 1992), which are (an isolated domain of knowledge). Their belief systems determine the way teachers think and apply what they learn from these, as distinct from their enacted practice.

Teachers form their beliefs over long periods of time; some of these beliefs are implicit and others are explicit. Implicit beliefs are hidden from the teachers' consciousness, yet play a powerful role in determining teacher action in the classroom (Bryan & Atwater, 2002). They are often related to teachers' thinking about the teaching and learning that happened, for example, during their own schooling.

Other beliefs are linked to organized bodies of knowledge (Cook and Brown, 1999). Teachers participate in various activities and engage with organized bodies of knowledge that influence their beliefs. Teachers also engage with multiple discourses that are presented to them in varying degrees of duration and depth. Unrelated to the quality of the engagement, the multiple discourses in themselves are problematic because they are seldom organized around the constituents of the teachers' instructional practice, so it is left to teachers' intuition to enact these in practice.

Attempts to influence teachers' instructional beliefs come from official sources as well. The national assessment system promotes one view of teaching and learning, and the Curriculum and Assessment Policy Statement promotes another (Kanjee, 2012). Many of the official sources present a general idea of how teachers should practice and some of these are contradictory.

On a local level, teachers responded to competing demands that were made by the schools where they worked. Teachers shaped conceptions of their professional work (beliefs) on work requirements, like completing the syllabus, conducting school's testing programme, or simply complying with the culture of the school. Teachers generally shape their conceptions of their work on what other teachers in the school

are doing (Kegan & Lahey, 2009). The way teachers prioritise their professional work is generally based on their beliefs and responses to their immediate commitments. Despite the quality of the teachers' engagement in activities that influence their professional work and despite official attempts to influence teacher conceptions of it, beliefs play a central role in determining how they act.

Teacher beliefs relate to skills as well. In the literature, Cook and Brown (1999) distinguish between knowing 'what' and knowing 'how' to explain the difference between propositional or declarative knowledge from skills. They have used the example of actually riding a bicycle to refer to a 'skill' ('knowing how') and to studying a manual to learn about riding a bicycle as 'knowing what'. Skills influence teachers' beliefs and their actions. It is argued that having a skill influences teachers' beliefs and actions to a great extent. Skills, however, require practice, especially if they are complex and newly acquired. Teachers may not have a belief system in place that enables them to know how learning, like innovation, can be integrated into their practice. Teachers may have little opportunity to deliberately practice skills in their classrooms.

Since this study aimed to understand how teachers conceived of their instructional practice and how they developed their professional work, both knowledge and skills were viewed from the point of view that they influenced teachers' beliefs and resulted in the attitudes, perspectives and behaviours that constituted their instructional practice. Beliefs are constituted with knowledge and skills, among other factors.

Given the multitude of influences and the isolation of teachers, the formation of teachers' beliefs varies from teacher to teacher, therefore their conceptions of their professional work are as diverse as the teacher population (Nespor, 1987). It follows that professional practice also varies from teacher to teacher, and each teacher brings a unique set of dominant beliefs that influence their practice. This does not mean that their practices are diametrically different from one another, it simply means that each teacher shapes his or her practice differently and intuitively.

The study made a distinction between beliefs, knowledge and skills, not only to identify the source of influence, but also to expand the notion of beliefs to include knowledge and skills. The researcher worked with a boarder spectrum of beliefs and explained classroom observation as aspects of teachers' enacted practice.

The next set of constructs to be discussed are those beliefs that are central to the professional work of the teacher. Teacher developers, researchers, policy-makers, school and departmental officials impart multiple interpretations and priorities when they influence teacher beliefs. Accordingly, external agents create teachers' roles and responsibilities and teachers are required to learn those roles. On one level, teachers play a passive role in the creation and enactment of these roles; on another level, they receive multiple messages about their central roles. A teacher's beliefs serve as a "psychological resource" (Maclellan, 2016) or a filter for teachers that allows the taking of instructional decisions, while the instructional core anchors the beliefs of teachers. The teacher, the learner and the content constitute the instructional core and, more importantly, the relationship between the teacher, the learner and the content constitutes the teacher's instructional practice (City et al., 2010). The instructional core brings back the teacher's thinking to their core business and the instructional tasks they ask learners to complete.

Teachers' scrutiny of their own beliefs, which is central to their professional work, provides the basis for them to understand their work and the resources they need in order to shift them (Fowler-Finn, 2013). Teachers make their roles explicit as well as scrutinizing the roles of learners and of content in collaboration with colleagues. This study analysed data related to teachers' beliefs that relate to themselves, their beliefs and their knowledge and skills in relation to the roles of learners and to content. Teachers' roles and responsibilities shape the roles of learners and content. Teachers who believe that their central role is to complete the syllabus will speed up the pace of content delivery to ensure that all their learners are exposed to the stipulated content. Learners need to answer questions in the examination at the end of the year. These

teachers' conception of their professional work will therefore be based on their beliefs about syllabus completion as a central organizing idea.

Teachers' beliefs about their roles also shape the roles of the learners and the content. Within the framework of their beliefs, teachers develop views about learners and content. While they might be valid, teachers may also entertain specific beliefs that influence how they view learners and work with them. If teachers believe that learners are generally lazy, they may fail to engage them in interactions that are meaningful and productive.

In a similar way, teachers hold beliefs about content knowledge and skills that shape their instructional practice (Adler & Patahuddin, 2012). For example, training in content knowledge prepares teachers to work effectively with content and therefore influences specific instructional practice.

Because the instructional core constitutes the instructional practice, teachers participating in IR practice learn to look at the relationship between the constituent parts more closely (Roberts, 2012). Teachers create instructional beliefs and experiment with them to ground their conceptions of their practice, and they learn to shift their practice by changing the relationship between the teacher, the learner and the content, or at least the perspectives and behaviours related to their professional.

The central idea behind the IR practice is linking thought and action and making both visible for the teaching community. Bridging the gap between thought and action is complex and requires special treatment that researchers in education are beginning to understand (Shulman, 2004; Schön, 1991).

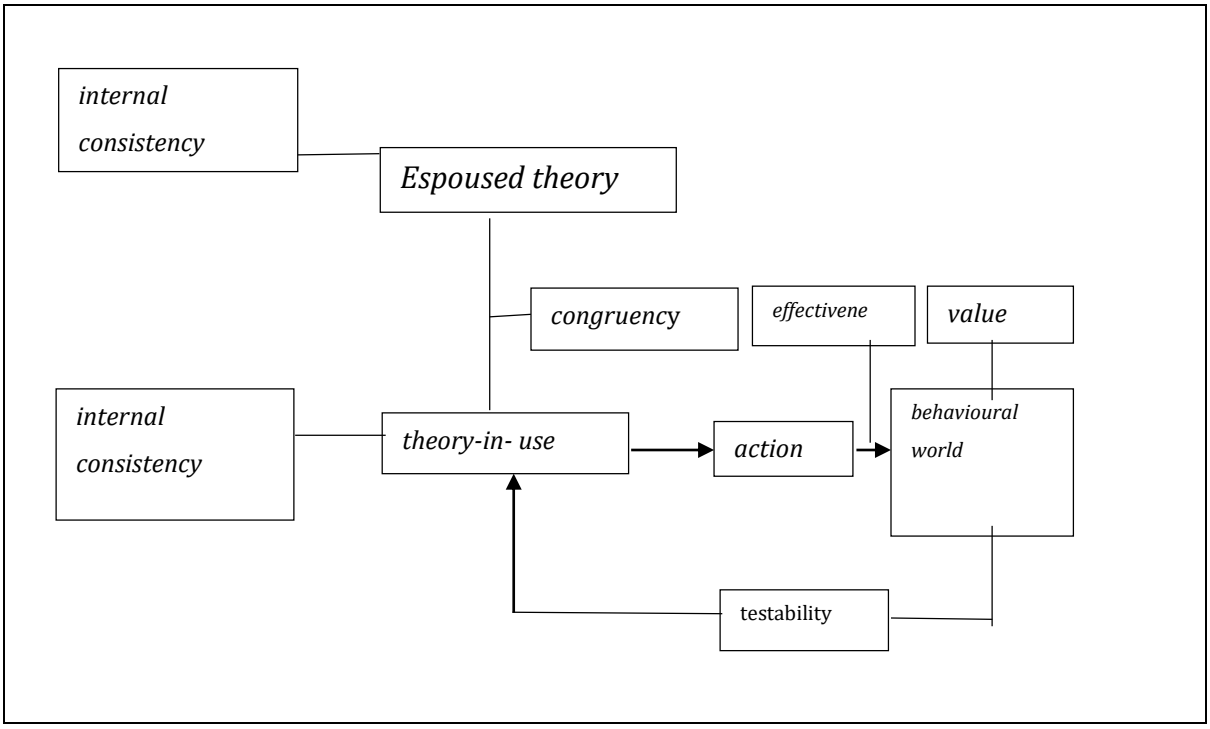
> *We believe that exciting intellectual problems are related to integrating thought with action. Effective action requires the generation of knowledge that crosses the traditional disciplines of knowledge- with as much competence and rigor as each discipline usually demands. This is a difficult task not only because*

> *scholars rarely cross disciplines but also because few scholars are inclined and educated to generate such knowledge* (Argyris & Schön, 1974:3).

This study focuses on understanding the relationship between the teachers' thoughts and actions in the classroom and the extent to which teachers start to understand their roles and shape those roles further through iterations of integrating thought and action in the IR practice. For the study, teachers work on the level of connecting their dialogue about instruction to what was happening in the classroom and the concern with teachers' shifting conceptions of their work.

Argyris and Schön (1974) developed a model for evaluating theories of action, concentrating on the theories-in-use and the behavioural world and comparing the two. While the purpose of this study was to examine the teachers and the instructional core, the model proposed by these authors is intended to frame the discrepancy between what people think they are doing and what they do in practice. For example, a company manager may think that she or he is supporting the retention of staff by the company, only to find that staff turnover is high. By examining the causal relationship between retention, support and the actual turnover, the manager has a framework to examine what she or he thinks and the behaviours that he or she is producing that results in high staff turnover. IR is based on a model that allows participants to examine the relationship between their behaviour and their goals such as teaching learners critical or creative thinking skills. This process is illustrated in Figure 1, below.

Figure 1: Theories of Action



Source: Argyris and Schön (1974:21)

IR practice focuses on teachers' growth and development and utilizes the complexity of teachers' thinking about their work and the multiple ways of engaging teachers about their work, in contrast with the other forms of professional development that are currently applied. In the process, IR creates teacher agency for change (Bandura, 1989). Many professional development interventions focus narrowly on one or two aspects of a teachers' professional work; in contrast, IR sets up a framework for teachers to engage more deeply. This may entail targeting multiple changes, as opposed to the one or two that are promoted in other interventions.

One intervention, for example, focused on mathematical content knowledge, another on engagement of teachers in professional learning communities, and others on pedagogic content knowledge. There was no commonality in terms of the focus of the teachers work and the development of ideas to change what teachers do in the classroom.

In the Maths Connect Project, a professional development intervention in Mathematics, the project targeted teacher content knowledge and, sought to strengthen the relationship between the mathematical explanations and procedures and to mitigate ambiguities in the lessons. In one paper on the intervention the failure to bring about significant changes is discussed (Pournara et al., 2015), which highlights the gaps between the professional development activity and the actual work of the teacher.

The Japanese lesson study and action research initiatives came close to looking at and working with actual practice (Ono & Ferreira, 2010). In this initiative, teachers looked at what learners were instructed to do in the classroom. Jita and Ndlalane (2009) and Stephens (2011), combined Japanese Lesson Study with communities of practice, coaching, and learning walks, with a view to linking the theory and practice. Learning walks involve teachers visiting other teachers' classrooms to find ideas that support their own work; this is a flexible framework for engaging in observation.

Utilizing action research is another way of connecting teachers to their work. When implemented in the classroom, action research projects require teachers to reflect and act directly in the teaching and learning situation. Action research focuses on individuals identifying and solving problems (Walker, 1993). It draws attention to teachers' explicit and implicit beliefs but does not bring in a collective focus and fails to shift teachers' collective thinking.

Brown and Duguid (1991) argued that there is a fundamental difference between the way work is described and the way people actually work. They argued that working, learning and innovating are related forms of human activity but do not necessarily support one another in adult growth and development. These researchers maintain that learning and innovating has little impact because it is abstracted from practice.

Practice is embedded in school cultures and as much as teachers learn and innovate, the role of school cultures in shaping practice is given little attention in many professional development programmes. The school culture is created and recreated by actors in the school and plays an influential role in the growth and development of the school (Hongboontri & Keawkhong, 2014). A focus on teachers' actual work in context is therefore important, as opposed to targeting only teachers' understanding.

IR practice focuses on the instructional core targets building competency in unfolding the teachers' actual work, with a view to understanding the complexity of the work and its implications for the learning that takes place in the classroom. The intervention targets the theories that teachers use to make decision and produce the actions necessary to affect learning and to build on those theories using collaboration (Argyris & Schön, 1974; City, 2011). By focusing on the instructional core, the IR intervention uncovers teachers' explicit and implicit understanding of their roles in the classroom on the basis of evidence and on the basis of bringing about targeted changes and, in this particular study, the use of critical and creative thinking in the classroom.

The facilitator targeted and structured the IR intervention at the high school by using a group of twelve volunteers driven by the common purpose of improving teaching and learning by focusing on the development of critical and creative thinking among learners. The underlying assumption in the IR practice is that teacher comes with implicit and explicit beliefs that drive actions in the class, and that failure to build, modify and change underlying beliefs results in superficial rather than deep and profound changes (City et al., 2010; Fowler-Finn, 2013; Schön, 1991).

In IR, teachers work with their understanding of what they do in the classroom by constructing theories of practice. They use their theories to compare them with the realities of their work or their practice. They set up a framework for constructing their theories of practice to establish a causal relationship between what they think they are doing in the classroom and what they are actually doing (City et al., 2010). The relationship between the written or espoused theory of practice and enacted practice,

or theory-in-use, is complex in the sense that the enacted practice has to be derived from actions of the teacher and from what other teachers observe as evidence of practice. The intervention supports teachers in theorizing about their work and making actionable decisions from and in practice, so that they develop stronger causal representations of their work.

2.4 Instructional Core

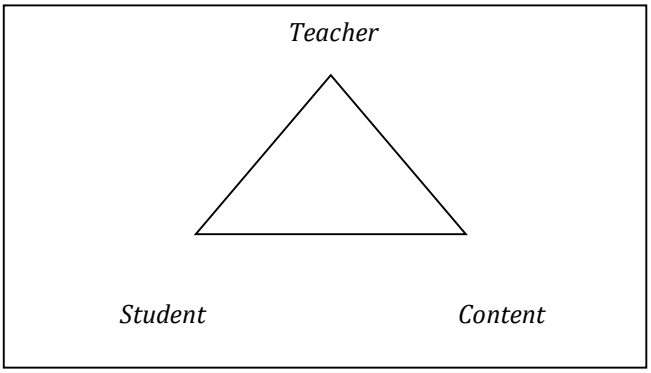
The development of the instructional core framework can be traced to Hawkins, who looked at the “I” (the teacher), the “thou” (the student), and the “it” (the content) (Hawkins, 2002). Later, Cohen and Ball (1999) argued that the relationship between teacher, learner and content determined the nature of instructional practice. Walter Doyle argued that the instructional task was located at the centre of the instructional core and referred to the actual work that learners were asked to do in the classroom (City et al., 2010).

The literature has identified different sources of teacher motivation to construct and shift their instructional practice (Day & Sachs, 2004). IR practice attempts to focus teacher motivation on designing and building their instructional practice around the instructional core. In framing the motivation, both individual and environmental elements feature in the way teachers do this.

The relationship between the teacher, the learner and the content constitutes the instructional process. Together, they determine the type of instruction that learners receive and what they learn. Although the teacher is responsible for establishing and maintaining the relationship, this does not imply that the teacher is fully aware of the process or explicitly theorises and acts on the theory. Teachers utilize their beliefs, which have both implicit and explicit dimensions.“[E]ach corner of the instructional core has its own particular role and resources to bring to the instructional process”(City et al., 2010:23).

The instructional core (see Figure 2) focuses on key features of the instructional process. It assists in making explicit many of the implicit dimensions of the role of teachers in structuring their instructional practice.

Figure 2: The Instructional Core



Source: City et al. (2010:22)

There are several reasons why teachers might set different priorities for their instructional practice; an aim of this study is to understand why they function the way they do and to understand how this may change in the future. “The model of the instructional core provides the basic framework for how to intervene in the instructional process so as to improve the quality and level of student learning”(City et al., 2010:23)

It follows from the model that teachers own understanding of the relationship between their roles, the learners and the content are critical for teacher to understand, in order, to shift their instructional practice. They also need to understand the roles and resources that each of them brings to the instructional process.

Doyle argues that the instructional task sits at the centre of the instructional core and refers to the actual work that learners are required to do (City et al., 2010). This takes many forms and teachers think about it in different ways, which may be either expansive or restrictive (Shulman, 2004). Teachers engage in highly complex work

and those who study it argue that it is both a science and an art (Shulman, 2004; Marzano, 2011).

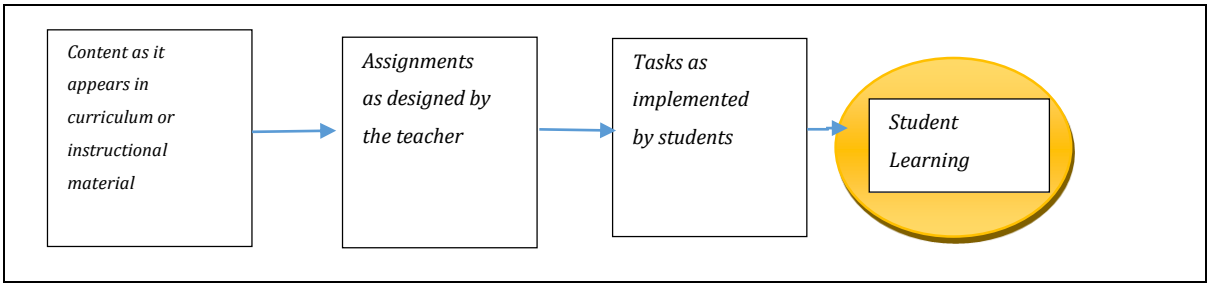
Huberman and Miles (1984) describe some of the changes that they see teachers make in their classrooms so that their teaching is more effective. Doing so requires high levels of skills (Huberman & Miles, 1984). Through innovation, they see complex changes in everyday classroom practices, such as repertoire expansion, relational changes, self-efficacy, transfer and changes in attitude. They describe complex changes intended to enhance the work of the teacher in an expansive rather than a restrictive way. They focus on multiple ideas of improvement (Huberman & Miles, 1984). These researchers reiterate the point that teaching and learning in the workplace takes place within a complex situation or context and need a complex framework to interpret and change.

Fowler-Finn (2013) and Rothstein and Santana (2011) describe a formulation of learner roles in which the teacher places the responsibility of learning in the hands of the learner. The responsibility for learning shifts from the teacher to the learner:

> *The teacher's job is to take responsibility for restructuring content, changing the accountability system in the classroom, and redirecting teachers and students roles in such a way that students do the work* (Fowler-Finn, 2013:62).

According to the previous author, in a situation where the learner takes responsibility for their learning, the responsibility of the teacher increases instead of decreases as the teacher creates the circumstances for learners to do so. Teachers transform content to produce learning, as shown in Figure 3, below. The content first appears in the curriculum and this is processed into tasks for learning. While Figure 3 presents a straightforward relationship between the content in the curriculum and the student's learning, the relationship is complicated.

Figure3: Learning Tasks Framework: How Content Unfolds



Source: (Fowler-Finn, 2013:63)

Teachers deal with a number of complex issues that arise between the content, the teacher and the learner and which shape their own behaviour in the classroom. For example, the teacher may design an assignment for learners to become familiar with the subject's content and/or to think critically about the content. The form that the task takes depends on its purpose and ultimately the design.

Following the seven principles of the instructional core that grounds the improvement in the teachers' core responsibility, this study explores the teachers' sense of themselves, their learners and content. The core itself projects broad roles for the teacher, the learner and content.

Table 1: Seven Principles of the Instructional Core

1. *Increases in student learning occur only as a consequence of improvements in the level of content, teachers' knowledge and skill, and student engagement.*
2. *If you change any single element of the instructional core, you have to change the other two.*
3. *If you can't see it in the core, it's not there.*
4. *Tasks predict performance.*
5. *The real accountability system is in the tasks that students are asked to do.*
6. *We learn to do the work by doing the work, not by telling other people to do the work, not by having done the work at some time in the past, and not by hiring experts who can act as proxies for our knowledge about how to do the work.*
7. *Description before analysis, analysis before prediction, prediction before evaluation.*

Source: City et al.(2010:23)

Teachers participating in IR follow strict protocols to get to the heart of the instructional core. Making the instructional core visible is a difficult task for teachers and this skill is developed through several IR sessions and several iterations of the evidence. Data is carefully mined to make them visible to teachers. The mining of data becomes better as teachers develop this skill.

While the instructional task is embedded in the instructional core and the instructional core acts as a framework for understand the actual work of teachers, it is the embedding of the instructional core in the IR practice that make it an effective framework for shifting teacher beliefs, knowledge and skills (City et al., 2010), hence

their motivation to shift the design of their instructional practice. In the IR practice, teachers develop an understanding of their current views about themselves, their learners and the content (the traditional approach) and they explore new relationships in practice (the new approach).

Establishing new ideas in practice requires a clear focus and lots of practice; finding the focus and time to practice during teachers' busy schedules is often difficult.

> *As an adult group task, instructional rounds is inherently ambiguous because there are many potential routes for groups to address a problem of practice* (Roberts, 2012:105).

The issue of focus and of making time to practise IR constrains efforts to bring about changes. According to Roberts (2012), large networks have between two and three IR session per year. They explain the difficulty involved in organizing more IR sessions, mainly because of regular workload demands. Higher frequency of IR practice is more likely to promote shifts in practice. The table below shows the need to focus on individual elements and on the relationship between them as the network engages in the change process.

Table 2: Instructional Core and Practice

The instructional core provides a heuristic for assessing the likelihood that any systematic improvement strategy, or any particular change in policy or practice, will result in any real improvement in student learning: • *How will this affect teachers' knowledge and skills?* • *How will this affect the level of content in the classroom?* • *How will this affect the role of the student in the instructional process?* • *How will this affect the relationship between the teacher, the student, and content?*

Source: City et al. (2010:27)

The instructional core is the central feature of the IR practice where teachers understand their actual practice.

2.4 Literature on Instructional Rounds

This study utilizes IR to understand how teachers construct and shift their instructional practices. In other words, it investigates how teachers conceive of their professional work and how they change their professional work. IR embeds the learning processes into its design in order to tap into individuals' and collectives' tacit and explicit understanding and generate teacher growth and development (City, 2011:2). City et al. (2010), Fowler-Finn (2013) and Roberts (2012) engaged in the IR practice and presented evidence of the strengths and weaknesses and this is taken into account in this study.

IR provide teachers with opportunities to rigorously understand their instructional practice and it also supplies administrators with a lens for examining their own professional work in relation to teachers practising in the classroom (Widener, 2014). IR offers the additional benefit of utilizing networks, and of being highly focused. IR practice enables teachers and administrators to develop forms of knowing in a sustainable manner and in ways that can be implemented in the classroom. These are often inaccessible in other interventions designed to affect changes in instructional practice. Classroom-based learning is indispensable for the sustained learning necessary for high-quality education (Pedder, James & Macbeath, 2005).

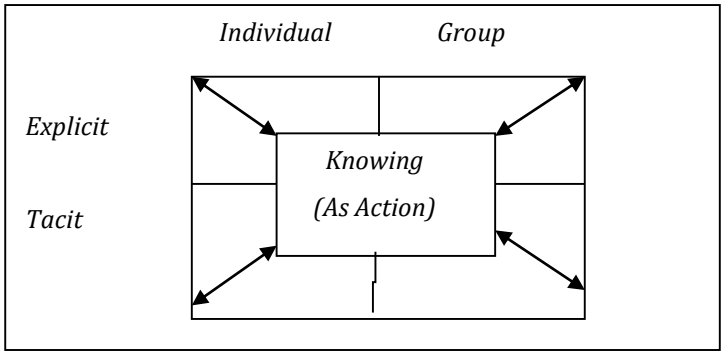
Hargreaves (2007) argued for more sustainable development efforts within a leadership framework, and IR creates an environment, depending on the improvement choices, for sustained, in-depth improvement.

Teachers participating in the IR practice are in a position to take charge of their learning (Ellis, Gower, Frederick & Childs, 2015). In a Collaborative Literacy Project in the United States, for example, teachers explored their behaviour, the behaviour of

learners and the content within the larger framework of literacy instruction and writing instruction in particular (Rieckhoff & Vier, 2012). Teachers who participated in this project developed “a new repertoire of skills” that were linked to both the IR intervention and in relation to writing. In another project that focused on Assessment for Learning, teachers reported positive changes to their conceptions and successful implementation of Assessment for Learning in their classroom (DeLuca, Klinger, Pyper & Woods, 2015). Teachers took charge of their practice because they understood their professional work better and because they were implementing in a context where they worked with colleagues to implement new ideas in their classrooms and they collectively decided on change.

To implement new ideas in their classroom, like ‘writing instruction’ in the Collaborative Literacy Project and ‘Assessment for Learning’, teachers work with an expanded knowledge base or an expanded understanding of knowledge. In relation to professional work, teachers adopt complex views about knowledge and learning, where complex understandings are explored by combining type of knowledge to promote different learning. Figure 4 below shows how explicit and implicit knowledge and individual and group knowledge is brought into one frame for development purposes.

Figure 4: Bridging Epistemologies



Source: Cook and Brown (1999:53)

As they distinguished between knowledge and knowing, Cook and Brown (1999) made the point that both knowledge and knowing are equally important consideration when taking instructional practice in account. This distinction provides greater insights, not only about the appropriateness of the knowledge structure but about avenues for learning.

Notions of deep learning (implicit and explicit knowledge) and group learning (individual and group knowledge) feature in some teacher development efforts like the Pillar Practice (Drago-Severson, 2009) and IR (City et al., 2010). More importantly for IR practice, teachers learn for understanding and for making classroom decisions.

The literature presented two views about the relationship between beliefs and knowledge. One view is that beliefs leads knowledge and the other is that knowledge drives beliefs (Mansour 2009). The author concludes that knowledge and beliefs are intertwined and argues that beliefs are strongly linked to the personal histories of teachers and the context in which they function.

Ellis et al., 2015 indicate that the IR form of developing professional work of teachers is sustainable. IR continuously develops participants in cycles, with teachers collaborating (Meyer-Looze, 2015). The cycles provide various opportunities to learn and to take learning to the next level of complexity (Burns 2011).

> *Improving teacher practice is a complex process, with traditional professional development models not providing the impetus for sustainable, lasting change to occur* (Rieckhoff & Vier, 2012:2).

IR may be used to support other improvement strategies like Assessment for Learning and improving writing instruction (DeLuca et al., 2015; Philpott & Oates, 2016; Rieckhoff & Vier, 2012). The nature of the intervention makes it a cost effective and a sustainable option.

IR practice integrates teacher professional development with school improvement and allows teachers, as individuals and as a collective, to learn. It also makes the system learn (Ellis et al., 2015). The practice works to change individual thinking and to change the thinking of the system in which the current school culture is embedded (Kegan & Lahey, 2016). The network enables counter-culture work in schools. “Failure to do this tends to lead to existing culture and practice reasserting itself”(Philpott & Oates, 2016:35)

The teachers and the system make it possible for change to be sustained over time. The counter-culture entails bringing the professional development work back to the instructional core through the problem of practice, which directs the gathering of evidence and drives change within the practice. IR shapes new ideas around the framework of the instructional core.

IR practice has built-in design features to support the development of trust and communication within networks. The literature points to the importance of down-playing the evaluation mode of thinking in IR practice (City et al.,2010).

Useful rules, which should be established before the debriefing, include the following:

- *Observers should not share what they have observed in a lesson with anyone outside the group of observers.*
- *Observers should not share comments made during the debriefing with people outside the debriefing.*
- *Observers should not offer suggestions to observed teachers unless the observed teacher explicitly ask for feedback* (Marzano, 2011:80-1)

Teachers find it difficult to move away from the evaluative or audit mode of thinking (Marzano, 2011; Philpott & Oates, 2016) yet the IR practice opens doors to new opportunities for interaction that break the culture of teacher isolation and judgment. Teachers benefit from structured professional communities like those created in IR

(Nathan, 2008). The new opportunity entails non-judgemental thinking and fosters trust and communication related to instruction.

Researchers studying IR practice researched different features of it. In Scotland, for example, the Philpott and Oates (2016) focused on studying the interaction during the debriefing session. Others have focused on the teachers' feedback and teacher perceptions within the literacy project (Rieckhoff &Vier, 2012). In Australia, the researcher was concerned with linking broader development strategies like lesson study, coaching, IR and learning walks (Stephens, 2011). All these researchers agreed that IR was a means of getting teaching and learning strategies directly into the classroom within a common framework.

The literature on IR include strategies to improve literacy levels, assessment for learning practices, differentiated instruction, promoting instructional discourse among administrators and improving the system (Ellis et al., 2015; Philpott & Oates, 2016; Rieckhoff & Vier, 2012).

IR fits well with other development strategies and may be brought into the problem of practice and reflected as the focus of the intervention. The literature points to the versatility of IR for improving the professional work at different levels. Each project focuses on a common problem of practice for participants, for example, a district may focus on sharing instructional objectives with learners (Marzano, 2011) like critical thinking.

Within IR sessions, teachers develop ways of talking about practice in a common way. They develop non-judgemental modes of describing their observations in classrooms, but initially find difficulty in moving away from judgement and evaluation and finding common ways of describing their observations and their work (Fowler-Finn, 2013; Marzano, 2011). Developing a common language to talk about instruction is a significant part of the IR practice (Fowler-Finn, 2013), but it takes time.

In order to give expression to “a question of practice”, teachers must be able to describe what students are currently able to do, with a shared understanding of what changes in a teacher’s own practice are likely to be effective in bringing about improvement (Stephens, 2011:123). The language that teachers develop during the IR practice also develops their skills in observing and describing, using a common understanding of what they see in the classroom and developing views about concrete changes that they can implement. The language provides teachers with the means to make shifts in their practice: they learn with the intention of making actionable decisions.

When teacher attend professional development courses or workshops, they rely on their intuition for implementation as opposed to evidence from practice. This study looks at how teachers think and act (physically and verbally) to implement professional development ideas. Teachers participating in the IR practice work with the problem of practice, gathering evidence to make decisions about the next level of work (City, 2011; City et al., 2010; Roberts, 2012). Evidence of practice grounds the work of the teachers.

Teachers recognize that the bedrock of the IR practice is lesson observation. Observations offered teachers a widow for reflecting on their own practice and learning new ideas from other teachers (Roberts, 2012). They do so from their own frame of reference. Classroom observation breaks teacher isolation and enables rigorous scrutiny of practice based on observable evidence from actual classroom interactions.

IR practice uses non-judgemental description of evidence as a tool to separate the teacher from the practice. Teachers are able to stand outside their work and use the problem of practice as a lens to understand their actions, both verbal and physical. Those participating in the IR practice gather data from the classroom through observations. Teachers remain in the descriptive mode during the debriefing sessions that follow the lesson observations (City et al., 2010). The focus during discussions

needs to shift from evaluation to description and the problem of practice is grounded in the instructional core.

Participants create physical and verbal representations of their work with the IR context. For example, when teachers collect evidence and identify patterns, they utilize their collective ideas to represent their work mentally and visually (City et al., 2010; Fowler-Finn, 2013; Roberts, 2012). These representations act as resources for teacher to shape their instructional practice.

The instructional core strengthens discussions about specific ideas related to the professional work of the teacher. In practice, promoting instructional specific discourse is more difficult (Allen,Roegman& Hatch, 2015). Strong problems of practice sharpen discussions and shifts discussion about individuals (teachers) to descriptive evidence and the next level of work.

IR practice requires investment of time and money depending, on the scale of the intervention. Big networks require more resources in terms of time and financial outlay but smaller networks are more cost-effective. Because of the size of the network in this study (twelve teachers) an expert was required to lead the process, together with a high level of training for a few teacher leaders, to start the process. For an ongoing learning process, the long-term costs are low. When the Oregon State in the United State cut the teacher development budget, the University supported the schools with IR intervention because IR is a cost-effective model (Petti, 2013). Training costs escalate when experts have to support teachers in the classroom: IR utilizes the teachers as resources for their own development. Developers avoid supporting teachers' professional development at their places of work because of cost implications and the labour-intensive nature of such support.

Empirical studies support the view that IR is an effective model because these interventions enable teachers to rigorously interrogate their learning; they also make it

possible for the system to learn as well, so that development is sustained and a new culture of teaching and learning, based on collaboration, is created.

2.5 Conclusion

From the literature reviewed a tentative understanding was created for targeting change in teachers instructional practice with a focus on the teachers work or the actual work teachers are asking learners to do in the classroom. The literature supports the view that teacher beliefs serve as a central resource for teachers' meaning making and decision that impact on instruction practice and the instructional core, the beliefs around the relationship between teachers and learners with content were implicated in making promising shifts in the teachers instructional practice. This study then proceeded to explore the IR intervention and shifts in teachers' conceptualization and construction of their instructional practice.

CHAPTER THREE: RESEARCH DESIGN

3.1 Introduction

This research employs a qualitative approach. Qualitative research methods, interviews and observations provide the most appropriate means of understanding how teachers perceive and articulate their ideas about the conception and construction of their instructional practice.

> *The overall purposes of qualitative research are to achieve an understanding of how people make sense out of their lives, delineate the process (rather than outcome or product) of meaning-making, and describing how people interpret what they experience* (Merriam, 2009:14)*.*

Qualitative research allows precise particulars of teachers' understandings and interactions to be collected and understood (Silverman, 2005). In this case, the study investigated how teachers understand their role in the classroom differently, before and after a year-long IR intervention.

This study was conducted using case studies and two stages of analysis, within-case and across-case analysis. Each case was treated as a comprehensive account of the understanding and interaction of the participant. After that, the cases were compared in the cross-case analysis (McMillan & Schumacher, 2006).

The case studies were also used to document the views of the participants with regard to their own practice, the learners, the content that was the focus of their interactions with learners, and the IR practice. The aim was both to understand and to achieve shifts in their beliefs. This study examined how teachers construct and shift their instructional practice because researchers, teacher developers and teachers themselves understand the difficulties associated with constructing and shifting teacher instructional practice- a process that is embedded in the teachers' belief systems.

3.2 Aim of the research

In each IR session, participants worked with a particular “problem of practice” asking the participants to observe classroom activities collecting data on that particular problem of practice and then to process them in a series of structured activities. For example, the participants might observe evidence for a common problem of practice, such as: “In what ways and to what extent are students engaged in their learning” (Fowler-Finn, 2013:44). Using this problem, participants follow the IR protocol to begin the IR cycle.

While the study focuses on the experience of the four teachers and what they learnt in it, it is important to remember that the larger purpose of IR is not just to think about the personal development of the participants, but to encourage learning in the larger teaching community of the school. This was one of the difficulties faced by this group of IR participants: because the facilitator was not based in South Africa, connecting the rounds practice to the rest of the teachers was the responsibility of the school and the school facilitator.

The participants, with the support of the researcher and facilitator, developed a series of hypotheses for the participants to test in the classroom. The IR participants, for example, could test several hypotheses to check if learners were engaging critically with their learning.

3.3 Reliability, Validity, Generalizability and Trustworthiness

According to Merriam (2009), issues of reliability, validity and generalizability especially in case study research like this study limit the research study. The researcher therefore took steps to ensure the issues related to reliability, validity and generalizability were taken into consideration. Given the nature of the study, issues of reliability and generalizability were a lot more difficult to address than those of validity. The researcher acknowledges that this is a small-scale study with only four participants. Every effort was made to keep the conduct of the research processes consistent for all the participants by interviewing and observing lessons during a

similar time and duration, keeping the same semi-structured questions to produce the data and practising the transcription and coding processes to ensure reliability.

Steps were also taken to make certain that the study is valid by paying careful attention to issues related to the production and processing the data to ensure that the participant's meanings were expressed in the study, and not that of the researcher (Dey, 1993). While researcher bias cannot be eliminated, a conscious effort was made to minimize bias.

In addition to reliability and validity, the researcher also took into account trustworthiness of the study. The researcher considered Guba's (1991) constructs that included credibility, transferability, dependability and confirmability in this study. The researcher considered trustworthiness of the study to ensure that findings emerged from the data (Shenton, 2004). In particular, using 'thick descriptions" of the data in the findings section brought the participant's story to the forefront and speak for themselves.

Because this was a small-scale study, it attempted to provide an in-depth understanding of a few participants and may not apply to a wider population and cannot be generalized to the general teaching population.

3.4 Design Strategy and Participant Recruitment and Selection

In the second session of the IR practice debriefing session, after the participants had collected evidence from their observations, they analysed the data and developed a question to further understand learner engagement in the identified problem of practice, in this instance concerning critical and creative thinking.

In this study, twelve teachers participated in the IR practice. Six teachers responded to the invitation and agreed to commit to year-long participation in the study, which included interviews and observation, but two of these teachers had to withdraw from the research for personal reasons. For one teacher, this was her first full exposure to

IR practice. Three teachers had experienced some form of IR in the past, and all the participants had been exposed to other forms of professional development.

This study explored how the four teachers who participated in a professional development programme conceptualized their position as professionals and how professional development helped them grow in their roles, especially with regard to their instructional practice. Since the goal of any professional development intervention is the participant's growth within the profession, the teachers were interviewed before and after a year-long intervention to determine whether their participation had had any effect on the teacher's perceptions. For this research, a qualitative approach was adopted to ascertain how teachers make sense of the profession and shift their beliefs that are related to their work.

> *Qualitative researchers believe that qualitative methods can provide 'deeper' understanding of social phenomena than would be obtained from quantitative data* (Silverman, 2005:10).

Understanding the actors' perspective at various points of the professional development process is key to understanding the shifts in beliefs that teachers make. Hence, a qualitative approach was applied in this study.

Kagan & Tippins (1991) point to the disadvantages of a using group setting for eliciting teachers' individual beliefs. To mitigate the barrier that a group setting imposed, individual interviews and observations were used as strategies for data production.

This study was concerned with how a teacher reconstructs their theory-of-practice through the IR intervention. In the literature review, an argument was made that, unlike medicine, law or architecture, teaching is a profession without a common professional practice (City et al., 2010). It was suggested that a step in the direction of establishing a common theory of practice would be to develop a common language for describing and talking about what good classroom practice is.

In terms of the qualitative approach, Silverman (2005) makes a distinction between an "emotionalist model" and a "constructionist model". These concepts are useful for understanding how teachers make meaning and how interaction is developed within a professional development activity. In the emotionalist model, perceptions, meanings and emotions are prioritized; in the constructionist model, interaction is prioritized.

Both meaning and interaction are important for answering different questions in this research. To produce data on meaning and emotion, the researcher relied primarily on interview data, collected at two points over the year. To understand interactions with learners, teachers were observed, both within the IR process and in the classroom. The use of this combination of methods allowed for some triangulation of the complementary forms of data produced.

3.5 Selection of Participants

There was a facilitator to organize and support the intervention. Participants in the overall IR program were recruited from the staff of the school where the IR intervention took place. The school agreed to their staff members being approached and asked to volunteer to take part in this research study.

Twelve teachers from the high school agreed to participate in the IR practice and six agreed to participate in the study. Two participants could not participate in the final interviews and the data initially collected from these two participants have been excluded from the study.

Participants committed themselves to the full cycle of two workshops and three IR sessions. In South Africa, language is an important consideration because of the diverse language backgrounds of many teachers[1]. The intervention was conducted in

[1] Readers are reminded that South Africa has eleven official languages and as the commercial centre of the country, Johannesburg has an even more linguistically diverse population. The school where the study took place uses English as the

English which is also the medium of instruction at the school, but this was not the home language of some of the participants. For these two teachers, it may be possible that language may have affected their expression of ideas during the interview session Apart from language, selection of research participants from the larger body of teachers in the network entailed keeping in mind issues affecting participants, which could be useful when considering future scenarios and action to be taken.

The research site provided a limited set of issues when considering the network. In bigger networks and in many schools, the nature of the intervention would manifest itself differently. Because of the small number of participants required, the participants were selected on the basis of their willingness to take part; factors such as age and level of qualification, although considered initially, were of no ultimate significance. The four cases that made up the final sample fulfilled the needs of the study adequately.

In a qualitative study like this one, asking teachers to commit to a process for a year is a challenge. Regular meetings for the IR process added to their work commitments. The initial planning of the study anticipated the possibility of one or two teachers dropping out and the amount of data the study was likely to generate with six participants.

3.6 Methods

Selecting a method to produce data on beliefs proved difficult because beliefs have multiple meanings and are not directly observable (Higgins & Moseley, 2001; Pajares, 1992). Beliefs are often linked to knowledge, skills and attitudes. Kagan and Tippins (1991) and Nisbet (2000) have utilized various strategies to produce data on teachers' beliefs, including interviews, questionnaires, observations and focus groups. In addition, Mansour (2009) argued that beliefs must be studied in context. The researcher took into account the advantages and disadvantage of these methods and

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medium of instruction and requires students to study two additional languages. Language plays a role in communication for both the teachers and learners.

decided on interviews and observations. Semi-structured interviews were used to produce data. Data was also produced by observing lessons and observing the IR debriefing sessions.

Interviews provided a tool for gathering data about how the teachers made sense of teaching as a profession. Data illustrating shifts in teacher beliefs was produced by conducting interviews at different intervals of the intervention (at the beginning and a year later). Interviews were an appropriate means of capturing teacher expressions about meaning-making and shifts in meaning. Data gathered through interviews may be corroborated with data from follow-up interviews, but in the end this did not prove necessary, since the main purpose of the interviews was to understand how teachers make sense of a particular problem of practice and to track the shifts or developments that they underwent.

> *Interviewing is necessary when we cannot observe behaviour, feelings, or how people interpret the world around them. It is also necessary to interview when we are interested in past events that are impossible to replicate.*(Merriam, 2009:88)

Collecting data on how teachers make sense of teaching as a professional practice required a sequence of fixed and open-ended questions. Recording teachers' responses and producing transcripts from interviews ensured that the data was accurate and allowed the researcher to listen to the interviews several times.
In developing the interview schedule, key indicators of beliefs were used. While most data on practice was collected through observation, some interview questions focused on how the teachers understood the practice aspect of teaching. The researcher explored the teachers' own sense of being a member of a profession and how they interpreted the notion of instructional practice.

IR practice generates inter-subjective understanding. The interviews and observation data provided insights into the changing patterns of teachers' meaning-making ability

in relation to the problems of practice. Interviewing the participating teachers again at the end of the year allowed the production of data to ascertain whether shifts had occurred in teachers' beliefs about their instructional practice.

Silverman (2005) argued that observations are appropriate for gathering data on interaction, and in this instance lesson observations yielded data on the changing patterns of interaction in the classroom, while observation of the network discussions revealed patterns of the interaction among members of the network. The researcher observed participants observing other teachers, but found that the data collected in this way was unsuitable for the study.

Observing each teacher's practice provided data for comparison at the end of the year. In other words, establishing initially how a teacher inhabited her practice and how this practice changed or did not change at the end of the professional development intervention, offered another view of the teachers' conceptions of practice. The researcher observed a few of the participants' lessons for twenty minutes each, using the IR Observation Schedule (see **Appendix L**).

Conversations in the IR practice meetings, and classroom observations themselves, provided rich data for measuring shifts in beliefs and practices. For example, listening to initial and later conversations about practice was a useful way of tracking expressions of shifts in conceptions of practice; the establishment of a common language was a useful indicator of the shift. Other indicators included the level of participation and the nature of engagement.

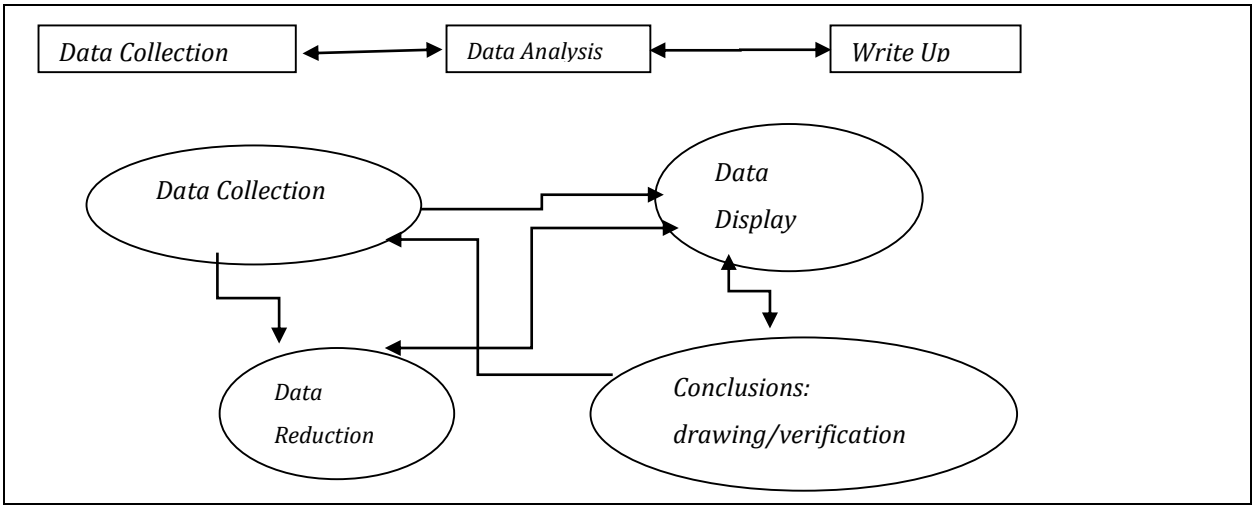
Observing teachers during the IR process was different to observing their lessons, as the focus is different: in the IR debriefing sessions, the focus was on the language that participating teachers used to talk about their work, while lesson observation supported the production of data on the participating teachers' actual work in the classroom.

Despite observing participants in the debriefing sessions, outputs from the session, in the form of a displayed collection of evidence from lesson observation, served as the main source of data. It proved difficult to isolate conversations of individual participants from the study sample.

3.7 Data Analysis

The data from the interviews and observations followed the process of data analysis outlined by Miles and Huberman (1994) in the figure below. The collected data was transcribed, coded, displayed and conclusions were drawn.

Figure 5: Components of Data Analysis: Interactive Model



Source: Miles and Huberman (1994:12)

In Figure 5, the interactive model of data analysis is illustrated. While it might be presumed that the linear process of data collection, analysis and writing up (illustrated at the top) is standard, in reality, qualitative research is far more dynamic in nature.

The researcher took responsibility for producing the data through the interviews and observations and also processed all the data. In this way, the researcher maintained tight control over the data, guaranteeing a level of security over the collected material.

In addition, the tight control meant that ethical considerations were addressed as well. The identities of all the participants, including learners, were protected. The first phase entailed reducing the data from the transcripts to more manageable components through coding: this meant assigning essence-capturing words to chunks of data (Saldaña, 2009).

The coding of data followed two cycles: the various codes were grouped into categories and eventually into themes. The cycles were used to look for similarities, differences, frequency, sequence, correspondence and causation (Miles & Huberman, 1994; Saldaña, 2009).The coding, categories and themes were used to generate displays which were then used to compare and track shifts in the teachers' beliefs.

3.8 Significance of the Study

This study contributed to the understanding of how teachers perceived their own practice and how a professional development programme was able to shift that understanding. It was based on the assumption that teaching, as a profession, required consideration of the notion that a coherent, discussable practice allowed a network of individuals to talk about their work.

The teacher's initial views about their practice, and their initial interaction, formed the baseline of this study. It was assumed that they developed new insights into teaching as a professional practice, and that these shifted their beliefs. Measuring shifts in teacher interaction and meaning- making provided understanding about teaching as a professional practice.

The literature review provided evidence for improving professional practice through a better understanding of teaching and learning and through teachers collaboratively deepening their understanding of what they do in the classroom. This study provides evidence of how this shift in understanding took place.

3.9 Limitations of the Study

This is a largely exploratory piece of research. Given that the teachers involved were not selected randomly and that the study was relatively small-scale, it does not purport to be generalizable to all South African teachers. However, it is hoped that the study would generate an added appreciation of how participating in this particular kind of professional development programme can influence teacher's beliefs and practice and open up a different chapter in the professional development of local teachers, adding to the general understanding of teachers' sense of professional practice.

In this study, validity mitigates against bias and ensures that questions, for example, measure what they claim to be measuring (Cohen & Manion, 1994).

3.10 Consent, Access and Protection of Participants

In compliance with the Human Research Ethics Committee guidelines for educational research, the governing body, the head of the college and principal of the school were sent information letters and asked to consent to the study (see Appendices A, B and E). The teachers participating in the study each signed a consent form (See Appendix D). Letters and consent forms were also sent to the parents, with consent forms (Appendices F and G) and to the learners (Appendices H and I). These documents outlined the intentions of the study and its relevance; they also included information related to maintaining anonymity.

The researcher used pseudonyms for the participants and gave them the assurance that the data would be kept confidential and would be destroyed five years after it was collected. Also, that that the participants had the option of withdrawing from the research at any point.

CHAPTER 4: FINDINGS

4. Introduction

The findings were generated from the data and the conceptual framework was formulated from two sets of interviews for each of the four participants; observations of three debriefing sessions with all the IR participants; and classroom observations of the four participants; it is presented accordingly. Utilizing the conceptual framework, the findings are presented in three main categories, namely beliefs about self, beliefs about learners and beliefs about content. They yielded initial insights into teachers' construction of their instructional practice and career choice. Passion for their subjects and the need to meet school demands seemed to emerge as two of them. The findings in relation to main categories provided other insights later in the intervention.

4.2 Vignette 1: Jenny

4.2.1 Beliefs about Self

Jenny believed that her high-school English teacher had the most impact on her selecting teaching as a career and English as a subject for specialization. She described how this teacher *"made English come alive"*, implying that Jenny connected with the learning in this subject.

Researcher: *What motivated you to become a teacher?*

Jenny: *Shoo that is a hard one. I am of the older generation and really when I left school I passed matric and there wasn't a huge big option and my parents didn't have a lot of money to send me to university. I think my English teacher in matric started me and she was absolutely fantastic. She made English come alive and that was when I started thinking about it and then monetary wise my parents couldn't afford university. I went to training college because training college gave us a loan so we and you know… you just had to pay it back by teaching.*

Jenny also believed in herself as a student. If she had a choice, she would have attended university. She chose to go to college because of the opportunity to study. When it came to teaching, Jenny set high standards for herself: she tried “to do it right”. She still felt excited about teaching and looked forward to it.

Researcher: *What would you attribute the excitement to?*

Jenny: *I think I wanted to do it right or maybe that was it. I have a lot and still do have a lot of excitement about teaching and with the children they are so [Not audible] and that is particularly why I like Maths because a lot of people say that Maths and English is a strange combination. I specialized in English Literature and they only brought it in for two years and they decided to scrap it and I have done the course by then.*

Teaching both Mathematics and English made her feel excited.

Jenny held the belief that creativity is something that cannot be taught, a sentiment that she believed other staff members shared.

Jenny: *You know, talk to everybody on the staff as a whole unit you know as to what came out of it, we came out with ‘I don’t think you can teach creativity’. I think you can’t? Yes, we are. We are not teaching it because I don’t think you can. You may think you have done a good job making them question something. Why did that happen? Why didn’t that happen? What’s going to happen next? I have that problem. I don’t think you can teach it.*

She explored the possibility of using questioning to improved teaching and getting learners to do different things. She could not see the relationship between her role in the class and creative thinking.

She benefited from IR and found that it made her critical of her lessons. The interactions with other staff members took place at the end of the year, just after the IR observation and debriefing session, a time when all the teachers were involved with the administration of end-of-year examinations.

Researcher: *Would you recommend IR?*

Jenny: *I'm really in two minds about it. I really am as I say, I think it helped me. It made me look at my lessons. I don't know if the whole school benefited you know, and maybe when we gave feedback it was the last day of school, a terrible time. It was just before we all had to do exams and reports so people weren't interested you known so that maybe was just bad timing to get the feedback. But as I said I'm two minds.*

At the end of the year, teachers focused on the administration of examinations; this includes producing learner reports. Jenny suggested that teachers might not have been interested in the feedback because of the timing or the lack of immediate feedback.

In her description of her English teacher, Jenny spoke of her as having a passion for the subject. In other words, the teacher was somehow connected to her subject and found ways of expressing her enthusiasm to learners.

Researcher: *It could be university or this school. It could be anything, including courses you attended.*

Jenny: *I think the big thing was the English teacher in matric. The big thing for me was she had a passion for English and she lived it and I think that is what you had to bring and that is what most teachers have is a passion for their subject. I think especially in the high school-subject based. So if you had a passion for your subject the children catch that and I think that would be good. From training college, I think for me it was training college that taught me how to teach not what to teach, but how to teach.*

You know how to scaffold, how to break something down into pieces so if you teach in little pieces the children get the end result. So I think that was the biggest thing I learnt from training college. Teachers breakdown so you are going to write a paragraph so what does a paragraph consist of? It's got a whole lot of stuff- sentences – so what is a sentence? So for the children to go back that [not audible] so you can write a good sentence. You can write a good paragraph. The paragraph got to flow and it's got to have one thing and I think that is what I learnt from training college and that really helped.

Connecting with learners meant that the teacher has to be responsible for making a topic accessible and for supporting learners in their learning: this is an idea that Jenny learnt at the college. The teacher understood how the pieces would add up for the learners. She looked for qualities relating to the topic that she has broken down and tried to see how these bits added up to something bigger, like the sentences in a paragraph.

The college trained Jenny to teach a variety of subjects, including English, Mathematics and Social Sciences (History and Geography). When Jenny taught, the feedback from learners was important, including the expressions on their faces.

Researcher: *I wanted to ask you a question about a great teacher but you already answered that for me by mentioning your English teacher. But the Maths side, where did that come from?*

Jenny: *Maths! I did because I was primary-school trained to do all the subjects of training college and because I took special English it was a literature component. I did that for two years- special English- but when I got to this school they needed somebody to teach Maths so I got one year but I tried it and loved it and so I thought that that went well and they haven't let me go but I do love it. I must admit as I said because of that Ha! Ha! Moment.*

Jenny looked for signs of learners grasping the content. These included the learners' facial expressions. They indicated to her that the learners understood and were connecting with the topic and with her teaching. It was a combination of learner expressions and monitoring qualities related to the ideas that learners have to put together, like the flow of sentences in a paragraph, that told her that they were engaging with the material and gave an idea of their progress.

Jenny also commented on the discussions that came from the IR practice. She struggled to describe what she was doing, or saw others doing.

Researcher: *Let me put it this way: 'As a teacher I benefited from A, B and C and I think that this is a route to take if you provide professional development.' What would it be? That kind of response?*

Jenny: *If I keep it to IR. The people who did it benefited. I really do and we discussed so much. So much came out of our discussion. It was awful trying to put down in words so that you can speak to somebody else. You know but we had the most amazing discussion that just went on and we better keep a schedule. I think we really benefited for those who did it but the others. If I were to give you advice, I would say read the book and do it very [Not audible] if you want everybody to benefit. It would take a huge chunk out of your teaching time it really, really would. I would say you need everybody to be on it which is almost impossible. Then I think everybody will be on board because you are all doing it and you'll all buy into it. You have to because you will all be observers. It will be more a cumulative thing not just some teachers.*

Jenny expressed her unease in talking about practices that she observed because teachers need to develop a common language of understanding. She struggled to find the words to talk about her work but at the same time, she had *"an amazing discussion".*

Initially, the teachers observed in the classroom with the intention of exploring teaching, but later found the focus on questioning skills more productive.

Researcher: *But was that deliberate-having the question and not having the question?*

Jenny: *I think when we first did it. It was very much let's go look so that is why the first one was, you know, let us have a look at what was happening in the classroom and let us see maybe there is a gap. Sometimes we need, maybe we need to look at something there. I think the first time was very much a let's go and look. We looked at the teachers questioning skills but it was much better to have the real or the actual question.*

Through IR, the group had opportunities to observe other teacher asking questions. They interrogated the use of questions in the classroom, utilizing real-life context or data from actual classroom interactions. The observation related to what the teachers were doing in class, rather than what the teachers thought they were doing, and questions teachers actually asked in the classroom.

Jenny believed in her potential and did not have opportunities to continue with her career of choice because of financial constraints.

Researcher: *Are you teaching English?*

Jenny: *I am teaching English and Maths and that was really [Not audible] for me she was one inspiring teacher who came actually very late. I would have liked to have gone to university but my options were not really opened to us in those days like they are now.*

She saw a different world for learners and the options that they have in today's context. She believed that learners currently had more opportunities.

She incorporated technology in her teaching: this was partly motivated by the school and partly self-initiated. When she started using Lab-on-Line she found it difficult;

however, her proficiency improved and Jenny recognized that she needed to develop in this area.

Researcher: *Tell me about your typical day.*

Jenny: *My typical day shoo. This year it is a bit different because I am involved in this new Lab-on-Line where we are trying to get children's reading levels up and the way they read. It is a fantastic course and the children like it and that's being very different because it is all on line and I find it easier because last year was the first year in the classroom and that was very difficult for me because I am older. I had to learn a hell of a lot because and I still haven't learnt enough. I am better this year and I and finding it is easier.*

She had become better with experience and with practice. She believed that more learning was necessary to develop her skills further. Learners' willingness to complete activities on computers also indicated that teachers get a sense that learners understood the world in a particular way and teaching them entailed working from that understanding.

Researcher: *You spoke about getting into their space to develop them. Was there anything that made a difference in terms of developing the kind of understanding from experiences?*

Jenny: *Probably having my own children and trying to understand them and trying to see and just trying to understand them and also why I stayed at this school particularly because they always been open to change. They let me be me and I would say I would like to try this and I can see them going aahh goodness me now she wants to do this but they let me and that is always that is why I say I like to stay here because they just say ok it looks like it's got merit it's going to help the kids so try. They have never stopped me from trying and exploring others than keeping to the straight and narrow.*

Having her own children and watching them grow had contributed to Jenny's understanding of how children learn. She also tried out different ways of teaching to check if the outcomes were different. There was a lot of trial and error involved in trying out new ideas with the learners. Jenny first got feedback from the school. From the above extract, she seems to have earned a reputation for experimenting in the classroom.

Jenny had observed teachers using questioning.

Researcher: *Were questioning techniques the problem of practice and critical and creative thinking skills?*

Jenny: *It came out of the first time when we looked at stuff and we discussed it and we put all sorts of things on paper and it came from that and we said let's see it. We are trying to get our learners to think critically. We started doing the critical thinking skills at school and said you know. We were doing it for the tens and elevens but we said well are we doing it all the time? Are we not just looking at that and there it came out with the two things together.*

The teachers worked with the idea of critical thinking and investigated whether the use of questions promoted learning among learners. They inquired into whether critical thinking was part of all grades in the high school. Questioning and critical thinking emerged as focus points for IR.

Jenny mentioned two competing demands on the school staff, namely preparation and marking. These tasks were both time-consuming and necessary for her practice. There were many other demanding tasks at school, like attending meetings, sporting activities and debates.

Researcher: *When you first started teaching, what was it like?*

Jenny: *I think I loved it from the start. I found my first year very difficult. I really did. I found the preparation and marking really difficult. I found it very difficult because you don't know the ways of making it easier. I have had to go through dips to sort it out and you had to do it and I am still a bit like that. I still work out exactly where I go but it used to take me all night obviously. Now it is a long way down the line and it's much easier.*

Marking provided evidence of learning and preparation allowed her to anticipate the work for the next day. She built on the learners' knowledge with new ideas or pieces of information, like the sentences and paragraph example that she used.

Jenny structures lessons differently in different subjects. It was important for her to be creative in English and logical in Mathematics.

Researcher: *How do you handle the difference in approach between English and Mathematics?*

Jenny: *Well the kids, because I teach the same kids for English, Maths and Human and Social Sciences, which is like History and Geography, and they say to me you are different in each class and I think you have to be. In Maths, I am a very logical because I think you have to be because most children don't understand and I think when it gets to English I do all sorts of stupid things like jump around. My creative side comes out and I am totally different in English totally different.*

She saw her role changing in different subjects and felt that the nature of the subject dictated the way she taught. She was logical in Mathematics and creative in English.

As mentioned before, preparation and marking were the two main areas of her work and she devised ways of coping with them and balancing the demands on her time. Technology assisted her in creating this balance. For Mathematics, she focused on exercises for learners to practice. She worked through a lot of examples with them.

Researcher: *Tell me about your typical day.*

Jenny: *I know where to go to get stuff. My preparation is much easier for my lessons and I still prepare every day the night before but it is quick. I decide how the lesson is going to go and normally, I teach first. In Maths, I do a lot of examples. I can use the iPad as well as the blackboard. You know the white board now, so that is really nice. I can bring pictures in. I don't have to work an example on the board it is on my iPad.*

Using technology allowed Jenny to be more efficient, because she displayed the work on the white board for learners to complete instead of writing each one out on the board; she was able to expand her lessons because technology allowed her to bring more into her classroom. She uses the example of using her iPad to show learners what a sandstorm looks like.

The time Jenny had available to spend with learners also increases because of technology. The time she used to spend writing examples on the board was currently available for her to focus on other aspects of teaching and learning, like listening to learner conversations and monitoring learner tasks.

Researcher: *I take it you have an iPad and you display information on the board?*

Jenny: *On the data projector. I found that really made my life easier and it is a lot quicker. There is more time. I should spend more time writing the whole problem out and I got it. I just click it and its instantaneous. I am always with them outside and reading to each other and those are my English Lessons.*

Time-wise, the learners' classroom experience had changed and she also focused on changing the setting of her lesson. She took learners outside to enhance their experience of reading, allowing them to read in a different setting.

Jenny believed that she has a lot to learn and constantly tried to experiment and change what she did in the classroom.

Researcher: *That is an interesting tension between good for the school and good for the individual.*

Jenny: *I want to try something new because I think you will really learn. I have to be honest with them and I say I think this is going to help you and that is why I want to try it and if it doesn't we need to look at it and I need to do it in another way.*

When Jenny tried new approaches, she enlisted the support of learners to give her feedback. Depending on the type of feedback she received from them, she modified her approach or tried alternatives.

Researcher: *And a lot of this will depend on the feedback you get from kids.*

Jenny: *Miss this was so nice and I understand or they go no and it not like every lesson or something. Try this one. I want to see if you can learn better from this way but if it does not work you got to tell me and we will just go back to the old way and you will probably understand so that and I think that is based on a relationship towards the children and that is also something the school allows you to do. You know they allow you to teach like that.*

One option that she had was to go back to tried-and-tested methods. The school's blessing and the relationship with learners assisted Jenny in trying out new ideas.

Jenny articulated the difficulty she experienced when asked not to judge teachers and found the experience contrary to the school norms, according to which they constantly judged learners and gave marks.

Researcher: *What was the IR experience like?*

Jenny: *I found it very difficult in the beginning to not judge because teachers and that's what they ask us to do all day-give a mark for this. I found it very difficult in the beginning but this time round it was much easier. You know it now. Having the question that you focus on makes it easier. The first time we didn't have a question we just went in there and there was so much happening. I felt that because I couldn't comment. The question focuses you so much more.*

The teachers' experience of classroom observation contrasted with the initial session because they moved from general observation to focused observation based on a question.

Their exploratory observation allowed teachers like Jenny to experience observation and the work of other teacher and the many things that go on in the classroom. They also had an opportunity to explore their own ability to observe.

Researcher: *But was that deliberate-having the question and not having the question?*

Jenny: *I think when we first did it. It was very much let's go look so that is why the first one was, you know, let us have a look at what was happening in the classroom and let us see maybe there is a gap. Sometimes we need, maybe we need to look at something there. I think the first time was very much a let's go and look. We looked at the teachers questioning skills but it was much better to have the real or the actual question.*

The focus on questioning skills provided more opportunities for discussion based on specific types of evidence collected through the IR practice. For example, teachers produced and discussed data on questions from classroom observations.

Jenny adapted her instructional practice when she moved up to the higher grades. Despite having the knowledge to teach English up to grade 10, the college trained her to teach primary school learners.

Researcher: *What kind of challenges do you experience in your teaching practice?*

Jenny: *I think the biggest challenge is that I was primary school trained although I am qualified to teach English up to grade ten. But I went to the primary school and that is where I started and when we brought our sevens up to the high school, I was teaching grade sevens, so they asked me to come up and when I got here they said please teach grade eight and please teach grade nine you know and so.*

As Jenny mentioned, she tried to understand the learners' frame of reference in her class, so she found out what learners were interested in and knew how to structure her lessons accordingly.

4.2.2 Beliefs about Learners

Jenny believed that the relationship with learners promoted learning and the school approved of innovation in the classroom. She invested in learner relationships by finding out their interests and also by moving from a position of what learners already knew.

Researcher: *That is an interesting tension between the good for the school and good for the individual.*

Jenny: *But as I say they do look at it first so they allow me. One of the most important things for the teacher is the relationship with the class.*

Jenny promoted learner interest in other ways: in class, for example; she used technology to promote efficiency in the classroom and also to enhance learners' learning experiences.

Jenny could see if the learners understand because they displayed understanding through their facial expressions. She used facial expressions as an indicator of learner understanding.

Researcher: *What would you attribute the excitement to?*

Jenny: *There are two things and for me the best thing ever and it still is when you teach Maths and you see the kids' faces and they catch on so fast and you can actually see the light bulbs going on. Oh! So that is how it works and for me that is why I never want to go into management or anything like that.*

Researcher: *Describe your experiences as an observer and as a teacher being observed.*

Jenny: *We didn't have enough time to really get into the lesson and feel what the students were feeling and for me that was a bad thing.*

As a teacher, Jenny felt excited about learners displaying understanding of learning. Even during the classroom observation, Jenny tried to observe learners' expressions during the lesson. She looked for signs of learners connecting with the content.

Jenny understood that learners were all different, as individuals and as a group, to the point where the grade 7s in 2014 will be different to the 2015 group, and so on. Her challenge was to understand these learners so that she could shape her lessons and select material that was consistent with their interests and understanding.

Jenny: *In one way, it was challenging and it changes all the time. Even in the primary school. I was always moving even in the primary school. I did grade four, I did grade seven and grade six. And up here I did seven and eight and nine so the challenge has been for me is how much the children have changed and so I had to change. I am a very different teacher to when I started. I still get excited about things. I am very*

different because the children are so different. The technology is there and because the best lesson always come when you take a start from something they know, love or hate, that you can get a reaction from something they know so I had to try to be current with what the young people know like and what they are thinking about or your lessons don't work or you don't get the stuff across so that has been my biggest challenge- keeping current with the children and how they changed and with what they like.

The dynamic nature of the learner population was extended to the changing world. Jenny tried to keep abreast of current learner interests.

Jenny further supported learners by understanding that they spoke and understood different languages. She allowed learners to interact using other languages, so that learning was promoted. She also utilized the fact that learners explained things in different ways, which also promoted learning. Jenny encouraged interaction so learners could construct meaning together.

Researcher: *Yes. Do you do that a lot in terms of getting kids to teach or do you get parents to do that?*

Jenny: *No! No! No! I often find in class. In Maths so a lot the learners that understand that finish quickly, they often help the ones who are struggling. Because the kids aren't streamed because they speak each other's language so sometimes I may say it in a certain way and they don't get it but when their friend tell them in their language it makes a difference and I am saying they still speak in English and sometimes if they want to speak in an African Language then they go oh! Ok! So when you get them to understand you can use peer.*

Classes were heterogeneous, so the learners understood a lesson better than others and those who understood it explained to the others. Jenny utilized peer support in

class and used language in different ways. Firstly, using different language could mean the same language, but the difference was in the way learners spoke, or it could mean an African language.

Jenny worked with groups to share their understanding among their peers. In this example, the learners wrote sentences and each read out their best sentence. They had the opportunity to listen to other learners' sentences and to reflect on their own. In this way, they transmitted the criteria for writing good sentences.

Researcher: *I take it that you have an iPad and you display this on the board in class.*

Jenny: *My English, I do a lot of work where we all work together and with the grade 7 we are doing a descriptive paragraph at the moment. So they wrote it and now they each read their best sentence today and we talk about why that was good and we look at that and then they read it to each other and so I do a lot of that. I hardly sit at my desk. They are very involved with the children except when it comes to grammar then I have to be [Not audible] but the grammar comes from what we are doing and I am a great believer in you don't just sit there and hear this learn this, it has to be integrated in some ways.*

Jenny often moved around the classroom so that she could share ideas with the learners. Her movement in the classroom related to her interactions with learners. However, her approach to teaching grammar was different.

4.2.3 Beliefs about Content

It was evident that subject or content shaped Jenny's teaching. Learners understood her because she taught them both English and Mathematics. Generally, more time was allocated on the school timetable to English and Mathematics than to other subjects and this meant that she had more contact time with them and got to understand them better.

Jenny: *I am at the stage in my life where the kids know me because English and Maths are such important subjects that I see nearly all of them somewhere in grade seven, eight or nine. I see them so they know me and I will go and say.*

English and Mathematics were regarded as important subjects that should be treated seriously.

Jenny viewed English as process and described how she breaks up the topics into sections. She then tracked how separate bits added onto one another.

Researcher: *What would you attribute to excitement to?*
Jenny: *You must leave the teaching and getting those moments and I think that English is more a process and the kids are very proud of the end product and you don't get that oh that is what it is you know.*
Researcher: *It like following an atomic structure from the atom to bigger structure and back. Going back and forth is important.*
Jenny: *Because let's say its abstract and each little bit then as I said the end product is normally very good.*

In the paragraph-writing lesson that she used to explain how she teaches, she focused on the quality of sentences and how the sentences flow to create a paragraph. Writing good sentences did not necessarily result in a good paragraph. Sentences needed to connect with each other to create a paragraph. Paragraphs needed to be concise and coherent.

4.3 Vignette 1: Anika

4.3.1 Beliefs about Self

Anika was in her fourth year of teaching Science and Mathematics at the school. Her passion for teaching Science was inspired by her high school Science teacher and her

vivid memories of her schooling experiences, especially of that particular teacher. She was born and grew up in another African country and spoke in a way that distinguished her from local South Africans. She attended a South African government high school and chose teaching as a career because of the opportunity to study further and because she thought that it would be fun.

Anika worked at a well-known private school and also played a role in giving authors' feedback on textbooks. She understood the approaches that textbook authors used when writing textbooks for learners.

Researcher: *When the authors spoke to you, do you think it made a difference?*

Anika: *The IS schools, they are the top schools. So they can organize to meet with the teachers of the IS schools and hear their response then they have succeeded before publishing, before release. After the textbook is accepted by the government, on the right side with CAPS, then they came to present to the IS schools for example, in Mathematics we teach different sets of numbers and as a teacher you always need an approach. The way you approach your topic. They use an approach. Like one would say this is how I present first and in the Geometry side this is how I present.*

In terms of process, the textbooks written in South Africa must align with South Africa's national curriculum or the CAPS (Curriculum and Assessment Policy Statement) and the textbooks were then reviewed by IS schools (Independent schools). For Anika, the author's approach was significant and she compared the approach in the textbook to her teaching approach.

Anika's role was shaped by the requirements of the school, which she viewed as a top school. At the end of the school year, she shifted her focus from teaching and learning to examinations and administration.

Researcher: *I know that this is a very pressurised time at the end of the year.*

Anika: *I was just telling [M] that we are into admin now. It's not the classroom situation. The classroom situation is not fresh in my mind so much in exam time. This is the time we have so let's go ahead.*

Anika saw herself playing different teaching roles during the year. She was occupied with examinations and administration at the end of the year, which entailed setting examination papers, invigilating examination sessions, marking scripts and processing assessment marks. Ultimately, Anika engaged in this process to determine the promotion and progression of learners. Anika functioned in roles that were, to an extent, determined by the school, depending on the time of the year.

This teacher believed that teachers play a role in helping learners "reach their dreams". Teaching was more than just teaching a subject.

Researcher: *What motivated you to become a teacher?*

Anika: *It is an interesting one. If I can become a teacher, I can influence others to reach their dreams so I took it. Initially, I didn't want to be a teacher. I did not have enough funds to take me where I want to go and when the opportunity arose for me to go into teaching, also it is fun, I took it. It will be a stepping stone for many other people.*

She examined the possibilities that teaching created for learners and the role that teachers played in influencing them. In her words, *"It will be a stepping stone for many other people."* This was similar to her Science teacher's influence on her: she created the possibility for Anika to dream of a university education and teaching opened a door for further education.

Researcher: *Describe her character.*

Anika: *Her character! She was a mother. If you think about government schools most teachers are like parents. OK! Fortunately, for me my parents were*

very supportive in my life but I know most of my friends that I went to school with they didn't care who got this teacher.

The way she described her Science teacher indicated that she was drawn to teachers who play a parental or caring role. Anika recognized this teacher's talent in teaching the subject and mentioned the supportive role that came from her parents and her teachers in a government school. In her description, Anika made a distinction between formal and informal conversations.

Anika: *Then after school or you know in the break time you can talk informally and especially as a teacher you can get those emotional issues which will always be there. You get in the profession of teaching and sometimes you have to balance it. If it is an emergency but it is very interesting to be to say here I need to stick to the subject. Teach them because that is the best you can get out of the situation.*

In class, teachers needed to be one kind of a person and during break they needed to step out of that role and engage learners on an emotional level. For Anika, a good teacher created a balance between being a subject teacher and being more like a mother.

Learners moved from one space to the next in terms of their age, and teachers should support them in making those transitions.

Researcher: *Talk about those dreams and stepping stones.*

Anika: *It is a great time and you need the best teacher to motivate you and you know to guide you through the space and most others. So we have a great influence on those children.*

The support came in the form of being *"a subject expert"* and acting like a parent and providing emotional support in different contexts from just the classroom. Anika's idea

of *"the best teacher"* entailed more than being a good subject teacher or being like a parent caring for their children. She believed that teachers needed to enjoy their work.

Researcher: *How long have you been teaching?*

Anika: *Yes! It had an excitement to it and that's what kept me going because I think I would have given up.*

Anika admired her Science teacher because she was hard-working. Her Science teacher adopted a particular language in her classes and another language outside them. "Language" referred to the nature of the conversations rather than code-switching. Although she had worked in a public school, she had cared for her learners. In many public schools, the number of learners might be larger than the average of twenty-two learners in a class at her current school. Her Science teacher made time for her learners, apart from the instructional time.

Researcher: *Describe your best teacher.*

Anika: *Teacher wise! I got my Science teacher. I went to a government school. In High School, I went to a government school and my teacher, she, was an interesting woman. I even go and see her sometimes when we close school because the government schools don't have the same timetable. She was that kind of person who would, you know, give off her best. If you make mistakes she will come and say actually I was reading and I found this and then we will talk about it. She was studying through UNISA. She was studying- doing her honours and currently she is doing her masters. So, I found for me, she was very motivated. I saw how she was pushing herself to go further and the influence she had on me. She made it oh it is something that said if I am going into teaching I am going to be that kind of a teacher.*

Anika's teacher communicated with learners in a way that showed she cared about them, and she developed an approach that motivated them. "*If you make mistakes*

she will come and say actually I was reading and I found this and then we will talk about it." Apart from her approach to interacting with learners, Anika's teacher completed her Honours degree and was in the process of doing her Master of Education degree. In this, Anika also aspired to be like her Science teacher.

As a teacher, Anika constantly strove to find out new ideas from multiple sources, including reading, studying formal courses, attending workshops and engaging in other forms of teacher development activities.

Researcher: *Tell me about the kind of things you have done to improve your teaching?*

Anika: *I read a lot so for example, the book on IR. Well, I was trying to finish it. I also registered for Masters in Mathematics so I am going to start next year and I always challenge the school to send us to workshops and whenever we hit a [Not audible] there are junior high textbooks which are aligned to CAPS and authors are willing to talk to the teachers.*

She practised searching for new ideas and understanding them. She invested time in understanding mathematics and believed that this was critical for sharpening her skills. The way she made sense of new ideas was carried through in her classroom, where she set up learners to understand ideas.

Anika felt that she was stuck and needed the support of the school to push her in a particular direction. She felt that more needed to be done by the school.

Researcher: *What are some of the challenges you face in your practice?*

Anika: *Some of the challenges for me, I feel that some of the challenges, I feel that we are stuck to the boat yet I try individually to push myself to go further. What others are doing in terms of the changes in education but I feel that the institution itself is not pushing in that area.*

She believed that something should be happening at the school that was not currently happening. There was a sense that she needed to do something differently and that difference was not taking place fast enough. Education was in a state of flux and Anika was looking for leadership from the school.

Despite the demanding first year of teaching, Anika developed ways of balancing work demands.

Researcher: *What was it like when you first started teaching?*
Anika: *It was exciting but also hard. It was exciting because I just completed my university then. I came into teaching and my timetable was quite full with six subjects. I was teaching in different grades as well, Math and Science. It was hard but now I am balancing it.*

She came to school with a university degree and had to teach six subjects in different grades, including Mathematics and Science. For the first time, she developed skills to cope with her work environment.

Subject wise, Anika viewed Science and Mathematics as special subjects and she tried to understand their complexities in order to make her a better teacher.

Researcher: *Are there specific things you changed in your classroom?*
Anika: *I will give you an example especially in the subject I teach. It is not very easy, it is not like language because you do research and speak about it.*

Although there was nothing intrinsic that made the subjects more or less complex, she suggested that they were special. She differentiated the teaching of her subject from other subjects. She seemed to suggest that only other teachers teaching the subject would understand.

Researcher: *How did you come up with the idea?*

Anika: *I don't know. I saw 3D cubes and I want to do something different. Ya! It just came up. Ya! Oh, with this workshop, I went to, they were speaking about it and started with something tangible and then in the abstract, especially for Mathematics, and they also showed us examples using sticks and showed it can work for Algebra which I found fascinating. When we got to this topic, I looked at it and thought I could do something so I think is it.*

Her constant search for new ideas from books and workshops allowed Anika to try out new ideas in the classroom. The movement from concrete to abstract was an example of an idea that she picked up from one of the workshops she attended. In this example, Anika looked at possibilities of applying the idea in her instructional practice.

4.2.4 Beliefs about Learners

Anika believed that it was a time-consuming process for learners to acquire new knowledge in the classroom. Learners had to *"internalize that knowledge."*

Researcher: *Kids must do their own thinking.*

Anika: *I will be done but it's for them to come up with the answer but they internalize that knowledge but for me I was taking them further. I want to be creative. Whenever I find there is something they can discover for themselves maybe do that and maybe where I need to teach I will do that depending on time.*

It was a simple process to present learners with the teaching content; however, learners had to process that knowledge and Anika described that as "discovering". She applied this belief by developing creative ways of taking learners further and by finding things for them to discover.

Anika had an understanding of teaching, with outcomes that included subject-teaching and learners finding their identity or moving from one space to the next, as they were in transition.

Researcher: *Talk about dreams and stepping stones.*

Anika: *Stepping stones! I think for me, and that is why I do it in the high school, I talk to young people to help them. Most of the time, they are trying to find their identity. I mean the child. Who am I now? Taking me from primary school to high school. Now, I need to be a different person.*

Anika understood that learners in high schools made these transitions and it was her role to support them in doing so. In high school, learners had to adjust to a different set of demands and act differently from in primary school. High school was a different space and learners needed to figure out who they were. Anika understood that learners had to do this and that her role was to support them.

Anika understood that learners learnt in different ways and that adopting one approach might suit some of them, while a different approach might suit others better.

Researcher: *What is it that they mentioned that you think made a difference?*

Anika: *So they look at just different sides on how I teach this and the sharing is always good because I come totally from a different angle and one comes from a different angle but once we share we can actually use that to your advantage because some children will get it on this and other children will prefer the visual side which one is using and the other children will prefer this and what I got is this one and that one which I am able to use.*

This teacher made a distinction between visual thinking and verbal thinking. If learners struggled to learn when she explained verbally, then it was a good idea to utilize visual scaffolding.

Reflecting on her own schooling, she used the word “motherly” to describe her favourite teacher’s interactions with learners.

Researcher: *Describe her character.*

Anika: *When these big boys got into trouble, she will go and sort them out in a motherly way and that would touch me. I am a foreigner and my English, you can hear, wasn’t good. It discriminated me. She treated all of us the same.*

Her phrase *“the big boys”* probably related to their physical size. The teacher utilized motherly qualities to handle the situation. She was firm but caring. It was fine to be strong as long as you treated all the learners alike. The teacher had developed the skill of interacting with learners and dealing with situations that caused disruptions in and outside the classroom.

Anika organized her lesson so as to enable learners to make discoveries. This was how she achieved this goal:

Researcher: *What have you changed because you learnt a new idea?*

Anika: *We have done much of the geometry of 3D and I got different shapes and I gave them the geometric shapes. I gave them two. I mean groups of three and I gave them two shapes and I gave them one prism and a cone and I said guys these shapes you know about them. It is not the first time you are seeing them and you come up with a formula for working out volume and for working out the surface area and I am not going to talk much. You have to explain it in a way that I’ll understand.*

Anika understood that the learners were familiar with shapes and gave them problems to solve in groups. She allowed them to discover ways of finding volume and surface area, on the condition that they generated explanations that the teacher understood. Anika therefore made demands on learners.

It was less time-consuming for the teacher to deliver the textbook version of the formula and make the learners memorize the formula. However, learner understanding and the generation of meaning were central to Anika's instructional practice.

Anika: *They can't, they come up with a simplified version. So instead of them leaning from the textbook the formula. They can apply it and I could see it in the examination and test but they still have to get it. Not all of them but maybe half of them and for me that was I think [Not audible]. I want to move forward but how can I, especially for my subject. How can I influence my kids to come up with this so that it's more meaningful rather than tell them so I need to, I am still thinking of ways to be creative?*

The words *"they still have to get it"* summed up her teaching goal. Despite shaping her lesson to promote learner understanding, Anika understood that not all learners would *"get it"*. If half of the learners understood, then she moved on. Anika was wrestling with the question of how to make more learners understand, and how to make their learning meaningful.

4.2.5 Beliefs about Content

The need to complete the syllabus was an important variable for this teacher and she spent time developing learners' understanding. As mentioned earlier, if most of the learners understand a topic, then it was time to move on.

Researcher: *The next question relates to things you changed because of something you have learnt.*

Anika: *With my subject, sometimes you get to do some graphs so you need to teach and then after you teach maybe then you can have a discussion and if there is an opportunity and when there is time, we have time constraints. I will always, I will give you specific examples that were geometry in my junior classes.*

Anika: *The person next to you will understand and I saw during the exams they will give the textbook so they presented and they explained this part because for example in the intermediate phase they are just starting with algebra sometimes they don't know factorizing-to make it simpler.*

In her lessons, Anika focused on discussions and explanations as windows for learners to generate their understanding and meaning. To promote learning, Anika tried to understand how authors organized learning content in textbooks.

Researcher: *Tell me about the kind of things you have done to improve your teaching.*
Anika: *This is how we approach the book and that is fantastic and actually most of the time you don't see the effects of the author you just see the book. These people, two of them are teachers and one gives workshops and all that but for them to take that time to speak to teachers. This is what our approach is and actually I found that interesting. The Classroom Mathematics, some different textbooks do the same because we are shifting, the education is shifting and I think it is about time we see the faces of the authors. So I do that a lot and know for example in August, no it was September, I went to a workshop at the American School. They always have these developmental workshops and this one was specific to my subject so I suggested to the school that they send someone so they sent me.*
Researcher: *What did the authors say that made a difference?*
Anika: *You see, they organize it. It wasn't just that they organized it to meet with the IS schools.*

She understood that education was in a constant state of flux; with that went the organization of the textbook. Anika found that the dialogue with the authors promoted her understanding of a book. This, in turn, supported her instructional practice activities.

Anika taught Advanced Placement Mathematics (APM) from 7h00 to 7h30every school morning. Learners were taught Mathematics during the school day or during normal instructional time, and in the morning they took AP Mathematics as an extra-curricular activity.

Anika has opportunities to interact with the learners in different ways during the course of the day, starting off with AP Mathematics, taking the class register, teaching and learning and supervising co-curricular activities.

Researcher: *Tell me about your typical day.*

Anika: *Because it is an extra subject, we don't try to run it in the normal timetable so we do it as an extra class from 7h00 to 7h30 and after that we got meeting and then my day starts and my timetable- sometimes the only break I have is break time. After, when I am done in the afternoon, I manage co-curricular activities. So I am here until 16h30 when I am finished then, I can start with prep so that is my typical day.*

In the course of a school day, Anika had opportunities to engage with learners, both formally (*"In the class we spoke Science"),* and informally ("the *emotional side")*.

Anika used a distinctive dialogue in her classes and generated related activities. "*In the class we spoke Science and we did Science.* "Anika related to her learners using the kind of formal language that she described when "*we spoke Science*". She developed a way of talking to learners that was different from that used in informal conversations.

Her current way of getting learner to internalize knowledge, discuss and explain, was a time-consuming exercise and about half the learners eventually understood.

Researcher: *Kids must do their own thinking.*

Anika: *Ya! But you see for example, first of all we don't have much time to finish the syllabus for the year. That takes time because each one of them is going to present so that took some time. It is easier for me to do 1, 2 and 3 in two lessons.*

In the above example, learners made presentations (gave explanations) to show their understanding. This led her to opt for the compliance option of rushing through the content to ensure that she completed the syllabus.

Anika made a distinction between old and new practice. While she looked forward to developing new ways of practising, she also understood the value of the old practice and record of success that it had generated.

Researcher: *What are some of the challenges you face?*

Anika: *They are still on the old side which is good because we have that interest. That is why we have what we have today, that old practice, but still I feel we need to explore. The institution need to push teachers like with what we are doing with IR. It is very general. It is good but I think we were told that this is the third time we are doing it. It's still general and we need to do it very specific. We need to identify problems inside the department and address those problems according to the times that we are having and not saying that addressing critical thinking, the problem of critical thinking but the way you will see in the different discussions. I will say that critical thinking in my subject but because other people are not in the subject they would not think it is critical thinking. We need to be very specific and say lets us ask the department what is going on here. How can we push it further and how can you know? Strengthen what we have according to our times. I feel often because as a challenge, I hope to motivate myself and I say that is pushing us.*

According to Anika, *"We have what we have today, that old practice"* referring to the school where she taught as one of the top independent schools. There was a need for the institution to push the direction, instead of the individual. She mentioned IR as an example, saying *"I want to make shifts with the school, not only alone"*. Anika again emphasised the need for mathematical understanding to be developed. She was concerned that those outside the department might not view what she did in the classroom as critical thinking.

In summary, Anika's background, starting with her own school, was a precursor to the work that she did in the classroom. She understood that she was working in one of the top schools and the need to study and understand what she did in the classroom was high on her list of priorities. Her main goal in her practice was to ensure that learners developed an understanding of the content; she did this through discussions, explanations and presentations. Anika also understood the importance of both formal and informal conversations and the need to support learners in finding their identity. She was motivated to understand her subject, both as an individual and a student, and was registered for a Master of Education degree. As a staff member, she said: "[*t]he institution needs to push teachers".*

4.4 Vignette 1: Ayanda

4.4.1 Beliefs about Self

Ayanda initially wanted to become a social worker, but later changed to teaching for financial reasons. Social workers seek to improve the quality of life of individuals, families, couples, groups and communities and teachers worked to improve the quality of the learners' lives and engage with parents and communities. Teaching was similar to social work in the sense that it offered clients support. Ayanda chose teaching as a third study option.

Researcher: *What motivated you to become a teacher?*

Ayanda: *In my, case it was a question of circumstances. I wanted to be a social worker so I registered at the University of Westville and did my first year*

and because of finances, I dropped out of my studies and someone said just give it a shot at Wits so I chose [not audible] I wanted to study social work and my second choice was BA and my third choice was education. I think I can cope with the young kids so I chose education. My third choice being education, I got accepted and so on and [M.M.] said why don't you do education and get a bursary and the BA guys responded. [Not audible] structure fees and know exactly what you want and my main focus was finances and my main focus was financial support and that was the main reason I became a teacher and that is how I ended up becoming a teacher.

Ayanda's financial position determined her study choice and, eventually, her career choice. She enjoyed working with people and she was confident that she could cope with young learners. The university trained her to be a primary school teacher, working with learners of about nine to fourteen years of age.

Ayanda was a very shy person and preferred to avoid too many interactions, but her experience of teaching made her more confident. Because she was nervous, she struggled through her teaching practice. She developed ways of coping with her nervousness.

Researcher: *What was it like when you first started teaching?*

Ayanda: *It was great. It was great. I remember when I was doing my teaching practice in Durban, I was not confident at all and that stuff. I remember in my teaching practice; I never hear what I said. It was like talking to myself. I said to myself get rid of the nerves and all that stuff. Just pace up and down and let [Not audible] I think that helped me to some extent. In terms of gaining confidence, when I started teaching, and of course I started teaching in Primary School, I was not that shy.*

In her teaching practice, she could not hear herself, but she had gained confidence by the time she started teaching. As a learner, Ayanda struggled because of her lack of confidence and felt that her teachers should have noticed and offered her opportunities to communicate better. It took Ayanda a long time to gain confidence.

She reflected on her awkwardness in class as a learner, when she wanted her teacher to notice and acknowledge her.

Researcher: *You may like this question. Describe your best teacher, or teachers and what was he or she like?*

Ayanda: *Ah! In my case, you know, I don't have a best teacher because I was a very shy person. I was that kind of a child who will sit in the corner. I think my teacher didn't try to take me out of it and they didn't see that I lacked confidence and you know push that child.*

She wanted to interact with others and to be part of the class but struggled with communication. She needed the support of her teacher to develop her confidence and improve her communication. Spending time in front of learners and talking to learners enabled her to gain confidence and teach learners.

Although Ayanda had worked on her shyness, she recognized that it might affect her interactions in other areas of her teaching career. Ayanda had been teaching in the school from 1996 and she was still trying to overcome her feeling of awkwardness.

Researcher *Where do you think the shyness went to is it as a child, at school level or at teaching level or is it still there?*

Ayanda *It is still there but slowly but surely it is going away to some extent. I want to explore teaching if there is always that kind of subject you have it whether its government or we could do without it so you know you are put into some kind of corner and that is fine. I feel that to some extent that the school did try to develop us. You come here to do this or maybe,*

I am not treating myself well on my part but to some extent it is coming out going to meetings and so on and there are days I just keep quiet and watch the tennis match you know now.

She still struggled with shyness eighteen years into her teaching career but she believed that she needed to open up to ideas and interaction so that her confidence could develop. She generally found ways of excluding herself from development activities, but she was starting to believe that she might gain more by participating in them.

Ayanda was a black female South African teacher teaching in a multiracial school with a majority of white teachers. Her racial identity played a role in her interpretation of events. She grew up in a township and attended a township school. Ayanda attributed her non-participation to her racial identity.

Researcher: *How would you compare your experiences from your studies to experiences you had at school like IR? How would you rate these experiences being beneficial for teaching and learning like IR?*

Ayanda: *I am just going to answer it. I don't understand the question on IR. It is my first time. I did it this year. I participated in it. There are people who will always participate in stuff but this here it might be a little racial as well you find that most of us black South Africans we don't participate in some of the things because teachers who participate are white teachers and maybe teachers that come from other countries so this year I said maybe just participate and see.*

Ayanda challenged her own beliefs about participation and made a decision to participate in the IR practice. In doing so, she opened herself to a new experience and challenged her existing way of thinking.

IR focused the teachers on the learners. It was easy to become derailed because there were multiple views about teaching and attitudes towards orientation might differ. It was easy for a History facilitator, for example, to focus on the subject without giving consideration to the learners.

Researcher: *If there was one thing you pick up, what will that is?*
Ayanda: *I don't know. I think the specific focus was that the IR the children are important. I think at the end of the day. I think at times it is easy to be derailed. It is easy to influence everybody else.*

Ayanda believed that the focus on the learners supported her thinking about learners and learning.

Ayanda's shyness was still a problem and her choices, she felt, were still driven by it, yet she confronted it by engaging in activities that made her uncomfortable.

Researcher: *Thank you once again for agreeing to this interview. The answers you gave were anything but shy.*
Ayanda: *No. No. No when I am in a group don't ask me to address them but when I am alone I can go to town.*

It took Ayanda a great deal of effort or energy to participate effectively in groups. Although this awkwardness worked against her, it also helped her to identify learners who were shy and who stopped themselves from interacting in the class. Ayanda opened up the conversation to include the voices of learners who were quiet in class.

Although Ayanda specialized in IsiZulu and History, she spent most of her time teaching IsiZulu in the high school and the primary school. The time allocated to IsiZulu was usually short because it was taught as a third language, so Ayanda spent less time with many learners.

Researcher: *Are you teaching in the primary school?*

Ayanda: *I am teaching in the high school too. I teach up to grade seven and I am a Primary School trained teacher so I can't go beyond that. The university trained me to teach in the primary school and I feel confident teaching in the high school.*

In South Africa there are eleven official languages, excluding sign language. Ayanda was therefore working in a complex language context. She described languages in terms of home language and first additional language, and each of these involved different complexities.

Researcher: *Tell me more about the kind of things you did to learn more about your teaching.*

Ayanda: *Like for example, with reference to language – IsiZulu First Additional Language. I was not teaching IsiZulu Home Language. I did IsiZulu in school and when I got to University I said ha. This is IsiZulu and I just took it to boost my marks and so on and when I got to high school I had to teach poetry in IsiZulu and so on.*

Ayanda studied IsiZulu at university at first additional language level. However, teaching the subject in high school placed demands on her that exceeded her skills.

In the school context, Ayanda got to spend more time with her home-room class This included the daily marking of the register and other administrative interactions. The time she spent teaching them IsiZulu was the same as the time she spent with other classes. In most classes she spent little time with the learners, making it difficult to get to know them and establish relationships with them.

Researcher: *Tell me more about what your typical day looks like.*

Ayanda: *I wake up at 04h30 because I live in the South. I got two daughters and I need to wake up and see to it that they get ready at 06h30-06h45. I*

come to school because at 07h30 is morning meeting and of course there is register and you don't pitch for a long time the school asks why and after that it is a question of ticking register, class register and with that register and at times they are out of class. We pray one person at a time. We pray this is not just a religious place, but again it is not just praying. Seen as a nice reflection. After that it will be the beginning of the day and so on. A lot of kids are not interested and so on and after that it will be teaching and so on and then a break and then a second break and lessons and after that we got extra murals like this term my extra murals was basketball but not coaching it because I don't know how to coach. My responsibility is to take register to check. So at times they play matches and at other times they have to do training. At other times we have to go to Pretoria you know and for five days or so basically.

She regarded prayers as a time for reflection. The only other time she got to spend with learners was during extra-mural activities and school trips, when she played a different role from that of teaching and learning.

Teachers were different, subjects were different and learners were different, and teachers had to respond to those differences. Knowing that there were differences and knowing that the work you were doing in the classroom had merit reinforced good practice.

Researcher *How would you rate these experiences being beneficial for teaching and learning like IR?*

Ayanda *Initially I thought that this IR is a lot of work and the task difficult and whatever but what I have learnt from it is that we are different as teachers and subjects are different, kids are just different and also at times I should sit behind the desk taking notes and kind of judging somebody else. But I think that and being observed and people taking*

notes and I think what was nice about IR is in future to be observed and people taking notes and saying you know what it was just, forget the other people, I think it is a nice experience really.

In the example above, Ayanda benefited from teachers identifying the good experiences she created for learners. Her colleagues acknowledged and affirmed her efforts.

The school played an influential role in driving change: the use of technology was an example of this effort. The school provided the resources for innovation in the classroom.

Researcher: *When you come across something new like when I was listening to the debriefing-not necessarily the IR- where do you get your information from to make sure those things are implemented in the classroom?*

Ayanda: *The school provides it like the iPads. This iPad the school get it for us. If they ask us to buy it half of us won't buy it. Whatever they come up with they provide us.*

In the past, one of the reasons why Ayanda was attracted to this school was the innovation related to integrated studies; the introduction of IR was no different. Ayanda was responding to the school thinking and influence in her work.

Technology, in the form of electronic devices and soft thinking, played a role in determining what happened in her classrooms: the teacher played a role through her soft thinking and ideas about practice, in generating classroom interaction. For example, it expanded the possibility of including topics that Ayanda felt strongly about, like the justice game. Ayanda was interested in human rights and this was linked to her identity.

Researcher: *You use the iPad for?*

Ayanda: *We have some form of, we supposed to use it for class, but besides doing this I was sort of doing sort of something involving justice game where it teaches children rights you know the lady sort of done the programme and had DVDs. So like using the DVDs to teach children. They have tasks and all that stuff that is how I got use it not just a lap top to show them DVDs and so on and discuss.*

She was able to use the DVDs as a device to enhance her teaching and to bring more diverse content into the classroom.

4.2.6 Beliefs about Learners

Ayanda's own awkwardness in class heightened her sensitivity towards learners who may be experiencing a similar problem. In a sense, this served as a lens through which to examine her teaching to make sure that quiet learners got opportunities to speak in class.

Researcher: *You may like this question. Describe your best teacher, or teachers and what was he or she like?*

Ayanda: *That is why you find in my classroom whenever I ask questions and discuss stuff and so on I just check you know there will be those children that are a little bit scared and after some time, I will say oh and so let me hear your voice. I don't even know what your voice sounds like because I am saying that is and I will not let that child disappear because I know how bad it was for me so I was that kind of a child who would say who, when and how. I don't know that child.*

She looked for signs of shyness and gently encouraged them to contribute to lessons, gently drawing them into classroom conversations.

Some subjects were more important than others and the National Senior Certificate played a role in ranking subjects according to their importance. English was very

important and so was Mathematics; however, a language that was taught as a second or even a third language was often not taken seriously. The problem was compounded when learners eventually dropped the language.

Researcher: *Just to highlight some of the challenges you are experiencing and some of the things you may have done to cope with these and feel free talk about those challenges.*

Ayanda: *That second additional [language] is a challenge because the kids are not interested. They don't take the subject seriously at all and most of the children struggle with IsiZulu in anyways and they have to do it because now and you can see that they are demotivated. They are not interested even an easy thing. It may not be easy for them difficult and so on. That is a difficult for me- to motivate them- the children learn IsiZulu and I say to the parent getting children interested this is your last year and say farewell to IsiZulu. They get 80% or so but that is not going to make a difference.*

The learners were demotivated and put in little effort to learn the language. Parents expected their children to do well, so Ayanda made few demands on the learners. The learners understood that their performance was not going to have a major impact in terms of promotion and progression. Ayanda struggled to motivate learners and parents to take the subject seriously.

Learners needed to develop skills and learning that were not just about accumulating marks. The marks should serve as an indicator of what the learners knew and could do. She used the example of a learner obtaining high marks although they were unable to speak the language.

Researcher: *Tell me more about the kind of things you did to learn more about your teaching.*

Ayanda: *What this father was saying is that he is interested in the child doing the right thing and not in the child getting marks they don't deserve and in that process they don't gain anything because if 1 + 1 = 13 and they get a tick for that you are not going to learn anything and then when it comes to teaching IsiZulu parents are because they expect children to get 90% and so on and then don't get 90% in IsiZulu let them speak IsiZulu and you find the child cannot speak.*

Ayanda was concerned about the misalignment between the marks that learners were given and the learning that took place. For the marks they obtained, learners should demonstrate competency.

4.2.7 Beliefs about Content

In the school context, some subjects were more important than other and IsiZulu was constrained by its lower status. Ayanda responded by making few demands on learners – they had to do very little to earn high marks and she was uncomfortable with this.

Researcher: *Tell me more about the kind of things you did to learn more about your teaching –I know you mentioned integrated studies method? There must have been other things where you learnt about teaching?*

Ayanda: *For them IsiZulu is fine 1+1=13 give them a tick and if you are doing Math it is a question of priority some subjects are more important than other ones and it is up to you as the teacher to say you know what IsiZulu might not be important to you for whatever reason but it is important to me and I want this child to respect IsiZulu. It's not Math or English but it is as important as Math so even if reading and writing thanks to that father.*

As a teacher, IsiZulu was important to her and she anticipated changing her approach to teaching. The teachers and the learners understood that the language was taken up

to grade nine then dropped. It was a situation where the learners did not need to demonstrate competency because they did not need to build the language background to support them in higher grades.

Researcher: *Does it make a difference if they pass or fail IsiZulu? Do they still go through?*

Ayanda: *Ok! For example, the subject that I am teaching I am teaching first additional IsiZulu and first additional IsiZulu. Children take it up to matric and second additional IsiZulu they take until the end of grade 9.*

Home language is taught at a higher level and learning is more demanding. The complexity of the language also increases in home language.

Not only in school, but also at university level, the language has a low status. At school level, many learners dropped it after grade 9. They did have the option of taking it further but most do not continue with it. At university, Ayanda had inquired about continuing with the language at Masters level but was discouraged.

Researcher: *Does it make a difference if they pass or fail IsiZulu? Do they still go through?*

Ayanda: *No! It might to some extent if they fail it now. They are not putting in a lot of effort. They know that they are going to pass. They know that come end of the year they are not going to do it. That is grade 10 onwards. We are no longer going to be doing this. I remember I went to university for something about second additional language and so on like I couldn't because three years ago I wanted to do Masters in that but I was getting negative comments from my lecturers and I thought no. But the other thing again was that the support was not so good because I had to sit with or take care of my daughters so starting with taking care of the children was a problem for something that I was not good at. I hide*

myself. When I was at Wits [Not audible] discipline so I ended up [Not audible].

However, family commitments also discouraged her from pursuing the language at a higher level. She thought that this was something that needed to change.

Using her own background as an example, Ayanda had felt isolated when she was at school and she developed ways of inviting learners to join in classroom conversations. She was determined to include all the learners, so she felt positive about observing a veteran teacher in action in a History lesson.

Researcher: *How would you rate these experiences being beneficial for teaching and learning like IR?*

Ayanda: *We get to class and we think we are the best when we get our peers, your colleagues observe this is a good idea when the teacher was teaching. History and somebody was saying something whether it was an outside comment. "I will come back to you" take whatever response and so on and later on you go back to the response, but later on you come back and say yes and that makes the children feel good. You are not just. You are important whatever point you give across is taken seriously and next year I will be teaching History for the first time, full time. I am teaching IsiZulu and of course I will be working with that teacher very closely.*

When a learner asked a question, the teacher agreed to get back to the learner and, in fact, she did so. The History teacher acknowledged the learner and Ayanda felt that this made the learner feel good. The veteran teacher modelled good teaching; realising that she would be teaching History in 2015 and would be working with this teacher excited Ayanda.

4.5 Vignette 1: Linda

4.5.1 Beliefs about Self

Teachers are motivated to take up teaching for different reasons and some of these are financial. Linda's motivation was job prospects and travel. There were many South African teachers teaching in other countries like England, Australia and Dubai, and they served as examples of the opportunities that are there for teachers.

Researcher: *What motivated you to become a teacher?*
Linda: *What motivated me to become a teacher was the fact that you could get a job anywhere in the world and you can travel anywhere as a teacher.*

Considering Linda's current employment at the school, the notion of job opportunities might be extended to South Africa as well. Like those teachers teaching in foreign countries, the prospect of travelling while working also made teaching an attractive option for Linda.

Having an understanding and spending time preparing lessons were two important characteristics that made a good teacher. Linda identified her school Science teacher as an example of a good teacher.

Researcher: *Describe your best teacher.*
Linda: *One of my best teachers was my science teacher because she knew her knowledge of science really, really well and she was always prepared and she was always prepared to help you after the lessons.*

This teacher was well prepared for her lessons, which meant that her lessons were organized with relevant resources for her instruction. Her interactions in the classroom demonstrated that she knew the subject well.

Linda was a confident teacher, secure in her understanding of her subject and her ability to teach learners. She also liked to utilize technology in her lessons as it gave her the opportunity and the latitude to be creative.

Researcher: *Tell me about some of the experiences that may have influenced your teaching practice.*

Linda: *To be honest, it was my first day of teaching. I felt confident. It also helps if you got technology in the classroom. You can be very creative.*

Linda liked using technology in her classroom because she believed it enriched her instructional practice. She utilized technology to teach map-work in Geography.

The IR practice started her understanding of critical and creative thinking, using technology to make her lessons more creative.

Researcher: *Look, let us say that you are busy with IR. I am sure if there is information that you used what do you normally do for more information?*

Linda: *It depends on what it is? In the case of the critical and creative thinking, it was more a start to me to share ideas but then we did go to a staff meeting where we got direction and generally talking to your colleagues it doesn't have to be a meeting.*

Sharing ideas with colleagues was adding to her understanding of critical and creative thinking in her instructional practice. The staffroom was a meeting-place for the teachers at the school and it was the space where Linda prepared for her day at school.

Researcher: *Tell me about your typical day.*

Linda: *I arrive at school and I sit at the corner of the staffroom. All teachers do that I suppose and make myself a cup of Rooibos Tea to get ready for the day. Teachers take registers and it is just teaching and obviously in*

the afternoon you've got extra-curricular activities and for me it is monitoring tennis and in term two, its netball.

She spent time with her class, marking the register and doing classroom administration before she started teaching for the day. She remained in her classroom and the learners came to her for lessons. Her contact with learners was extended because she also monitored extra-curricular activities.

The school was well-respected and the teachers possessed a wealth of experience and understanding, which attracted learners. Linda was teaching in this context and when she first started, coping with the demands of teaching and proving herself to her colleagues was important.

Researcher: *The next question is what it was like when you first started teaching.*
Linda: *It was quite tough because it is a lot of work you got to do and you have to prove yourself to your colleagues and students that you teaching and mostly it's just a lot of work. You haven't done the work before you do a lot of new preparation and stuff.*

Although her motivation to do well was intrinsic, external conditions also influenced her attitude. Linda did a lot of preparation in her first year.

Linda identified the qualities of behaving in a way that fell between strict and soft, while remaining calm, humble and passionate about kids. This was important for successful practice.

Researcher: *What was her character like?*
Linda: *She wasn't strict but she wasn't like soft. She was sort of in between. She was very calm and humble woman, passionate about the kids she was teaching.*

These were qualities that had allowed her teacher to earn Linda's respect. Apart from knowing her subject and being well prepared, her teacher possessed other qualities that made her stand out.

Linda valued the work of other teachers and interacted with them to share and to learn new ideas. She described IR and critical thinking as a start to making changes.

Researcher: *What are some of the things that you have done to learn more about your teaching?*

Linda: *Well, I have gone on conferences with my colleagues. It's more like workshops and just to meet other teachers about how to teach things and how to deal with other things.*

When she experienced problems in her teaching, Linda was able to request assistance from other teachers during the contact sessions.

Organization and good teaching went hand-in-hand and Linda was interested in being more organized- not that Linda showed any signs of been disorganized.

Researcher: *Any thoughts that you have about practical things you want to see happen to improve your practice?*

Linda: *The workshop that my colleagues and I went on it is to become savvier with it and just speaking more to your teachers about how and maybe being more organized.*

She showed evidence of trying to learn more and to organize differently, like utilizing technology to be creative and to enhance her practice.

Technology and colleagues have been singled out as major factors supporting good instruction. Technology made her work easier and her colleagues supported her efforts to enhance her practice.

Researcher: *Describe any challenges you experienced in your classroom practice.*

Linda: *Initially, in the beginning, it was not having technology in the classroom and now we do and it is much better. I suppose just having each other because usually we converse nicely with each other me and my colleagues and things like that and sometimes I suppose with any teacher if they don't understand simple things and you sort of have to go back to the drawing board.*

The idea was that there was always someone you could go to if you needed support and you had technology that could enhance your work.

4.2.8 Beliefs about Learners

The idea of supportive relationships was carried over into the classroom, where Linda supported her learners and helped them enjoy the subject.

Researcher: *Is it something you do in the class or something?*

Linda: *No! You can actually do it in class. I support the kids and they are more passionate about geography and things like that.*

Having a calm disposition and taking a middle ground in terms of strictness defined what she meant when she said she supported the learners. She uses the phrase "*passionate about the kids*" to describe her own Science teacher and used the words "passionate" again to describe the learners' relationship with the subject.

Linda struggled with the learners in her class who lacked the necessary knowledge and skills to cope with the grade. Learners advanced in grade levels but not in terms of their knowledge and skills.

Researcher: *Describe any challenges you have experienced in your teaching practice.*

Linda: *I think some of my frustration are how some kids got to the grade that they got if there are struggling so much. I don't know what to do with that foundation and it is something that hugely affects me really. It's a sad thing to see kids get to grade 7 and suddenly you see they have very poor numerical skills and I don't know how it happens like that. You know that eventually, they are going to get tested with the IB [independent board] and stuff like that. I bet you if you get all of them sorted out when they are much younger that is what frustrates me is that problems could have been sorted in term of their development and all of that.*

This problem might be solved if learners acquired the necessary knowledge and skills when they were younger. They struggled because they did not have the necessary numerical skills, for example, to cope with the work.

Learners loved to use technology for map-work. They interacted with the content using a device that they liked.

Researcher: *Is GIS in Geography and what does it entail?*

Linda: *It's creating maps on a computer and getting the kids to do it themselves and actually love to do it with them from next year but I wish I was a little bit more technologically savvy and some people think I am but should be more.*

Teacher efficiency with the technology was likely to enhance her teaching further. Linda thought she needed to know more about technology, although her colleagues thought she was good at using it.

4.2.9 Beliefs about Content

To implement the teaching of map-work using computers, Linda attended a GIS workshop. While the teachers used technology in the classroom, the school played a

role in facilitating change at the school. It helped if the teacher had a technological background, however rudimentary.

Researcher: *What workshop was it?*
Linda: *It was GIS.*

However, such initiatives were also supported by the school because the technology needed to be available for learners to use at school. If the technology was part of the classroom set-up, then it supported teachers in practising their learning.

Linda taught Mathematics, Science and Geography at the school. She was particularly drawn to Science and spoke about her own school Science teacher.

Researcher: *Do you teach Mathematics?*
Linda: *Yes, with the juniors.*

She taught Mathematics to the junior grades in the high school. Technology supported Linda's teaching in three ways: firstly, she was able to display diagrams like shapes on the board without having to redraw them every time she needed them; secondly, technology allowed her to display diagrams on the board and focus all the learners' attention on them; thirdly, she could show learners images that were difficult to describe.

Researcher: *How does technology make a difference in teaching and learning?*
Linda: *It's like in Math. It is so like when you are teaching geometry to not have to redraw each geometric diagram. It is so much easier to explain on the board and it show the kids are looking at their books so it is much easier to teach if it is on the board. It is already done for me in Geography. It is nice to show videos and pictures and things like that because you can't imagine some of the things you have to show them.*

Linda enhanced her lesson content with videos and pictures.

4.6 Vignette 2: Jenny

4.6.1 Beliefs about Self

The researcher interviewed Jenny for the second time almost a year later to find out about her experiences in the classroom. Jenny believed that IR had provided her with opportunities to learn new ideas, and at the same time she shared her knowledge with other teachers when participating in the IR practice.

Researcher: *The first question is how would you describe your IR experience?*
Jenny: *Hmm. I think I learnt a lot. I learnt a lot. I think I passed on that knowledge. I learnt a lot. I have been teaching for a long time and I haven't looked at other people's teaching methods and for me it was lovely to look at the younger teachers and the different ways of looking at stuff. For me, I thought it was beneficial for me.*

Her interest in understanding learners and their interests allowed her to look at how the younger teachers were teaching, and she found this beneficial.

Following the IR intervention, the school was going to create the time and space for teacher to work with learners every Wednesday for three hours, and this contrasted with the thirty-five-minute lesson that were part of the school time-table at the time of the interviews. Through the IR intervention and the discussions that emanated from it, the school realised that teachers were achieving the goal of teaching critical thinking to a limited extent because little could be done in thirty-five minutes. The school therefore decided to make this change to the timetable in 2016.

Researcher: *Is this the school plan for next year?*
Jenny: *Yes, but obviously it can't be implemented if the teacher chooses not to implement it as part of what we going to do.*

Jenny explained that, despite the efforts of the school to make more time available, the teachers still needed to implement the idea. In some cases, for various reasons, teachers might choose to utilize time differently. Only twelve teachers participated in the IR intervention; however, the school ran a workshop on IR for all the teachers and they shared the outcomes of the debriefing with the rest of the staff. Teachers had very different experiences of critical thinking.

Jenny explained the ways in which one particular learner engaged in her learning about writing better and the role she played in the process. She engaged the learner around the mark she had received and told her that she was capable of better marks, then she went on to provide the learner with suggestions for improving her work.

Researcher: *To what extent did the hypothesis on teachers knowing if learners are engaging in their learning assist you with the experimentation in the classroom?*

Jenny: *I think that with English you can really do it and I think that technology has helped a bit here because I can for example, I've got a girl who writes absolutely magnificently in my grade 9 class. I asked her to write a short story so she sent it to me and I sent it back with ideas and I marked it and I said to her your marks are not wonderful and it should be because you are brilliant at writing. You haven't got to the core of what I wanted and this happened about a month ago. No, about three weeks ago. She said would you mind if I write it again and I said no not at all. So she changed it and she came back and said I am not happy here, we had an ongoing conversation. It took three weeks before I got a final version. Right now in one way it's horrible. I finished marking and now I got to do it again but she was thinking about what I said and about her work so she said I see what you are saying and I need to write this but again I said for me for it to be a better story I do and it has taken us three weeks coming back and there was that exchange of the either verbally when she comes to see me or its been on the iPad.*

Jenny worked from an artefact that the learner produced and provided feedback for improvement. The teacher had conversations with the learner, both face-to-face and via email, to make suggestions that the learner applied in order to improve her work. The learner sent changes to her and she provided further suggestions, so that the learner wrote a better story. The whole process took three weeks and Jenny contrasts this with the traditional idea, according to which all the learners wrote and Jenny provided feedback, then learners rewrote a final copy for assessment. Jenny utilized learning from the intervention to explore alternative ways of engaging with learners.

Although Jenny valued the contributions of her colleagues, in practice she spent more time planning alone. With her colleagues she got opportunities to explore other ideas. As an individual, when she wanted to do something she implemented it. The quality of feedback was helpful but if she wanted to be efficient, taking an individual route served her well.

Researcher: *When you talk about planning is this individual planning of group planning?*

Jenny: *Look, I think if we did it in our groups it would be more beneficial because you bounce ideas off each other because I do it individually because this is what I want to do and I do it. If you have your whole team because there is quite a few of us, four of us, when you say something and someone says hey what about this.*

Jenny worked individually more than collaboratively, but saw the benefits of working with others.

Jenny's initial framework of teachers standing in front of the class and learners sitting in rows facing the whiteboard was highlighted when she observed a younger teacher's lesson. Although this arrangement occurred in a similar context, with the younger teacher there was a lot more movement in the classroom.

Researcher: *Is there anything that stands out?*

Jenny: *I think sometimes it's the lovely creative ideas that the younger teachers are coming out with which is good you know. There is a lot more movement than they used to be. You know when I was at school and even learning to be a teacher they were very much in their place but I am not like that but the children were so for me it was new. Teachers are quiet happy to have a lot of movement in their classroom. They will do this and they will do that so it is not a teacher do.*

Movement provided learning possibilities for learners and Jenny valued the learners' active involvement in the classroom. Sometimes involving learners meant allowing them to interact with one another and moving about. Observing younger teachers extended Jenny's ideas about engaging learners through organized movement. By doing this, Jenny got closer to the learners' conversations.

Jenny explained how questions could be used to promote critical thinking. In the example below, it was the type of questions as well as the situation that allowed the teacher to take learners' thinking forward: the combination of content and questions.

Researcher *Are there other plans in addition to critical thinking?*

Jenny *What do you do then and they stretch themselves even? Always 'what if' all those 'what if' questions always 'why don't you do it in this way?' I think the kids are doing that a lot and I think it depends very much on the subject. It's just easy to bring it in; science is another subject to bring in critical thinking.*

Asking questions was a skill that allowed learners to think more deeply; as Jenny explained: *"they stretch themselves".* Jenny identified *"what if questions"* as a way of engaging learners critically. Critical thinking might also involve looking at alternatives: *"Why don't you do it this way?"* If learners were thinking about bricks to build a

structure, the teacher could suggest that learners consider other materials, like metal or wood.

Jenny thought that learning might be classified as easy, difficult or very difficult, and she went further and started to mention activities that were different from the usual question, answers, discussions and explanation activities in the classroom. Jenny spoke about Mathematics exercises, writing paragraphs and learning grammar.

Researcher: *Elaborate on the Wednesday plan.*

Jenny: *What sort of things do you want as I said I will be quite happy for three hours to do because I will have things that are easy, difficult and very difficult? The 7s will start here and the 8 and 9 will start here and they will all try to get there by the end of the time and they will be building things, making things and sorting things out. They will try to see the actual geometry. Build it so you can see it and you can go onto the next one and as they go further and further the more difficult it will be.*

Because she would have three hours to work with learners, Jenny was starting to think about learners "*building things, making things and sorting things out".* At that stage, she thought about it and the range of activities to engage learners' thinking expanded.

Jenny had changed her relationships with the learners. In a traditional classroom setting, the teacher usually occupied a space in front of the classroom and the learners sat in rows, maintaining a distance between the teacher and learners. Jenny now tried to get closer to the learners, using teacher and learner movement. She listened to the learners' conversations.

Researcher: *What are you doing differently in your classroom?*

Jenny: *Reflecting on my lessons more carefully. I think it afforded me opportunities to get closer to kids. The gulf between learner and teacher is not so big. It used to be very much the teacher in front and the child*

there. Now the children and the teacher is much more together. I often sit in the class and the kids talk. I just sit on the desk and I talk from the desk and they all join in which is very good. That sort of closer thing that you don't always think you have to be up there. Technology has made quite a difference.

She changed the nature of conversations in the classroom and got the learners to talk and to be part of the classroom conversation. Learners did not give answers, but engaged in conversations about a topic. This brought up the question of learning and creating meaning. Did learners create meaning through questions and answers, or by having conversations? For Jenny, critical thinking conversations are important.

Jenny changed her role in the classroom, depending on what she wanted to achieve. Her classroom disposition was purpose-driven and she found it necessary to have learners listening, conversing, moving or doing something else, depending on where she was in the planning of her lessons. Within a lesson or a sequence of lessons, Jenny constantly changed her behaviour to suit the type of learning she was looking for in her lessons.

Researcher: *I noticed in other lessons I observed that learners communicated freely to each other and across the classroom, is this the ethos of the school?*

Jenny: *I think it varies from teacher to teacher. If I am teaching Math, when I am teaching concepts you keep quiet and watch me. That's terrible but I do but then there is plenty of time for them to experiment and play and talk to each other after that. But when I am teaching a concept then that's it nobody talks at all. Like that listening comprehension, it's very relaxed and then they normally talk. So it's not the end of the world. If I am teaching concepts, they know.*

When she taught concepts Jenny preferred learners to listen; at other times, she preferred talk and movement. Jenny found it necessary to change dispositions to

promote learning in her classes. Teaching concepts was central to Jenny's teaching practice.

Time was an important factor that also contributed to this teacher's disposition. Jenny had a sense of what she needed to complete by the end of the year. She thought of ideas that she believed would excite learners but felt that she could not achieve them all within the constraints of the timetable.

Researcher: *Reflecting on IR how do you think the school should proceed in future to support your development?*

Jenny: *What they should do is what they can't give or do that is give us more time because we don't have time. Because my timetable is full because we don't have time to plan the stuff properly. For me that will be useful. I want more time. I want more time to plan to think about exciting ideas for the kids to do. I am so rushed I stick to stuff I know works. I don't have time. I can't experiment-to say let's try this and see what will happen? I did this term. I tried with my grade 7s and it turned out very well and I am pleased with that but I did it in the August holidays.*

During the August holidays, when she had greater freedom to explore her teaching ideas, she worked differently with the grade 7 learners and found that learners responded differently. Jenny was pleased with her efforts.

Teachers have different strengths: Jenny believed that she had a wealth of teaching experience, while another teacher had knowledge or theory.

Researcher: *While on the subject what are your impressions about subject IR?*

Jenny: *I think it will probably be good because I am not going to be here forever. Claire is young and going to be here longer. She has a wealth of knowledge and I have a wealth of experience and if we could pass it*

among the department it will be lovely. I will again have time to have those meetings.

Jenny believed in the importance and benefits of collaboration.

4.2.10 Beliefs about Learners

The key goal for Jenny in her teaching was to promote learner understanding. She used learner understanding as a basis to design her lessons.

Researcher: *That's interesting. Moving on to the next question. In the previous IR session, learner engagement and the importance of prior knowledge emerged as significant ideas grounding critical thinking. To what extend do you think this has assisted you in your planning?*

Jenny: *You see I always teach them from a point of what, you know, that I can build on and it doesn't matter whether its Maths or English and that has been my teaching style forever. I also like children to do, so with Maths, I have something that is different. It's called a rough book. So they have a neat book where they do their work and the rough book is where I teach them something and now they try it right now so I do a lot of that and I have always done a lot of that so that suits me and I like the children to do rather than not.*

Learners at the school listened to the teacher, had conversations with the teacher and with one another. In addition, they were required to engage in activities like completing Mathematics exercises or examples or writing sentences and paragraphs. Jenny allowed learners to try out or experience their ideas using a rough book before working in their neat book. Learners therefore had more freedom to explore ideas and these were reflected in books that might be displayed. Learners had opportunities to experiment, discover and explore new ideas before committing to displaying their work in their 'good' books.

Jenny thought that learners should question what they were learning. She encouraged them to ask questions and to express their discomfort when they failed to learn. The learners therefore identified gaps in their own understanding.

Researcher: *What do you understand by critical thinking?*

Jenny: *Questioning out of the box. For me it's the ones who just question everything and it's not the oh is that why you did it no. A real out of the box. You can see they thought about it. The question say I thought about this and now I am worried. I am wondering about this.*

When learners questioned what they were learning and were worried about something, this meant that they were connecting new knowledge with their own thinking and picking up gaps that needed to be filled by the teacher, by other learners or by the learners themselves.

To keep the grade 7 learners engaged took greater effort than the higher grades. Jenny observed the younger teachers engaging them and learnt from those observations.

Researcher: *The next question is related. What significant lessons did you learn from the IR practice?*

Jenny: *Yes, that was the significant lesson that I learnt and I had to use it because my grade 7s are a group that can't sit still so I borrow techniques from watching younger teachers and go ok I'll do a little bit of this and a little bit of that and it has kept them going. I did a lot like that where they can't sit and concentrate for longer periods of time even though they are in the high school.*

Within Jenny's own repertoire, she expressed a number of ideas that might be applied to grade 7 teaching, like taking the class outside for a reading lesson, or engaging them in activities like completing examples for Mathematics. She might also use

movement, physical presence and listening, to support their engagement in learning. She changed her physical position in class in the course of a lesson.

Jenny's key strategy for engaging learners was to understand their prior knowledge and their interests.

Researcher: *Is there any other contribution you would like to make before concluding?*

Jenny: *As I was saying, for me, the most important thing comes from the base of knowledge they have. Make it from what they know. I want them to know and that's the best advice I have been given and it works.*

If learners were interested in what was happening in class, they would engage in learning and would develop an understanding that they could bring to further lessons.

The Wednesday three-hour session allowed Jenny to think more deeply about content and the type of activities that would engage learners critically. Subject teachers got the opportunity to try out activities that developed and engaged learners differently.

Researcher: *Elaborate on the Wednesday plan?*

Jenny: *What we are going to do on Wednesday? We have short periods in any way and they want to do away with that because Wednesday is test day so we have assembly in the morning then we have our tests and the rest of the day grade 7, 8 and 9, this is for three hours we do something and the 10, 11 and 12 do something but what that something is, every Wednesday is going to be different thing so this Wednesday it might be history so all the history things.*

Jenny thought about new frameworks for engaging learners utilizing the three-hour sessions offered. For the first time, teachers would get to control the learning in class for three hours. In a sense, teachers like Jenny would get to work with a bigger unit of

learning and to think about learning processes that might take longer to accomplish. Jenny would break down and rebuild lessons so that learners gained depth of learning.

As in the above example, Jenny maintained a longer relationship with learners on a particular activity or idea. She worked with one learner for three weeks to support her writing and she used multiple means to enhance her engagement with the learner.

Researcher: *To what extent did the hypothesis on teachers knowing if learners are engaging in their learning assist you with the experimentation in the classroom?*

Jenny: *We send each other messages and I go what do you think about that and she goes this is what I have written. Do you like it? You know it's been an ongoing thing for three weeks. We didn't used to do that. We did different drafts. We get the drafts, write on them and they write them neat. This has been the way we did things. That is where the critical thinking is shown.*

Jenny spent more time, not only with learners but on the activity, in order to generate better quality of work. To achieve critical thinking, Jenny invested more time with learners in supporting their activities. She was getting closer to them and she had more time to understand and build on how they thought.

4.2.11 Beliefs about Content

Is the aim of the teacher to remember a collection of facts or is it to help learners in the long run? Jenny held two views that determined her choices in the classroom. In Mathematics, Jenny focused on completing the syllabus because of its cumulative nature. If she completed the syllabus, it would help the learners the following year. She believed that Mathematics knowledge was hierarchical. If they learnt a section this year, it would support their learning the following year.

Researcher: *This emerged from the last interview. What are your impressions of the tensions between completing the syllabus and experimenting with critical and creative thinking?*

Jenny: *Look it definitely does make a difference but I think in the long run the critical thinking will help them more. I think you have to weigh what will be better for the child and that is the biggest thing to worry about. It worries me just about this is a personal thing. It worries me that I have to complete the syllabus not so much in English. English is very repetitive and you keep on doing nouns and you keep on doing [not audible]. But Math, if you haven't got the basics of probability and you get to the next year, how do they catch up? So you put a burden on the people next year. If you don't finish the syllabus and that is a huge struggle and I must admit I tend towards finishing the syllabus. I think about the kids next year.*

Jenny found that English offered more opportunities to focus on critical thinking. The nature of the English content allowed her to bring in topics and to push learner thinking, using her repertoire of ideas. With Mathematics she felt more constrained.

She understood that critical thinking had to be worked into teaching and learning. The school was playing a role in supporting the implementation of critical thinking at school.

Researcher: *Do you think that the tension will be resolved?*

Jenny: *I think what people are doing now, people are working on ways to put the critical thinking in. I think it had that effect. They have come up with a new scheme already to do something on a Wednesday because on Wednesday the periods are very short and we only have such a short time with them. She has put on the time table a whole new plan and I think that comes from the critical thinking which I think is a good thing.*

Jenny was also articulating the point that after the IR intervention, the school made a conscious decision to enable teachers to engage in teaching critical thinking. The school was making more time available for teachers to spend with learners for this purpose. However, the implementation depended on teachers including critical thinking in their practice. If they were going to do this, they would craft their lessons using their own understanding of critical thinking. Teachers developed their own conceptions of critical thinking and applied them in the classroom.

Researcher: *Is this for your subject or all subjects?*

Jenny: *No, it's across the school. It's a whole school plan and it's lovely really. It's a lovely plan but as I say everybody in the school has to buy in through otherwise it won't work. That is also something that needs to happen.*

With regard to her own practice, Jenny was calling for more to happen so that teachers included critical thinking in their instructional practice. Critical thinking was complicated and could mean different things. When Jenny thought about how to bring it into subject-teaching, she was not sure if it was easy or difficult to do so. She looked at the role of questions in teaching critical thinking and saw that she should listen to learner conversations and craft appropriate questions on the spot to direct conversations or dialogues in the classroom.

Researcher: *Are there other plans in addition to critical thinking?*

Jenny: *I think critical thinking in some subjects it's very hard to bring in and in some subjects it's easy. Maths and English it's very easy to bring in and make them think critically. Just by the right question at the right time or maybe it's not as easy. I don't know for the other subjects. The kind will even, you know, you are teaching us surface area but at the end of your prism there's a rectangle.*

On the one hand you had Mathematics, where knowledge was hierarchically arranged, and on the other there were English lessons that could be structured according to different approaches. Jenny used the example of calculating the surface area of a prism as an example. Learners needed to know how to calculate the surface areas of different shapes before they were able to calculate the surface area of a prism. Jenny thought about the meaning of critical thinking and this example suggested that she was considering what critical thinking meant in different subjects.

In the example she gave below, Jenny described a potential plan for History teachers to teach critical thinking during the planned three-hour session. She was considering the type of content that teachers could draw on for this kind of teaching. The topic, "Hats from Shakespeare's time" might generate activities like researching hats, drawing and making hats, identifying similarities and understanding their significance.

Researcher: *Elaborate on the Wednesday plan.*

Jenny: *The history teachers, they are going to get together and they are going to think about how to, so they may make hats form Shakespeare's time, or what are hats like. They may do a newspaper with all the events of the world at that time. It's a case of everybody coming together in different sections and doing a certain subject like English and English people do all sorts of things. It's just a plan. It's a maybe. She put it out there and said think about it and that's a challenge- will it work.*

For Jenny, teachers would be able to organize a series of related activities for learners to engage in critical thinking. At this stage, Jenny was not clear exactly what form this would take in the classroom but she had some ideas about choosing topics, organizing activities in order of difficulty and supporting learners in engaging with the content.

She used technology to enhance her lessons; an example was displaying Mathematics problems on the board for learners to complete, and used technology to enhance classroom content.

Researcher: *What are you doing differently?*

Jenny: *Maybe in my literature, I do a book on dust storms. Well about a girl in the US and they have a terrible dust storm. I tried to explain to the kids what a dust storm is? Now I can just put my iPad on and just show them. I mean the kids were fascinated. Look at that. They can't be you know. Technology also made I think that kind of thing possible now and it was difficult before technology.*

In the dust-storm example, most learners had not experienced dust-storms but the iPad provided a means for Jenny to create those experiences for the learner. Within a short time, she displayed visual images of ideas described in the text. The technology supported learners in creating images and engaging in deeper conversations.

Jenny recognized the potential of learners and they seldom disappointed her. At the end of the year, understanding that learners might be tired, she got the learners to perform and engage in learning. They performed the complicated task of writing poetry and Jenny was fascinated by their poems.

Researcher: *To what extent did the hypothesis on teachers knowing if learners are engaging in their learning assist you with the experimentation in the classroom?*

Jenny: *Why I was late here today they were writing poetry and I thought are you mad to make them write poetry at this time of the year because they are tired. We are tired. They write beautiful stuff and they stayed behind in break to talk to me and say what do you think of this am I on the right track. This is what I have done and this is what I want to get across. Did you pick it up? Did you know? That sort of conversations. That's what*

has come from critical thinking and that's engagement. That's true engagement the kids are really they feed in what you said and they feed in and they feedback. I do have an exceptional grade 9 group this year. They are just willing, willing to listen and do stuff.

More importantly, they were asking her questions, such as "*This is what I have done and this is what I want to get across. Did you pick it up?* "According to Jenny, these learners were asking her if there was a match between the idea they envisaged and meaning in the poems they produced. The learners engaged critically when they asked these questions and took the feedback into account. Jenny created conversation that framed her lesson content and allowed learners to ask the right questions.

Jenny summed up the role of content in critical thinking when she mentioned that people were thinking about the "*journey"* of the lesson. She used conversations and questions to engage learners in critical thinking. As discussed, it was not just the questions, but also the content and the situation.

Researcher: *What evidence of critical thinking did you see in the last IR debriefing session?*

Jenny: *I think there was more questioning overall and not just questioning that needed one answer the right answer put it that way. The questioning I think changed. The sort of questions. It wasn't just a right and wrong answer. I think people became more aware of getting the children's opinion on stuff. The people understand the thumbs up and thumb down. More and more people were doing that. Certainly [not audible] two they were doing. People are thinking more about the journey of the lessons. The lessons are varied.*

Jenny felt that teachers were thinking about the cumulative effect of lessons and their impact on learners. Jenny used open-ended questions to stimulate conversations and

steer the conversations in different directions. In those conversations, she elicited the opinions of learners. However, her approach changed when she taught Mathematics and the meaning of critical thinking changed, as in the example of finding surface area, which illustrated her approach. Creative thinking entailed working with complex mathematical ideas. Jenny taught learners the concepts, they worked out the answers first in rough, and then wrote them in their neat books. They practised several examples before engaging in critical thinking, where they had to apply their understanding.

4.7 Vignette 2: Anika

4.7.1 Beliefs about Self

Anika participated in the IR practice formally for a full year, starting at the end of 2014, continuing in 2015. The last debriefing session was held in September 2015. Teachers at the school worked with the problem of practice, focusing on teachers knowing when learners were engaging in critical thinking and examining their own learning.

When learners spoke in the classroom and the noise levels escalated, teachers needed to make a distinction between noise that contributed to learning and noise that was a distraction. Teachers needed to monitor whether the learners' conversations were about their learning and whether they were benefiting from those conversations. To determine this, teachers needed to listen to the conversations.

This conversation started before the formal interview and the teacher was trying to explain why one class was noisier than another.

Anika: *In terms of the noise, I judge where and what type of noise is there and how busy they are.*

Anika had a sense of acceptable classroom noise levels and listened to the learners' conversations to check if they were contributing to learner understanding. She made informed decisions.

Linked to the learner conversation in the classroom, Anika sometimes related the subject content to real-life problems like the HIV pandemic.

Researcher: *To what extent do you allow deviations in the classroom? Is this discretionary?*

Anika: *I could see that even some of the children now are so engaged in that discussion and they needed that and they need to hear that and listen. They might not even remember them like that. We did the whole year but maybe that is what the goal of the teacher should be. We are subject experts but we are present in the students' lives. Am I still on the right track?*

In this particular example, the learners engaged in discussions about HIV. Perhaps the learners were interested in the problem and could relate to the topic. In that case, Anika recognized her role as a subject expert but felt that she needed to work with problems related to the learners' lives or things that affected them and their communities.

Anika felt that staff needs were important and that the school needed to play a role in addressing those needs.

Researcher: *Reflecting on IR, how do you think the school should proceed in future to support you practice?*

Anika: *Yes, we are focusing on children but if the staff is neglected like their needs are not met not their needs but their certain I don't know how to put it the educators as a whole, they also need evaluation instead of only focusing on what is happening in the classroom. We ticked that box. What is happening in the classroom? We also need to look at the body of educators that makes up the school. What are some of the problems we can address so that we continue?*

She saw the need for teachers to be evaluated and the need to look at other aspects of the teacher or school, including aspects outside the classroom.

Anika thought of understanding as a collective and an individual process and struggled to develop an understanding of IR when it was first introduced. Later she attributed her understanding of IR to reading. She began to see the possibilities for improving her practice after reading part of the book and participating in the IR practice. Anika started to see the value of IR through deep engagement.

Researcher: *How would you describe your IR experience?*

Anika: *Firstly, for me it was not a pleasant experience because I think the way it was introduced to us was not very clear. What I found of value in IR was when I started to read about it because I felt that it was not clearly articulated. The majority of us as staff were resistant and said it is another thing without understanding the value of it because it is not clearly articulated. I think it was introduced four years ago and then also we kept on it. It was like we were looking at critical thinking and then all of a sudden trying to understand what critical thinking is in our subjects. Then they brought in IR and we had to observe critical thinking. We had to do that for almost three years in a row and that was a bit frustrating. And for me, who kind of started to understand it personally when I took a book and I wanted to understand.*

Anika felt that the staff resisted IR and that it was not clearly explained. She was taking into account what she thought the staff felt as well; however, despite the resistance and their poor understanding of IR, they persisted with the intervention. Anika developed her own understanding by reading the book. As mentioned, the focus was on the classroom observation.

The high school had implemented IR for four years and Anika was in her second year of participation. Her first year of participation in IR was exploratory. During that year,

the staff spent time trying to understand the intervention and it was only in the second year that Anika started to see possibilities for changing her practice.

Researcher: *What were those significant lessons you learnt from IR when you did observations?*

Anika: *There are a couple more but for me I think it was the beginning. It was my second year of teaching when we started IR and obviously in the first year you just do it and you know. But the second year you start thinking I can alter this and when we started with these observations and for me it was a turning point that made me decide I need to change. I do not want to teach this way. I want to [not audible] this child. It made me think about my own practice so how can I improve. It is a process obviously. Even if I change it, I am in the process.*

Anika started to reflect and see possibilities for change in her second year of participation and lesson observations convinced her of the need to change her practice. She started to examine her own practice when she observed other teachers and decided that she did not want to teach in the same way. She understood that changing her classroom practice or her instructional practice was a process rather than an event. The classroom observations served as a turning-point for her to begin the process.

Anika used two words that seemed to be similar in meaning: "*problem solving*", which related to her Mathematics teaching, and "*critical thinking",* which originated from the IR intervention. She saw that these ideas had much in common.

Researcher: *Are problem solving and critical thinking the same thing?*

Anika: *I think they do have some commonalities. They got more ties and less differences and I am trying to [Subject seem tentative so I moved on to the next question].*

In her practice, Anika played around with Mathematics content to see if learners could solve problems using their mathematical understanding. As she had mentioned, they struggled with problem solving. She brought up the distinction between general understanding of IR and the need for subject-based IR, with a view to deepening her understanding of Mathematics teaching.

Researcher: *You raised this point about subject based IR, do you think the benefits will be better?*

Anika: *Personally there is great benefit from observing diversity of subjects. I have gained a lot and it's actually it's something you can change for anything but we had done that for four years. Is it not time to also pause that for a bit and this is continuously assess the school so is it not time to focus on this department. What is happening if there is a problem? We can look at not necessarily Math or English in the History in the Science in the Social Science in the languages. You know in those kinds of things. It doesn't have to be my subject alone but we get a better sense because I feel that its fine over all but there is so much detail that is lost because not only considering the smaller parts. That's why I say it. That way and also yes we are focusing on academics but who brings about the academics. That is why I brought in the aspect of the staff. Like for example, next year Umalusi is going to come to do observation or, whatever they do. They are going to look up the educator. They are going to look at different aspects of the school. We should have to do that before through those different areas. Look at the school as a whole but also look at the different aspects of the school so that we are already clear beforehand.*

While she believed that she benefited from observing teachers teaching subjects other than Mathematics and Science, she also believed that the intervention could assist her in becoming a better Mathematics and Science teacher through a focus on these

subjects. She felt that there was a missing link in the intervention and that subject specific detail was lost in the process.

Umalusi, the National Senior Certificate Qualification authority, came up in conversation. Anika was concerned that they might be looking for subject-specific detail and this might be different from what the IR intervention was attempting to achieve. Anika was conscious that external bodies or agencies would look for content-specific detail.

In contrast to more traditional way of practising in isolation, IR opens up teachers' practices to scrutiny and, in the process, exposed teachers to other teachers' practices. The teachers in this study benefited in three ways: firstly, they were able to see their own practice by observing others, secondly they observed new ways of teaching and thirdly, they were able to get feedback from other teachers on the way they were practising, by focusing on the evidence of practice. IR separated the teacher from his or her practice.

Researcher: *How would you describe your experience of IR?*

Anika: *And then in terms of highlights, I think observing as you heard in our discussion, observing other teachers, it brings in a different aspect and you say this one is doing that then you start off thinking. It allows you to think about your own practice while you observe and for me that is where, although it was a struggle for four years ago, I started observing other teachers. I started thinking about my own practice and comparing. I saw the pattern when you teaching Math. We are in the front and the teacher is a source of information and I saw it wasn't me and it was almost everybody who was doing that in their class and I said no. I started thinking about it, my own practice, and looked for ways of changing that.*

Anika now believed that her role in the classroom had shifted from being a source of information. She had also discovered that other teachers were having the same experience. Ordinarily, this information would not be available because of teacher isolation, and this was something that she wanted to change in her practice.

Researcher: *What are the tensions between finishing the syllabus and experimenting with critical and creative thinking in the classroom?*

Anika: *I try to, yes tick the box, but now and again put in questions, problem solving, reinforce it and also in our internal calendar we do have tests. For example, last week, they wrote a test on Thursday and we discussed as a group, the teachers who are teaching grade 7s, we are going to test this topic it might not be the test on problem solving taught in class for me yes I will make sure the children are able to get it but I will always make sure that in those topics do they have the grounding to problem solve beyond the textbook.*

The tension between completing the syllabus and teaching higher-order thinking and problem-solving was reflected in the teachers' efforts to meet test requirements, which presumably excluded problem-solving. It appeared that the tension ran deeper because teachers were required to teach at a certain grade level, which was assessed, but problem-solving activities were voluntary. As a teacher, Anika knew they were important, but if they were not included, no one would notice. Teachers internalized the requirements and interpreted them from external sources and built them into their practice.

Anika thought of problem-solving as linking Mathematics, for example, to real problems and understanding the details of real-life situations.

Researcher: *What is problem solving?*

Anika: *We need to think where did the other part go and that's real life because the small minute details that students may overlook when you go real-life*

it's not the [Not audible]and for me those are the kind of things we need and I like to look at. They can apply this to the content.

In real-life the world does not have a perfect fit, as demonstrated by the example of volume, where there is a mismatch between theory and practice. Three spoons could not fill the container, as predicted through the calculation. A learner explained that the thickness of the material used to make the spoon explained the difference.

Anika had developed a new understanding of learner interaction and experimented in changing learner's physical location in the classroom and interaction with friends and other peers.

Researcher: *When learners walk into the classroom do they choose their own place or is it allocated to them?*

Anika: *I am not forcing them but only when there is a need to intervene I intervene but that is because I constantly change their places they end up not clustering the same way.*

Anika found it easier to change learners' seating in the classroom to facilitate interaction, but although she requested that learners change their places, it was not compulsory. She thought that learners understood what was required of them and only intervened if she spotted a negative pattern. She also switched between teaching in a laboratory to teaching in a regular classroom when the laboratory was not required, in order to promote learner interaction.

4.2.12 Beliefs about Learners

Learners were required to change their roles during the lessons. Sometimes they had to listen and at other times they interacted with their peers in pairs or in groups.

Researcher: *To what extent did the hypothesis and experimentation in the classroom assist you in reflecting on critical and creative thinking?*

Anika: *I do get them to listen to me and other times they pair and other times they can be in small groups and so forth. At other times individual and also change position all together so that I listen to the conversation and I listen to them addressing each other not only academically for me, but for me it's also important in terms of mannerism. The value that they bring about when they talk to each as friends and when this one not actually your friend. Like immediately, how you are going to talk about it to each other. How you are going to interact?*

Anika focused on the quality of learner interaction, their "*mannerism*", or how they interacted with one another. She focused on the conversations about content as well as the quality of interaction, based on the value they bring to it. Anika differentiated between interactions with friends and other colleagues and academic conversations. The learners developed ways of communicating with friends and other class colleagues. Anika was open to different forms of learner interaction.

In her explanation, she made a distinction between *"the syllabus"*, *"teaching for life"* and *"real-life"*. Learners needed to learn the subject and she took it further in two ways, which were linked to real-life and teaching for life.

Researcher: *To what extent do you allow deviations in the classroom?*
Anika: *I think sometimes especially as educators yes we are teaching syllabus but we are also teaching for life. I always tell my children that- I call the learners my children- and sometimes we have to allow the ethos of the school to persevere in it you know. To be present in the moment to judge how far you have to take discussion. For example, we had a specific case in my grade 8 where they had to talk about the way they conduct themselves and how they can be prey to predators on the internet.*

When she got learners to explain the discrepancy in volume, she was encouraging them to apply their knowledge in real life situation. When she used graphs to discuss

the topic of HIV, she was aiming to teach for life. The role of learners shifted in those instances. Anika linked mathematical content with content that related to important social issues like HIV. Anika utilized different discourses in her classroom.

Do learners learn differently if they have conversations with their friends or if they sit at the front of the classroom? Anika thought that it did make a difference and constantly changed learners seating to ensure that they all got the same opportunities.

Researcher: *It's interesting that you mentioned change in view of children of each other. What did you mean?*

Anika: *In terms of seating for example, the practice is that most of the children take a specific seat for the rest of the year but if you interchange them, you are going to say today you are going to sit here and another day you are going to sit here and another day you are going to sit there. Everyone gets a fair chance of getting to the front and going back- sitting with this one, with that one and all that. I have to say sometimes, boys this side and girls that side and those kinds of things so that at the end of the year everyone has had an interaction with each member of the classroom. I think that is important.*

Apart from using seating and peer interactions, she sometimes used gender as a criterion for grouping learners. She used learner interactions as opportunities for learners to restate what they had learnt in their own words. Once learners demonstrated that they could explain the content in their own words, she extended her teaching by adding more words.

Researcher: *That was an interesting view and I wanted an elaboration. In the previous IR session learner engagement and prior knowledge emerged as a key idea grounding critical and creative thinking skills. To what extend do you think these are significant in your planning?*

Anika: *Describe it in your own words and then from there I gave them couple of other words that they had to research so they could actually do the task. With the task I gave them, you could also see those discussions and they came back and said oh that is just a [Not audible] I could see the child understood it and could talk about it so for me hmmm because for me in that way that specific class I tried to engage allow the children to engage with the content and engage with each other but also access their prior knowledge, but connect it to the information with iPads and come in to consolidate. That more or less was the highlights.*

Anika used a number of strategies to ensure that learners engaged with the content, from explaining in their own words, and introducing new terms to add to what they know and to make additional links using technology. Anika also encouraged intersubjective discussions.

This teacher had thought about ways to engaging learners in critical and creative thinking. She identified their ages as one of the variables that needed to be taken into consideration when working with them. She understood that those below fourteen are different from those of fourteen and older.

Researcher: *To what extent did the hypothesis and experimentation in the classroom assist you in reflecting on critical and creative thinking?*

Anika: *Actually, it was something that I thought about even before we did the critical thinking. It is something I have been thinking about and as I did express, especially now and research is proving that the children of that age and below are very different form children 14 and above and now we need to think of ways of how do we engage and how do they engage, noise not chaos. How do you engage? To me personally that was bothering me and it came about in our discussions and I am very conscious of that. They saw me walking around listening to the conversation for example, in the natural science class, listening to the*

conversations that were taking place and when possible saying ok what do you say. Please explain and you saw that another child who would talk to the other group.

Anika was trying to understand the problem of engagement better. Firstly, she created opportunities for learner engagement, then she listened to their conversations and explanations to determine whether they were learning. She listened to the way learners' processed information and talked about it.

As already mentioned, Anika explored alternative ways of engaging learners. She had limited options in the laboratory to experiment with learner interaction, although she initially preferred to teach there.

Researcher: *What were those significant lessons you learnt from IR when you did observations?*

Anika: *I also felt that-sorry I am tired now [Referring to her state of mind during the interview] I thought of class arrangements and how for me it was quiet interesting because before except for this term I actually taught in a laboratory. I change to a classroom. The tables are stuck and what not. But even with the laboratory I thought of how can I switch or change so that children have a different view of each other, the board and what not and now that I am in the classroom I changed. Now and then I change the arrangements. These are two of my highlights.*

She chose to move to a standard classroom because the standard classroom offered more options for learner interaction. In the laboratory, learners faced the teacher and the teacher interacted with them from the front. In a standard classroom, the teacher could arrange the desks for group interaction and she move around to listen to them speak.

Anika thought of content as something that needed to be extended or taken to another level for the learners. In the examples below, learners had to see the relationship between what they were learning in the classroom and how it could be applied in other situations.

Researcher: *What is problem solving?*

Anika: *Problem solving for me is when you expose a child to real-life problems. They are using the knowledge, skills and values that they learnt in the lesson to solve that problem so they will go beyond 2+2=4. Now use it in context of real life situation- I am just trying to think of an example- so for example, the volume that I was intending to do and it did not work out and I improvised with that. They measured the volume and then hmm and also we calculated theoretical and we got 91.125 cm cubed and we have a spoon which says 25ml which is 25 cm cubed so it's supposed to be three spoons and something and when you put it inside it's not exactly three which fills to the brim now.*

In the example above, learners calculated the volume and came up with the answer, but they ran into difficulty when they applied the formula in practice. The difference presented the teacher with an opportunity to engage learners in thinking about this problem.

To support learner conversation in groups, Anika enlisted the help of another learner. On one level, the learner was able to come up with the answer, and got him to explain to the other learners. On another level it was like having two teachers moving around the classroom, stimulating discussion.

Researcher: *To what extent did the hypothesis and experimentation in the classroom assist you in reflecting on critical and creative thinking?*

Anika: *I did teach him and say do not give answers and he was explaining how he came about those answers to the group and for me that [Not audible]*

I am still on track by talking even if they not because most of this time it's not possible especially without [Not audible]to actually tell the teacher they can tell each other and that is why mixing them and changing them allows for that kind of engagement because I am exposing them to something.

There may have been another advantage in utilizing a learner to explain how he came up with the answer. Learners use similar language to their peers and this may promote understanding. Anika encouraged learner engagement by doing so.

4.2.13 Belief about Content

Teachers played a role in shaping content for teaching and learning. It was possible to teach statistics as an abstract idea, or it could be shaped in other ways.

Researcher: *To what extend do you allow deviations in the classroom?*

Anika: *Now, when I was teaching statistics, I changed my statistic to suit problems around HIV and AIDS which is a very big problem in our country and it diverted to a discussion. It went into a discussion that was about you know about life problems. Why are we having that? What is the statistics telling us? That so many people if you treating them as a group so many people are HIV positive, two of us, yes we spoke about that problem yes and that's why as if we are present, you as a teacher, you are present in that moment. You are present. You are able to make a better call on what is important for the children.*

HIV and AIDS are common problems in South African and many communities are affected by this disease. Schools also teach learners about this disease because their lives are affected in some way. Anika's decision to incorporate this problem when teaching statistics connected the subject to life problems. She taught learners to interpret the data.

Anika took almost three years to understand IR and to see its possibilities for her own practice. In the first three years, she felt that she was doing something, but lacked a sense of direction.

Researcher: *How would you describe your experience of IR?*

Anika: *What it is? I understand the theory which was fantastic, as I said before, it was like this is exciting and you can do something with it because for three years I had to do exactly the same thing and I felt that we are not moving anywhere but with a vision of moving forward one problem of practice to the next level is becoming a little bit more enjoyable.*

In the IR practice, working with the problems of practice and the different levels, provided a sense of direction.

From the interview with Anika, one gets the sense that it was easier for her to complete the syllabus by following the textbook; however, learner understanding would have been restricted. But completing the syllabus was important and learner understanding needed to be considered as well. Her first role was to complete the syllabus and her second role was to ensure that learners understood.

Researcher: *What are the tensions between finishing the syllabus and experimenting with critical and creative thinking in the classroom?*

Anika: *Ok. So yes. We have to complete the syllabus to a certain extent but for me what is the use of completing the syllabus if the learners don't understand even one. If you have not taught it properly and yes, you need to complete and you need to focus but which is important to make them aware of time and time management but for me I need to judge how much in-depth has this child understood. I will give you an example; in Math you can tick the box because of the textbook. I have been going through every single exercise and the majority of class actually completed it and the converted volume/capacity and what not so they*

have done the exercise but once I start doing problem solving and it's not provided by the book it becomes different and I am searching for the depths of understanding and yes its taking time but that is what's going to last and that is what they going to use in the future so yes it is complex but also for me how I balance that.

Anika understood that learners struggle with problem-solving and to support them in it is time-consuming. She balanced completing the syllabus with ensuring that learners understood the content in complex ways: she referred to this as *"the depth of understanding"*. Anika thought about learning as something that would be of value in the future. What they would learn was something that they would use when they left school.

This teacher believed that textbooks contained basic content and that critical thinking was something that occurred beyond the textbook. It was something that she brought into her teaching. First she got learners to understand the textbook explanation, then asked them to apply it to real-life situations.

Researcher: *What does critical thinking look like in the classroom?*

Anika: *There is questioning. There is also looking beyond like learners are looking beyond the textbook. They look beyond the textbook. They are looking beyond the textbook that is the topic that is popping in my head right now is what happens today when the child says oh no it's because the container is thicker. The plastic might be thicker so it's going to take more space so the capacity is going to be less for me that is the question. With the question, we are thinking more about understanding of the problem.*

The teacher and the learners asked questions about real-life situations. The textbook contained information about volume and learners were able to calculate volume; after that, they needed to apply this information and ask questions about it.

The skill of questioning is central to critical thinking and Anika observed teachers asking questions in their classes. This exposed her to a range of questioning techniques.

Researcher: *What were those significant lessons you learnt from IR when you did observations?*

Anika: *Firstly, I was doing the observation and questioning, the type of questions that we asked especially in particular classes the type of questions that allowed every child to be part of the discussion. That for me was something that was very significant.*

Anika focused on the type of questions that allowed all the learners to be part of the discussion. Some teachers asked questions that engaged all the learners. Anika thought about her lesson in the planning stages and in the implementation stages. She incorporated some changes in her lesson plans and thought about what she would be doing in the classroom.

Researcher: *That was an interesting view and wanted an elaboration. In the previous IR session learner engagement and prior knowledge emerged as a key idea grounding critical and creative thinking skills. To what extend do you think these are significant in your planning?*

Anika: *For me it was highlighted through IR so it becomes subconscious. One of the things I had to do- when I had to- when I planned my lessons it was one of the things I had to watch out for for example, in my lesson like the natural science lesson. Initially I gave them [not audible] this is what they had to do tell me. They told me so I said research and some of it was too broad. I said ok fine. I said when you research you have to understand what you research. If they talk about force don't give me formulas, you don't understand.*

When she thought about research, Anika focused on the request to help learners understand their learning. She wanted her learners to research forces, so that they understood what forces meant, instead of simply producing a formula. She wanted to develop subject-specific skills to sharpen her teaching and was concerned that other teachers might not acquire Natural Science and Mathematics teaching skills: staff concerns were also important in shaping her thinking.

Researcher: *There are no right and wrong answers and they represent your views which are important. The final question. Reflecting on IR, how do you think the school should proceed in future to support you practice?*

Anika: *One point is important for me and that is we don't generalize. This is the fourth year doing IR and it is about time now we focus it on subjects. It's been very general and it's important that we focus it on subjects. With that said, not only academic subjects but also whole school that need to be addressed and what is the word I am looking for look at it through lens, through these observations, so one is the say departmental and the other one might be say for example in terms of staff.*

She makes reference to the staff, the department and the subjects she teaches, Mathematics and Natural Science.

4.8 Vignette 2: Ayanda

4.8.1 Beliefs about Self

Initially, Ayanda believed that participating in professional development activities like IR amounted to extra work and avoided such participation; however, her perception changed when she watched others participating, especially Anika. She also believed that her responsibility was confined to teaching and that she was not paid to participate in professional development activities.

Researcher: *How would you describe your IR experience?*

Ayanda: *Ha! I think that for me it's working out and I also before I took part you know initially I didn't see the need to take part. I felt that I've got a lot of work to do. If I got a lot of things to do and I was not prepared to start the extra work. You know what I can keep running away from this. As a black Africa teacher, sometimes when we take a backseat when it comes to other things and you know we concentrate on teaching and that is it. My issues and whatever become like becoming a teacher and not getting paid enough to participate in this and that and [Anika] is not a South African. You have people like [Anika] who is brave enough to participate in this and that and the next thing you know we complain when they get better opportunities or something like that whereas it is not a question of [Not audible] it is a question of what we do ourselves. When you are asked to do something you tend to pull back. So basically that's my take.*

Ayanda's racial identity seems to be a motivator to act. She believed that white teacher participated in professional development activities and black teachers did not, especially not black female teachers, until Anika started attending and interacting in such processes. Ayanda reflected on her beliefs because of Anika's participation. Ayanda discovered that she had a role to play and it was not a racial identity problem but a choice that she was making to pull back or to participate.

When questioned about the relationship between completing the syllabus and teaching creative thinking, Ayanda was of the belief that teacher had different goals and some were driven by the need to complete the syllabus, or it was their style of teaching that enabled them to finish the syllabus.

Researcher: *Do you think it is something that will be solved or will it still be there?*

Ayanda: *I think it will always be there all the time. It depends on the kind of teacher because the other people are so focused on wanting to finish the syllabus or maybe the way they do things and this is like writing some of*

the people some things you know they just write a small paragraph and come up with all the points and some of us will write long kind of a thing. It is a questions of saying don't finish or struggle to finish the syllabus and do something to try and make this other person so there must be some kind of compromise and so on and I think that sitting down and have meetings with others so the page where are you are maybe I need to slow down a bit or maybe I skipped or maybe I need to go back. You know it is something that can be negotiated.

She used the example of some teacher achieving their goals by being terse and she took a longer time to achieve her classroom goals. Ayanda attributed the pace of her lessons to the length of the notes she gave learners. Ayanda was unsettled by the idea that one had to choose between completing the syllabus and spending more time teaching learners. Although she presented her struggle to complete the syllabus or to keep up with the other teachers her slow pace rather than creative thinking slowing her down. She believed that, through negotiation, she would develop a better understanding of her slow pace. Ayanda acknowledged that she struggled with pacing her lessons.

At this point of her participation in the IR practice, Ayanda believed that there might be some things that she was already doing in the classroom, she did not see the immediate need to connect the intervention work to her classroom practice.

Researcher: *Do you remember the hypothesis from the last IR session –What will it take for teachers to know that students are engaging with learning so that students have ownership of that learning and the little additions. From a personal point of view, did you have an opportunity of experimenting with the hypothesis?*

Ayanda: *I cannot say. I did not make a conscious effort to do that because at times you find that, you know this and that, and in other cases you have time to sort of you know learn something new and then you have time to*

experiment in depth into that thing and so on. You find that at times you know when you learn something new but already we are teaching so it's always a struggle to say now let me go back to class and you know experiment with this and that. We try but it's not like I took a conscious effort to do it.

Ayanda was already engaged in the daily task of teaching and thought that it might be disruptive if the intervention was taken into account.

This teacher benefited from the observations in IR, which expanded her understanding about how other teachers engage in their instructional practice. Ayanda was teaching History for the first time that year and she benefited from the experience of watching a veteran teacher in action.

Researcher: *The final question. How do you think the school should proceed in future?*

Ayanda: *For me, all the staff members need to be given a chance to observe the other teachers, their colleagues lesson, because in observing the lesson, I was like what is this? If you don't have the buy in, you don't participate. I don't know. Force and encourage and let everybody be on the other side of the fence then there will be buy in.*

Ayanda had a point of reference for her own teaching. Teacher A was using one approach and teacher B was using another. Ayanda reflected on her own teaching and found that was possible, for example, to acknowledge and make learners feel good in other ways in the classroom. Ayanda felt strongly about acknowledging learners.

Ayanda recognized that IR practice is a process, that she could do more to improve her work and that the school was investing in her to improve her instructional practice.

Researcher: *On a personal level what do you want?*

Ayanda: *I think more training. I know that time is not on our side, but sometimes you need to do things. I agree now I am struggling with IR on a different level so on and more training and more time to practice what I am training and so on. But in any way, for some reason, the school has decided to send me with the other teachers to a course on IR in December and that means I will understand IR even more. So it's that kind of thing. More intensive training so that one can understand and apply those lessons and if that could happen with everybody that would be nice.*

She was of the opinion that more teachers needed to be involved and more intensive training needed to continue at the school.

In one of the IR debriefing sessions, the teachers discussed the importance of prior knowledge as a prerequisite for building critical thinking. They also discussed strategies to ensure that learners' prior knowledge is taken into account.

Researcher: *The teacher never prompted you to speak so is it something you changed? In terms of prior knowledge?*

Ayanda: *Ya! Maybe I am not that conscious of prior knowledge. I take it for granted that it should be taken into consideration and so on like in the History lesson I was trying to say remember in History you don't just focus on one aspect. What you should know from previous lessons.*

For this teacher, prior knowledge was established through a sequence of lessons, and in that way, she made sure that learners had the necessary knowledge to build on for critical thinking. She had been taking learner prior knowledge into account before the IR intervention, and viewed this as a natural, tacit or implicit part of her teaching.

Ayanda believed that she had to change her instructional practice by changing her physical position in the classroom and by arranging the class in groups to encourage learner participation, but she stood in front of the class and the desks were still arranged to enhance the learners' view of the teacher and the board, rather than to allow interaction among learners and the use of groups.

Researcher: *Has your role changed in any way since you started IR?*

Ayanda: *Maybe a little because I am still standing in front of the class. The method of teaching is more or less the way I was taught because I think in term of IR, I should has you know, the tables should be changed the desks should be in a group. You know in a group and my job is to be the facilitator moving from one group to the new group.*

The position she took in the class and her teaching methods were based on the model of her teachers when she attended school: she was familiar with the model of standing in front of the classroom and teaching learners who were seated in rows facing the white board.

4.2.14 Beliefs about Learners

Learners need to feel important and this is accomplished through learner participation. This involves having class discussions and allowing learners to ask questions and make comments. Most importantly, the teacher should interact with the learner's ideas.

Researcher: *What significant lessons did you learn from the IR practice?*

Ayanda: *They will talk about this and discuss that and later on, she will definitely go back to the student's question and comment and so on and for me it is something. You do your best and for me that was interesting. I hope I was able to do that kind of thing so that the children feel important so that their inputs are valued and their questions will be answered at the end of the day or something like that that impressed me otherwise I will*

be in my classroom doing things the way I always. That kind of thing motivated me to join. In the future I will do that.

Interacting with ideas is a way of valuing learner input and of making them feel that their views are worth considering, a position that contrasts with the way Ayanda was taught at school. Ayanda modelled her teaching on that of her teachers and made an effort, within that framework, to make learners feel that their contributions were valued. Getting quiet learners involved in the lesson was a deviation from her own schooling experience.

Learners participate in discussions in class and they express their views. Their views are taken into account by allowing them to discuss ideas without interference or input from the teacher. The learners' views are added to the engagement.

Researcher: *In the previous IR session learner engagement and the importance of prior knowledge emerged as key ideas grounding critical thinking. To what extent do you think these are significant and assisted you in your planning?*

Ayanda: *In the class. [R- In the class]. I think for me especially when it comes to student engagement it is something I have been doing before the IR thing because I am the kind of teacher who wants students to participate so not just listen to me. I am teaching IsiZulu but for example, if there is a [Not audible] and they are discussing it and so on. I won't discuss that. I will add their views so student engagement for me is something I have been encouraging very long (silence).*

When learners ask questions, challenge authority, challenge the text or express innovative ideas then they are engaging in critical thinking according to Ayanda.

Researcher: *That is an interesting point. If I asked you what your understanding of critical thinking is, what would you say?*

Ayanda: *Critical thinking. Letting children not just take things at a superficial level. You know, teaching children to question things to challenge authority or the text that they engage in and to be more innovative. To not just ask that somebody came with this way of doing things that is the only way things can be done in terms of you knowing creativity and so on.*

In the process of questioning, challenging authority and expressing innovative ideas learners, explore multiple ways of approaching ideas. In History, learners engage with the relationship between the past and the present. They connect the past and the present – the subject loses value if this does not happen.

Researcher: *Before moving on to the final question, I observed that the class in your History lesson moved from the past to the present and learners have the freedom to communicate, is this deliberate or something that happen just for this lesson?*

Ayanda: *Yes, it is something I am always trying to get kids to understand why things are the way they are today. I think that sometimes you teach History and something happens in the past and we don't kind of make the connection between the past with the present then it becomes a useless subject so there must be the link or connection. I am kind of happy this took place. Tear gas and so on and I think to a large extent you share the point.*

Ayanda was glad that the connection took place and hinted at South African history when she brought up the tear-gas idea, pointing to South Africa's oppressive policies in the past. Learners understood the past in the light of the present and the present in the light of the past. For example, when learners discussed royal subjects wearing expensive jewellery in public, they imagined and discussed security both past and present. They also discussed the security of Queen Elizabeth's jewellery. The ideas of past and present were interrelated because of the nature of the topic.

4.2.15 Beliefs about Content

Controlling the delivery of content in the classroom is influenced from different directions. In terms of the Curriculum and Assessment Policy Statement, South Africa's national curriculum, certain content areas must be covered in a particular grade, and the textbooks that are based on the curriculum also carry these expectations. The school, especially the high school, responded to the pressures of the external exit examination (the IEB Certificate) and this sometimes conflicted with the teachers' goals to improve student learning.

Researcher: *Is there is a tension between completing the syllabus and experimenting with critical and creative thinking in the classroom?*

Ayanda: *Completing the syllabus. Maybe it's something I struggle with you know. If you are expecting children to voice out their views and so on chances are that I might not complete the syllabus and I can say at the moment, I am kind of fortunate when it comes to IsiZulu because I take all the grades sevens so it is not like teacher A takes a group and I take another group because that is where the tension and problems come in because maybe that one is focusing on completing the syllabus and in my case I take all the grade 7 so I do things in my own pace. I take all the grade 7s so I do things at my own pace and when it comes to grade 9, I am sharing with the other teacher but we are kind of checking. Are we on the same kind of a theme when it comes to the test and so on so that you know the children are not advantaged or disadvantaged in anyway. The story is that we more or less do things our own way using the same theme. In History, I am sharing the grade 8 with another teacher. I am a bit slow because I give learners a chance. What you want to say and so on and that teacher is a bit serious and for me, it becomes a challenge.*

This teacher controlled the pace of content delivery when she taught all the units in a grade, but struggled to keep pace when she shares the subject with another teacher.

Creating a balance between giving learners a chance to articulate their views in class was a time-consuming process and the effort involved in completing the syllabus created tensions. Themes help teachers to keep the content uniform in classes that they shared. As long as the teachers were covering the same themes, the content would be similar and the pace was monitored.

Controlling the delivery of content also occurred on another level, when the teacher and the learners brought in ideas that fell outside the subject guidelines, for example, in one of Ayanda's History lessons, a learner raised the security issue; discussion continued around security and Ayanda allowed the learners to continue the discussion.

Researcher: *How far are kids allowed to go when they bring in new elements into the lesson?*
Ayanda: *It is something I am struggling with. It is something I am struggling with.*

Ayanda was struggling to balance making learners feel important and valued and controlling the subject content. In the same lesson, a learner raised the attitude of citizens towards politicians.

Ayanda majored in history at university but spent most of her teaching time teaching IsiZulu and a few other subjects at primary school level. She was currently teaching History in the high school. Ayanda identified the position of the veteran teacher as delaying but not ignoring the learners' comments.

Researcher: *What significant lessons did you learn from the IR practice?*
Ayanda: *Like mmm! We can talk about the History lesson that I once attended. I teach history this year by the way. I have been teaching IsiZulu for a very long time, but I did major in History at university so it was interesting you know to see this veteran teacher you know doing his thing for example, maybe a child would ask a question or maybe give a comment*

about this or that doing something in relation to justice or something thing like that and the teacher would say ok I will come back to you.

The veteran teacher proceeded with his lesson and took into account the learner's input. However, he delayed his reaction to the learner's comment. The teacher did not have to respond immediately – he decided on the nature of the interaction with the content.

4.9 Vignette 2: Linda

4.9.1 Beliefs about Self

Linda would have liked to hear more about the implementation of critical and creative thinking in classrooms and believed that the staff meeting might be the best place to discuss them.

Researcher: *What will it take for you to fully implement critical and creative thinking in your classroom?*

Linda: *Maybe once a week on a Friday morning staff meeting, someone can discuss one thing that they did differently in their classroom that helped the learners to engage more or think more critically. I think the staff needs opportunities to discuss and share their ideas about how to achieve more learner engagement.*

If such discussions were taking place in the IR practice, perhaps Linda was thinking about the need to extend those interactions. The fact that the teachers who participated had to share ideas about critical and creative thinking also meant that they had to experiment with ideas in their instructional practice.

Linda learnt new techniques from her colleagues through lesson observations. The lesson observations were focused because they took place in the context of IR practice.

Researcher: *How would you describe your experience of IR?*

Linda: *Interesting, I have learnt new teaching techniques from my colleagues through lesson observations. We visited different classes and picked up new ideas from teacher.*

Linda saw what teachers did in the classroom and gathered evidence of their instructional practice. She realized that learners need to be more involved with the content they were asked to study and concentrated on finding ways of getting them more engaged.

Researcher: *What significant lessons did you learn from IR practice?*

Linda: *I discovered creative ways of getting the learners to engage with content. I make them do research before the lesson. This is very helpful to them than if I always answer their questions.*

Engagement entailed getting learners to ask questions about the topic and the teachers' role is to answers those questions. She involved learners by asking them to research topics before the lesson. Their questions should relate to learners' understanding of the content.

Linda was asking questions about learners' learning and she was experimenting with ways of engaging learner more around content.

Researcher: *To what extent did the hypothesis and experimentation in your classroom assist you in reflecting on critical and creative thinking?*

Linda: *This has assisted me to see what works and does not work. I tried out different methods to see if learners are engaging with the material and if they are learning.*

One method of engaging learners was to let them ask questions and the teacher then providing the answer or filled in the gap in learners' understanding. Another method was letting learners explain a concept to their peers.

4.2.16 Beliefs about Learners

When learners processed content especially in the forms of concepts, Linda saw this as representing a form of critical thinking.

Researcher: *What evidence of critical and creative thinking did you see in the final IR session for this year?*

Linda: *For me critical thinking is when students are able to re-explain concepts in the class to each other. When they can express something in their own words.*

Linda combined a strategy for engagement with her notion of critical thinking and got the learners to explain the concepts to their peers. In terms of critical thinking, she understood the term as being able to explain the concept, so that the learners processed the concept, using their own words.

Added to the notion of re-explaining concepts, Linda brought in a deeper dimension when she spoke about learners thinking outside the box and combining their thinking with their observations and experiences.

Researcher: *What is your understanding of critical and creative thinking?*

Linda: *The learners can think outside the box. Use their observations and experiences in their environment / community in class discussions.*

What happened when learners combined what they learnt in the classroom with their own observations and experiences? In a sense, thinking outside the box meant looking at the relationships between content and their own experiences and observations. The use of multiple ways of stimulating thinking and learning engaged

learners more. Linda planned her lessons to support learning. She built discussions into her lessons and encouraged learners to refer to their observations and experiences in the discussion.

Researcher: *In the previous IR session student engagement and prior knowledge emerged as key ideas grounding critical and creative thinking skills. To what extent are ideas significant and has this assisted you in your own planning?*

Linda: *The idea of student engagement and prior knowledge has influenced my planning. If it is a section that they can relate to easily, I encourage them to discuss what they have experienced and observed in their surrounding environment. Also, I have allowed them to play with prestik to help them focus (especially ADD or ADHD children). I have allowed then to write on the board when the class takes down notes. I have allowed then to change slides of a Power Point when I teach.*

Linda also allowed learners to engage differently with the content, for example, by slipping in devices to aid concentration and also by understanding that in learning there are different needs. The learners also wrote on the board and made changes to PowerPoint presentations. More importantly, Linda focused on a set of ideas to aid learning in her classroom.

In keeping with the aim of implementing multiple ways of encouraging learning, Linda promoted learner interaction, not only in terms of explaining concepts to one another, but also in terms of learners asking and answering their questions.

Researcher: *What are you doing differently in your classroom?*

Linda: *Getting students to ask and answer each other's questions. Making them to take down their notes and write down what they understand about concepts taught in class. Encouraging them to use their own examples to explain concepts or situations.*

She took the notion of learners' processing concepts to another level when she instructed them to write notes and record their understanding of concepts. The learners were also encouraged to write down their own examples. She went from a dialogic level to a written level.

4.2.17 Beliefs about Content

Linda used teacher-centred methods to deliver large amounts of content over a relatively short period of time. She resorted to this especially in the third and final term because of the looming examinations, but she understood that promoting learning required more learner-centred approaches.

Researcher: *What are your impressions about the tension between completing the syllabus and experimenting with critical and creative thinking in your classroom?*

Linda: *It can be challenging, especially in third term as final exams are looming. You have to make trade-offs at times ("chalk and talk" vs more learner-centred learning). I try to create a balance between the two.*

Linda gave detailed explanations about her learner-centred approaches, in which she got learners actively involved in learning the concepts and processing them in their own words, with their own examples, and by linking the concepts with their observations and experiences. However, learner-centred methods take time and are also a lot more demanding for the teacher.

4.3 Debriefing Findings

Jenny, Anika, Ayanda, Linda and eight other teachers in the high school section of the school participated in the IR practice. These teachers identified a problem of practice, in this case, of critical thinking. During the IR classroom observations, they collected

evidence of critical thinking from the classes they observed: these included observing teachers other than the twelve who had committed to the IR practice.

The four teachers in this study were part of the group that participated in the IR practice and for purposes of the study it was not possible to isolate the collected evidence or the discussion to any particular participant. In addition, the twelve teachers who committed to the IR practice were split into two groups for conducting observations and for debriefing sessions.

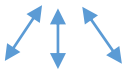
Three or four months separated each observation session. In general, the teachers collected evidence related to their roles and to the learners' roles and tasks. The observation and debriefing sessions presented the growth and development component of IR. The evidence presented represented the collective effort entailed in the discussion and categorization of observed evidence from different classes. While individual teachers collected the evidence by observing colleagues, they nevertheless had opportunities to agree and further shape the evidence during the debriefing session. They did this in terms of its relation to the identified problems of practice and the categorization of the evidence.

4.3.2 Debriefing Session 1

The school conducted IR training prior to the first IR session. This resulted in the development of the high teachers' skills and their ability to be non-judgmental in supporting the classroom observation process. Essentially, the school encouraged teachers to confine themselves to description when collecting data and having conversations within the IR framework.

The table below presents collective evidence that participants collected and processed from classroom observation (see Appendix M).

Table 3: Instructional Rounds Observation Schedule A

No	*Evidence*
1	*Teacher*  *Students*
2	*Activities given time limit.*
3	*Learners given clear guidelines or instructions (Evidence &Time Limit): Talk about the picture, feedback.*
4	*Teacher elicits further responses from learners-uses "Carry on that thought or try to be more specific".*
5	*On what to do next (did not tell them what to do next).*
6	*To add extra information –she omitted add own opinions on information she gave.*
7	*Can't work anything out. [Peter] what do you think?*
8	*But why?*
9	*Are we ready. Eyes on me. Let's talk…options do I have?* *…elaborate* *Times* *Responses* *I* *(e.g. What does a song do at a sporting event?)* *Tell it to your friend next to you.*
10	*Directing questioning.* *T-What… do I write it.*
11	*You brought it up. Now defend it.*
12	*Talk to your friend next to you.*
13	*Teacher- Question of comparison.*
14	*T- What is Beckett doing here? Theme: Philosophy* *How does it relate to the other scenes?*

15	*Teacher pointed out that the learners' subjectivity is influenced by their personal context.*
16	*Teacher recaps.* *Teacher-Why is the title highlighted? (Recap)*
17	*T-Asks students to read out something that he had to look up for homework (student did this?)*
18	*In all lessons (7) there was evidence of teacher asking critical questions. Engaging in critical discussion.* *Then he asks the student to summarise what they read out aloud because he didn't think the student…*
19	*Look outside the source. Solving higher level problems. 5 classes-proof of critical thinking methods.*
20	*Save the environment, Be brave! We're all supporting you.*
21	*No correction of behaviour- 3 late- No response. I sleeping… correction …giggling not directed.*
22	*Seating* *Auditorium* *Seating in circles* *Rows facing forward* *Rows facing forward* *Rows facing forward*
23	*Seating pattern need not determine learning* 
24	*Very important point…well spotted…noted.*
25	*Mary asked to explain something she discovered at home.*
26	*Student engaged in their own learning – learners write notes as others talking to question…answering.*
27	*T- Who is Mohammed?* *L- A military dictator.* *T- What's that?* *L- (Explains. Learner expands on answer.)*
28	*Learner as expert in classroom. Teacher asked 2 learners to stand up and give….*
29	*Pair work…specific task for discussion…structured learning…clear outcome.*
30	*Discussion beyond the classroom…each night allocated learners…have to post something about lesson (for discussion).*

31	*T- What's an ambassador?* *Ls- Not sure-not responding.* *T- Find out and post. (They have a WhatsApp / Facebook group where to post things)*
32	*Learners work in pairs and exchange answers. Give their partners answers, not own…to rest of class.*
33	*Responses. Fill the gaps all together response. Remember process.*
34	*T- What you do to one side you do to the other.*
35	*T- Tell us more.*
36	*Learners were asking probing questions- questions of increasing difficulty/ depth.*
37	*Learner formulated own theory about reasons behind the subject being discussed (Photography vs Art) used terms of subjectivity/ objectivity.*
38	*Implicit use of thinking skills in one. Nothing explicit.*
39	*Asked about use of canvas:* *What did they use?* *Why did they use it?* *How was if different?* *What is different now?* *Progression of? S [Questions]*
40	*People working on own things- not paying attention…not corrected.*
41	*Presentation- learners listened passively. One slept. Some worked on their own speeches.*
42	*Learners playing games and not watching movie. 4 on iPads using notes the app. 11 learners on using the exam pad to take notes.*
43	*Opportunities taken to direct learner questions…not always taken – not seen in two classes.*
44	*Task* *Learners discussed source document (similarities and differences based on prior knowledge) in pairs* *T- think outside the source.*

After observing several classes over a period of two days, the teachers gathered for the debriefing session to discuss, document, classify and evaluate the evidence they gathered from the observations. Although Jenny, Anika, Ayanda and Linda, together with the other participants, focused on the instructional core: the teacher, the learner

and the content, the task and the documented evidence focused mainly on the teachers' roles and the learners' roles.

Thirty-seven pieces of evidence related to teachers' roles. The evidence focused on teacher control in the classroom. Teachers played a central role in the classroom and were instrumental in getting learners to focused on lessons, directed learners, evaluated learner responses, motivated learners, sequenced the lesson, utilize questions in the classroom and tasks to engage learners.

From the forty-five pieces of evidence the IR participants generated from observations, only eight related to the activities of the learner: the rest focused on the teacher's role. For those that focused on learners, the evidence included learners' interactions with one another, learners working individually, how seating arrangements affected engagement, learner distraction and learner roles in formulating ideas.

4.3.3 Debriefing Session 2

During the second debriefing session, after conducting observations, the twelve teachers discussed and classified the evidence they collected relating to critical thinking. Again, the evidence related mainly to the roles of teachers and learners in the classroom. Out of sixty-nine pieces of evidence that the teachers presented in the debriefing session, seventeen related to the role of the teacher and sixty-six related to learners' roles. Since the last debriefing, the participants had looked closely at what the learners were engaging in in the classroom. Teachers provided learners with correct answers, conducted experiments, asked questions, offered learners guidance and guided them.

The teachers participating in the IR practice, including Jenny, Anika, Ayanda and Linda, looked more closely at the role of learners in the classroom. They identified evidence relating to what learners were doing in the classroom. The teachers discussed the number of learners who actually participated in the lessons, for example, four out of thirteen, three out of thirteen, seven out of thirteen, three out of

twenty-one and finally all learners. Learners engaged in lessons mainly by asking clarification questions, engaging in discussions, listening to the teacher, working in groups and following instruction in the classroom. During class time, learners also engaged in activities that were unrelated to lessons, like eating, doodling and playing on electronic devices.

The main form of interaction between the teachers and learners related to questions and answers, correcting responses and completing teacher-designed tasks in the classroom. The purpose was to bring their own roles and those of the learners into a relationship with the content. They focused on what they were teaching and what learners had to know. The table below presents collected evidence for Debriefing Session 2.

Table 4: Instructional Rounds Observation Schedule B

No	***Evidence***
1	*Test* *Preparation for the following days math test (revision).*
2	*T- Giving learners answers/ corrections for homework.* *L- Marking their homework.* *T- If you have a problem please tell me. That is in relation to the correction.*
3	*T- What do we start with before algebraic expressions?* *Teacher wrote answers on the board. She then asked learners to tell her/ give her the rest of the answer. One learner gave the answer. The teacher helped him where he seems to be struggling.*
4	*L (3): L's answered the question.*
5	*One learner realized that there was a mistake. She made the teacher aware of that. The teacher admitted that there was a mistake and one of the learner volunteered to correct it.*
6	*T- What terminology did we use?* *L-Variables, core efficiency, index.* *T-Elaborate on index* *L- Giving the degree of expression.*
7	*One learner was correcting his homework. However, he was participating in giving answers or working on the board.*

8	*Physical science learners took out their books. One learner greeted the observer.*
9	*T- How do we make a battery strong?* *L- We use more wire. (Five or so learners put up their hands.)*
10	*Three learners were talking. However, most of the learners seemed to be engaged. The reason being that they were fascinated by the battery experiment.*
11	*Teacher asked learners about temporary and permanent magnets. Learners answered the question, in group.*
12	*One learner was marking/ working in her book.* *One was quite looking and listening to the teacher.*
13	*Learners were listening as the teacher did the next experiment. The teacher could not remove the magnet, but one student could. The second learner failed to remove the magnet.*
14	*Teacher asked a question and one learner answered. The teacher was impressed and he asked the learner how does the learner know. The learner replied by saying that he watched it on discovery channel.*
15	*Student reached the class long after the bell went.*
16	*Students sit down open books. Start marking their work according to the answers the teacher was providing.*
17	*Teacher invited students to do the work on the board. She asked for volunteers.*
18	*Students followed the example on the board. They (look in an attentive way) focused on the board.*
19	*Students volunteered to work on the board while their peers followed step by step.*
20	*The teacher pointed out small mistakes on the board. Students verbally confirmed that he understood where the mistakes were.*
21	*T- Hand up if money makes a good relationship.* *L- Many learners say yes.* *T- Says hopefully you'll change your mind by the end of the lesson.*
22	*Learner co-operate in drama games- clapped a rhyme and did a word association game. They then combined the two.* *The word game: Learners had to quickly come up with a word related to a social issue.*
23	*Teacher explained that they can write a poem on a social issue with a rhythm.*
24	*Group discussed what social issues they could write a poem on/ about.*
25	*T- Why do I want to know about questions?* *L- They can show you what we know or don't know.*
26	*T- Does God exist? Is it open or closed? Pointed out only two possible answers.*
27	*T- What are you trying to achieve by asking questions?*

28	*Learners were all looking forward. All were answering – all focused. Some answered individually / some as a class.*
29	*T- Explain closed and open questions. Asks for an example of an "open question."*
30	*T- In groups, examine how the type of question change the info we get.* *Open: Why is green a colour?* *Closed: Is green a colour?*
31	*Asked to apply content knowledge by writing a response- am able.*
32	*Looking + responding. Repeat information. Fill in …of ….*
33	*They asked questions about what they were seeing.*
34	*2 pairs of learners explain to each other what the teacher said they must do. Evidence…we must…*
35	*Learner questioned if teacher was explaining and understanding questions correctly.*
36	*Learner hiding phone behind iPad.*
37	*…with pairs of scissors…right through the…but his….*
38	*13 learners* *1 girl ask question…What do you mean by legality?* *2nd girl asked what must we write down?* *3rd girl I do not understand.*
39	*Initiate discussion of topic to get.* *Made notes of information being discussed or explained.*
40	*1 girl eating but listening-answering quests + engaged in discussion with…*
41	*Learner eating but answering every question asked.*
42	*Learner had her hand up for 10 minutes unnoticed. Then asked what must we look for?*
43	*4 learners out of 13 were writing / taking notes in 15 min of the lesson. Those 4 were girls.*
44	*7 learners taking notes on new work out of a class of 20.*
45	*---helps…*
46	*Discuss what they…*
47	*Vocal responses e.g. YES/NO suggestions.*
48	*… all look at…eyes focused when work written on board- 4 girls immediately started making notes others…*
49	*In a class of 21 learners in 15 min of the lesson 6 learners spoke/ responded or commented on the content that was being discussed- 3 boys/ 3 girls.*
50	*Group work – assist each other.*
51	*1 or 2 learners with earphones in/on devices. Not doing what others doing.*
52	*Own work- helps whole…*
53	*Discuss what they see…*

54	*Vocal responses e.g. yes/ no.*
55	*Ownership of work…. Asking for surety, direction and clarity*
56	*Learners consult with others e.g., test results.*
57	*Learners ask for suggestion + express need.*
58	*Class discussion* *T given info among themselves. Drew own conclusion.*
59	*Is doodling ever WD…aid focus?? How does it compare with an active discussion.*
60	*Link to what they know about this observation "Oh I saw this on learning channel discovery."*
61	*Worked as a whole group (class) all did task.*
62	*…evading question asked from teacher. Busy on phone looking down.*
63	*Ask for clarification* *Learner was late.* *After explaining the mistake, the teacher asked the learner to carry on (correct their mistakes)*
64	*Learners were using the distance formula to simplify the…*
65	*Class attention was on movie.*
66	*In a class of 21 learners 9 learners were writing down as the class discussed. I learner on the phone under the table.*
67	*Put info on board (whole class)*
68	*Groups of learners clarify instructions.*
69	*Learners questioned teacher- Clarification* *Asked for clarification*

4.3.4 Debriefing Session 3

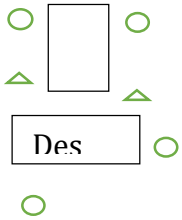
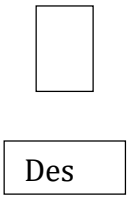
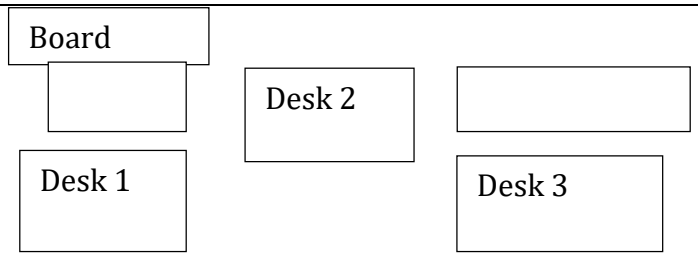
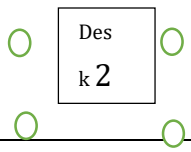
Jenny, Anika, Ayanda and Linda together, with the other eight teachers, focused their discussions on their own roles and those of learners in order to gain insights into critical thinking and how learners were engaged in the learning process. They presented evidence on seating arrangements that promoted learner interaction in classrooms and documented evidence of learner activities that supported learning. The first six pieces of evidence, presented below, showed learner interaction in the classroom within the class and groups. In one piece of evidence, all seventeen learners were engaged in their work. This was the first time that teachers were documenting evidence of all the learners engaging in learning, participating in the

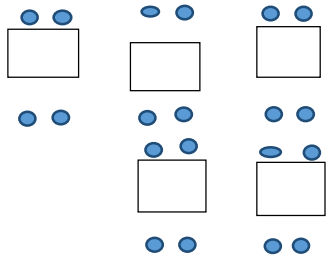
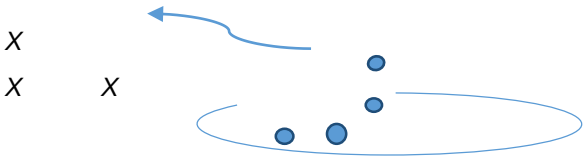
lesson in numerous ways. These included a lesson game and a group activity. In the course of the lesson, they initiated interaction, expressed a lack of understanding, participated in problem-solving, completed tasks, engaged in a dialogue, used their own words to demonstrate understanding, utilized their own questions and answers to make sense of a task, used technology to support their learning, worked in pairs, read a text and reflected on a film. They were also physically involved in the tasks.

The teachers also presented evidence of non-participation and distractions that kept learners from concentrating, like too much noise.

The participants in the IR practice presented evidence of teachers' roles to enhancing learning and identified the following strategies: effective communication, planned seating arrangements, monitoring, methods of assisting slower learners, utilizing questions effectively, developing learner expectations, letting learners develop notes, maintaining a positive relationship with the class, stimulating learners' interest, distributing learning material, acknowledging learners, listening to learners and utilizing technology to support learning tasks.

Table 5: Instructional Rounds Observation Schedule C

No	Evidence
1	*Distracted by what was happening around them.* *Either cutting out worksheet or started reading through worksheet* 
2	*Everyone (10 Students) were working on handout. Reading data analysis handout.* 
3	*SH- Students worked in groups or pairs- teacher facilitated.*
4	*Enhance* *Learners in group- working independently. Then check with each other in group- discuss discrepancies at all 17 learners engaged with work.*
5	 *Groups- Asking each other about a handout that was given out.*
6	*Teacher helping middle group to understand questions on data analysis handout.* 

	
7	*Enhance* *Discuss the various conflict management styles in pairs.*
8	*Answering together- some just mouthed because they didn't know the answer. But…*
9	*Learners partnered up with someone, teach them new term. Then find new buddy, same thing…then again.*
10	
11	*Learners seated in pairs. Comment: Laugh to each other throughout lesson.*
12	*LKS* *Learners were engaged because they were sitting in pairs.*
13	
14	*Enhance* *Learners seated in semi-circle facing each other. They work in pairs.*
15	*Enhance* *Learners working in groups of 3 and 4- on cash budget-small groups- learners did not know asked questions-others in the group help. If they can't teach [Teacher] walked around +help.*
16	*Notes for the topic were made with the students help. Teacher did not make notes.*
17	*Task to work on-worksheet*
18	*Enhance*

	They were allowed to set out their summaries in their own way. Teacher praised them for being innovative.
19	*Say it in your own way then we will put it mathematically.*
20	*Enhance* *Get learners to move around + then stop. Tell a friend about a term-does about three rounds of stop + discusses terms with class as a whole. Draw on previous knowledge.*
21	*Quick Revision* *Learners putting up hand by themselves (were not even asked).*
22	*In language, learners were given a written task first while individuals did a reading test (JH).*
23	*Learners answered questions by referring to an earlier movie they had watched.*
24	*Teacher gives systematic progressive instructions that builds on each other.*
25	*Math: Learners were engaged because they were playing geometry wars.* *The game was like chess. There was a prise to be won.*
26	*Teacher asked some learners….*
27	*Enhance* *Teacher wrote up + yes +- yes from the class suggestions.*
28	*Write down the new word. The new sentences on the board. As enhance of what they heard from the conversation.*
29	*Enhance* *Challenging task: change the negative to positives.*
30	*Enhance* *Humorous u-tube clip- even though the projector didn't work- show on iPad.* *The whole class was attentive.*
31	*Enhance* *Topic was relevant. Behaviour. Group work, situation, consequences.*
32	*Clear instructions expectations for next practical lesson.*
33	*Enhance* *Clear instruction-look at the sheet. Give formula- sub + answer.*
34	*Enhance* *Visual Aids – Movie Clip- Learners all watching.*
35	*Seating Arrangement*  *Sent task to students on iPad.*

36	*Enhance* *They were all looking at a resource on their own iPads and reading it.*
37	*Teacher asked…what do you need? Learners gave a list of three things…which the teacher wrote on the board.*
38	*Enhance* *Learners help each other when struggling. What are you doing? Go down or across. Oh! Sorry I am supposed to go across- I've been going down.*
39	*Learners asked each other (as they worked together)* *How does this work. I do not understand. The learner in the group explains.*
40	*Freedom of being able to say they don't know + other children explaining.*
41	*Learners listen to each other's answers and indicate agreement or surprise etc.*
42	*When teacher emphasised that learners work together, they started talking about questions and explaining to each other.*
43	*Enhance* *Group discussed the topic- noise level high-but engaged.*
44	*Learners nodded their heads as the teacher spoke.*
45	*Learners were engaged because they were discussing strategies of how to play geometry game.*
46	*Learners were engaged by taking down notes or working out the answers.*
47	*Math* *Learners were engaged because they kept on asking questions for clarification.*
48	*Learners where engaged when the teacher asked them to solve a mathematical problem.*
49	*Enhance* *Teacher gave them a task & walked around to check they were on task and understand.*
50	*Fewer children in the class led to engagement as the teacher was able to help /check straight away for every child.*
51	*Students' prior knowledge helped engagement.*
52	*Enhance* *Teacher used French accent for "ampere".*
53	*Learners were engaged because the teacher was trying to imitate the accent of scientist she was talking about.*
54	*Start with an ice breaker e.g., what do you call the fear of birds.*

55	*R…the word starts with. Learners complete.*
56	*Walking around.*
57	*Learners were engaged because teacher was moving up and down. This made learners pay attention.*
58	*Enhance* *Timing/ Pace* *Teacher gives time for responses/ discussion but moves onto next point after a short time- keep discussion controlled.*
59	*Give an example of what is going to be asked in text and tell them that.*
60	*Make use of relevance/ recognition e.g., refer to movie/book.*
61	*Get class attention by standing up –first thing and greeting them (worked for HJ)*
62	*Learners were engaged because the teacher asked them to look at her.*
63	*Learners were engaged because the teacher asked them questions about what they have done previously (prior knowledge).*
64	*Were either doing what was asked or were helping each other to do their work.* *The knowledge makes such a big difference in the lesson.*
65	*Hindrance* *Arrival of late students interrupting and the teacher having to recap- loses some of the students.*
66	*When the teacher asked them to get iPads it was chaos. Half of them didn't bring them. Had to leave again to fetch. She had to repeat the instruction.*
67	*Learners did not engage because they were dissing each other.*
68	*Was playing sudden death on his iPad but soon returned to task.*
69	*Learners with iPads on desk when iPad not used in lesson. Learners distracted-on iPad while class discussing.*
70	*Some learners were not engaged because they were playing on their iPads.*
71	*Only asked learners with hands up (those not responding).*
72	*Handing out notes and giving instruction at the same time. Kids either talking or looking at notes- +/-6 did not hear instruction-had to be repeated*
73	*Teacher hands out task and gives instructions-lots of noise + milling about.*
74	*Technical difficulty-take into account- download before hand- movie-shouldn't have used download-learners get distracted while waiting.*
75	*Putting non-participants on the spot: call them to offer an opinion- they clammed up and looked sullen.*

76	*Child answered and teacher did not listen – was busy on OHP-nor did most of the class.*
77	*Asking whole class to answer- only half the class put up their hands to answer.*
78	*One learner was not engaged because he was sitting at the back of the class. He was ignored when he put up his hand.*

The findings showed the transition and development of participants from their initial debriefing session and the debriefing session a year later. The transition included the participants' role in the IR practice and in their dialogue and conceptions of their work based on the disciplined approach and on being evidence-driven.

4.4 Classroom Observation: Jenny

Jenny taught listening comprehension to her grade 9 learners during her English lesson. This occurred at the end of the year when the school was preparing for the final examination. She had not covered listening comprehension during the year and felt that it was an important skill for learners.

4.4.2 Beliefs about Self

Jenny crafted her instruction to support learners in practising and develop their listening skills. She began the lesson by inviting them to occupy seats that had been arranged for pairs of learners to talk and to listen to each other, so the chairs faced each other in twos. For the learners this was a new classroom configuration, designed to create a different communication setup. While she instructed the learners, they remained quiet and followed her instructions.

Jenny's instructions included directing learners to their seats, orientating learners on the proposed tasks (speaking and listening) and supporting two learners in finding seats because a learner was absent. Jenny displayed the topics on the board and requested the speaker to select and to speak about the topic to their colleagues. While half the class spoke and the other half listened, Jenny walked around the classroom, interacted with the learners, encouraged them, monitored their interactions by listening to their conversation and later engaged each pair around their peer assessment. She then targeted a few learners around the quality of their peer assessment.

After Jenny created the speaking, listening and assessing experience for learners, she stood in front of the class and read an article, outlining how to listen effectively.

4.4.3 Beliefs about Learners

The learners entered the classroom and noticed the new classroom arrangement and followed the teacher's instruction to occupy relevant seats. They chose partners for this pair interaction. From four topics displayed on the board, learners selected a topic to tell their colleagues about. After listening, learners had to retell their colleagues

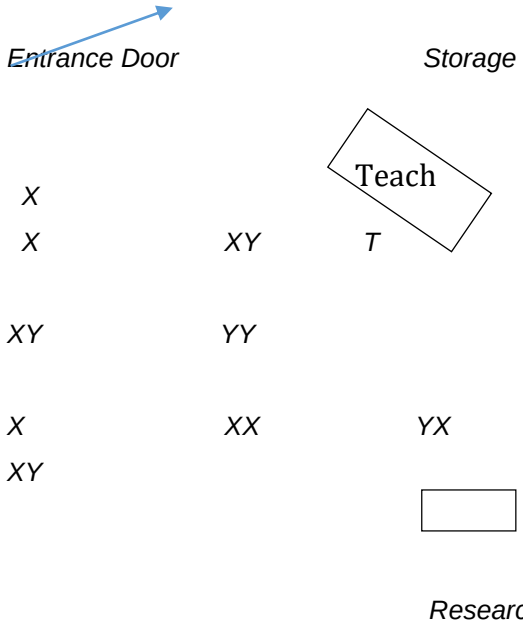
what they hear them say. The speaker then rated the feedback they received from their colleagues. After about five minutes, the learners switched roles where the speaker became the listener and the listener the speaker. In addition to these roles, the learners also interacted with the teacher around peer assessment and they asked questions to understand listening skills.

4.4.4 Beliefs about Content

Content selected for this lesson revolved around a main piece of text that outlined how one should listen. The content was linked to the experience the teachers created in the classroom for learner to speak and listen to their colleagues. The content was further enhanced by the teacher, who selected topics that learners could relate to in terms of the learners own experiences. The content was linked to assessment task as well.

Table 6: Instructional Rounds Observation Schedule D

Physical Setting



Learners sat on chairs facing each other and the learners' desks were moved to the side of the classroom.

Conversations *The teacher requested learners to play roles of listener and speaker. The speaker and the listener later swopped roles.* *The learners had to rate their listening efforts.* *The rating was out of 5 with 5 being the good score and 1 the poor score.*
Participants, Activities and Interaction *Learners developed and verbalized a story to listeners. The learners based their story on one of four topics:* *My funniest moment* *My worst mistake* *My saddest experience* *My happiest moment*
Subtle Factors *The teacher controlled the discussions of learners. There was a time for listening to the teacher and a time for discussion.* *The teacher moved around and interacted with learners when the learners worked in pairs.* *During discussions the noise levels were moderate and this allowed all learners to interact without competing with their voice levels.*

4.5 Lesson Observation: Anika

Anika taught grade 7 learners a Science lesson on calculating forces. Anika taught this lesson at the end of the year at a time when the school was preparing for the end-of-year examinations. The lesson took place in the afternoon. Teachers at the school remain in their classroom while the learners move to the teachers' classrooms for their lessons.

4.5.2 Beliefs about Self

Anika arranged her classroom so that learners were seated in groups of about four. The physical arrangement of the classroom supported learner interaction and she

moved her teaching space from her science laboratory to the classroom to exploit the desk arrangement for better learner engagement. Anika further supported learner engagement by allowing them to move around the classroom to other groups, to offer and elicit support. Anika followed a sequence in her lessons, starting with recapping the previous lesson, then explained the task they needed to complete, with examples. This was to the whole class. She then distributed worksheets to be completed individually in groups, after which Anika monitored the activities of the groups and supported their efforts through conversations.

4.5.3 Beliefs about Learners

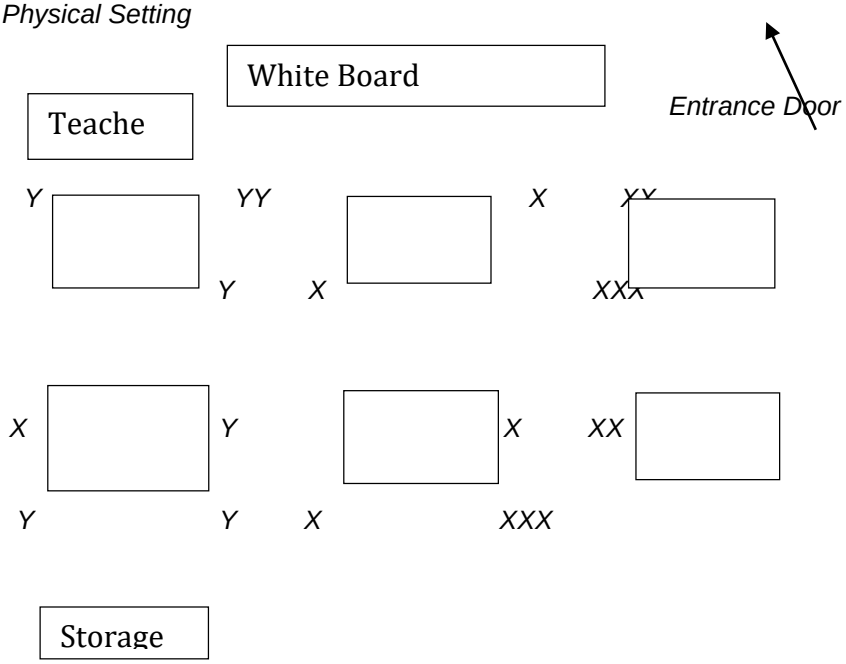
One learner approached the teacher at the beginning of the lesson and engaged her for a few minutes before walking to her seat to prepare for the lesson. The learners sat in groups of their choice, most of which consisted of three or four learners. The task was to complete a worksheet, and they discussed how to do this; at the same time, other learners were busy with different activities. The groups continued with their conversations, despite the teacher's presence near them. When the teacher spoke, the learners listened. One learner moved around the groups to explain how he had arrived at the answer. Two learners recorded the lesson using their iPads.

4.5.4 Beliefs about Content

The science lesson started with correcting previous work, which had involved completing worksheets. The topics were the following: force and Si Units, area, size and shape, the calculation of force. The content was sequenced to lead up to calculation.

Table7: Instructional Rounds Observation Schedule E

Physical Setting



X- Male Learners

Y- Female Learners

Total Number of Learners: 22

Conversations

Teacher discussed previous lesson for those who missed the lesson on forces.

Learners had one–on-one discussions with teacher.

When appropriate, learners left their desk space to discuss problems with other learners.

The teacher requested a learner to move to some groups to discuss how he arrived at the answer.

Participants, Activities and Interaction

Sequence of the Lesson

Diagram –Types of Forces and Si Unit

Force/ Area

Shape/ Size

Teacher distributed worksheets

Learners calculated force / Completed the worksheet

Teacher the learners and the learners supported each other

Subtle Factors

Two learners recorded the lesson on their iPads

5 Learners with iPads and one learner was playing on his iPad (not related to the lesson)

Learners communicated freely with each other

The teacher embraced the use of technology

Learners continued with their discussion when the teacher approached the group to listen, offer support or to explain

Learners were busy in different ways.

4.13 Lesson Observation: Ayanda

4.13.1 Beliefs about Self

Ayanda taught History for the first time at this school in 2016 and spent most of her time teaching IsiZulu. She had majored in history at university. Although she had planned a video clip to begin the lesson, the technology (projector and whiteboard) did not work. She turned down the offers of assistance from learners and proceeded with the lesson, which took place in the afternoon.

Ayanda's lesson was about the Ashanti people, and for this she used a History e-textbook. She requested all the learners to access the e-textbook on their iPads in preparation for the lesson. She also asked volunteers to read paragraphs covering different topics relating to the Ashanti people, before asking questions and allowing the learners to engage in discussions. Ayanda monitored the time learners spent in discussion before guiding the next learner to read the next paragraph. She allowed the learners to discuss security, wealth and safety issues and to constantly relate the past to the present. She noticed that three learners dominated the initial discussion and called for learners to put their phones away and raise their hands. More learners raised their hands and Ayanda invited these learners, in turn, to participate.

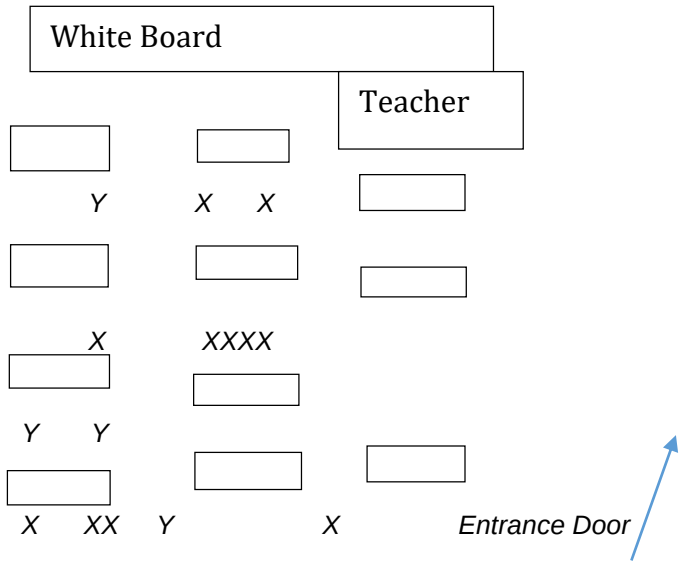
4.13.2 Beliefs about Learners

Learners volunteered to read different paragraphs and participate in discussions. They raised social issues like security, wealth and safety, linking the paragraph to today's world. They added to the discussion by giving additional examples and disagreeing with their peers. When one learner read the paragraph on mining, another learner suggested banning mining because of safety issues. Another learner disagreed, arguing that regulating mining was a better option. They communicated with the learners next to them and with learners across the class. They also asked questions when they did not understand something.

4.13.3 Beliefs about Content

The content on the Ashanti people provided rich ideas for classroom discussion. The content covered issues that are relevant to today's society, in which people also deal with wealth, safety and security issues. The use of e-textbooks added a technological dimension to the learning.

Table 8: Instructional Rounds Observation Schedule F

Physical Setting  *X- Male Learner* *Y- Female Learner* *Total Number of Learners-15*
Conversations *Ashanti* *Trade – goods, slaves, wealth and trade routes* *Learners agreed and disagreed* *Learners made reference to contemporary events*
Participants, Activities and Interaction *The teacher referred learners to the textbook on their iPads* *The teacher requested learners to read paragraphs from the text on the iPads and they discussed issues from each paragraph:* *Ashanti People* *Culture and Goods –African and European* *Power / Politics* *Security* *Laws* *Authority* *Leaders*

Slavery *Religion* *Homework Activity 1 and 2*
Subtle Factors *Learners asked related questions freely* *Learners moved around the classroom when they needed to move around* *Learners carried and used their cell phones and iPads in class.* *The teacher spoke little and allowed learners to discuss issues related to the text.*

4.14 Lesson Observation: Linda

Getting time to observe Linda proved to be difficult because of her demanding schedule. This lesson took place in a grade seven class in the afternoon. It was not one of her typical lesson because Linda spent most of the time checking whether learners submitted their assignments and negotiating new dates for submission. She spent the rest of the lesson guiding learners in how to study for a planned test.

4.14.2 Beliefs about Self

The teacher requested learners to complete a mind-map for an assessment activity and learners submitted these electronically. The teacher went through the register of learners' names and emails to identify those who had submitted and those who had not. For those who had not submitted, Linda negotiated a submission date with the learner and recorded this on her computer. Linda spent most of the thirty-five minutes completing this task before moving on to guiding learners for the planned test. In addition to a mind-map, the learners completed a task on latitude and longitude.

4.14.3 Beliefs about Learners

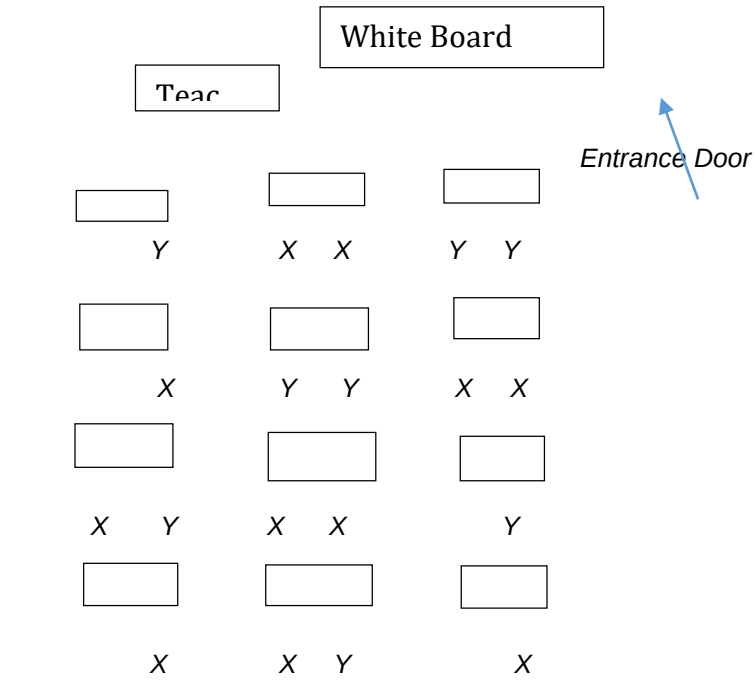
The learners responded to the teacher as she called out their names and indicated whether they had submitted work or not. She checked this against the emails she had received. Three learners asked questions about the task they had to complete. The learners sat together, suggesting that more pair work than group work took place in

the class. Learners also moved around in the classroom. For the test, they asked questions so the teacher could clarify those sections for revision.

4.14.4 Beliefs about Content

The content covered during this lesson included the mind-map, latitude and longitude.

Table 9: Instructional Rounds Observation Schedule G

Physical Setting  *X- Male Learner* *Y-Female Learner* *Total Number of Learner – 20*
Conversations *Learners asked clarification questions:* *About the SA Booklet Assignment* *About the test on the 2nd of November*
Participants, Activities and Interaction *Learners asked teachers questions* *The learners submitted their assignments via email.*

Teacher checked if learners handed in their mind map assignment and recorded handing in dates for those who did not submit. *Learners also had to complete a longitude and latitude task.*
Subtle Factors *Learners communicated freely* *Learners moved around the classroom* *Learners had phones and iPads in the classroom*

4.15 Conclusion

The researcher categorized data collected from two sets of interviews, each for four teachers, the observation of three debriefing sessions and finally the observation of a lesson given by each of the four. Teachers' beliefs about self, about learners and about content served as the main lens to determine these findings. However, before classifying the data into these categories, the researcher spent time reading and interpreting the data to identify emerging categories or insights. For the debriefing sessions isolating individual participant interaction and verbal behaviours proved difficult given the rich discussion and contributions and this was treated as a collective effort.

CHAPTER 5: ANALYSIS

5.1 Introduction

Literature on teacher development indicates that teacher developers, teachers and researchers hold mixed views about how best to support teachers in changing their conceptions of their instructional practice. Many support the view that teachers' understanding of a particular domain of knowledge is the best route to take when developing them professionally (Adler, 2015; Pournara et al., 2015; Venkat & Adler, 2012). Others maintain that teachers' collaborative engagement may support better learning (Ono & Ferreira, 2010; Jita & Ndlalane, 2009; Shalem et al., 2011), while another school of thought holds that teachers need to work with artefacts from their practice if they are to understand and shift their conceptions of their instructional practice (Marzano 2011; Ono & Ferreira, 2010; Roberts 2012; Shulman, 2004). However, in many types of professional development, teachers may learn new ideas but fail to examine their own beliefs deeply, or their conceptions that allow them to construct their instructional practice in the first place (Pajares, 1992; Polly et al, 2013;). In this way, the interventions may fail to take into account a teacher's meaning-making system.

> *All teachers hold beliefs, however defined and labelled, about their work, their students, their subject matter, and their roles and responsibilities, but a variety of conceptions of educational beliefs has appeared in the literature* (Pajares, 1992:314).

Teachers' beliefs and conceptions of their work may give rise to behaviour choices (Polly et al., 2013). In this chapter, teachers' beliefs are examined before and after a year-long IR intervention, with a view to understanding how teachers perceive their instructional practice.

Teachers' beliefs include knowledge and skills. When teachers make instructional decisions, they do so based on their beliefs, despite attempts to influence their

practice with knowledge and skills, and their beliefs generally have affective and rational dimensions. Few teacher succeed in making a shift from their existing beliefs to the new conceptions (Pajares,1992).

The findings of this study were analysed to understand teachers' beliefs that are implicated in their current conceptions of their work, and the shifts that they made in their understanding, if any, after a year of the intervention. City et al., (2010), Fowler-Finn (2013) and Roberts (2012) argued that the instructional core is constituted by the relationship between the teacher, the learner and the content, and that this is central to the work of the teacher and to their instructional practice. While the intervention framework focused on shifting teachers' instructional beliefs, the study was not intended to make each teacher aware of beliefs that shaped their instructional practice with a view to deliberately shifting or enhancing them, although a shift may have resulted from the organic processes of the IR practice.

In the first part of the study, the researcher analysed the findings to identify the teachers' conceptions of practice before the intervention; in the second part, the findings were analysed in order to track any shift in teachers' beliefs with a view to understanding whether teachers had actually shifted their conceptions of their instructional practice.

Debriefing sessions provide a forum for teachers to engage with their own thoughts about teaching and learning based on observation evidence. The sessions allowed teachers to think more closely about their work. Grant and Kline (2000) described debriefings as empowering spaces because they deal with teachers' perspectives. Teachers' dialogue is central to shifting their practice. During debriefing sessions teachers had opportunities to talk about their work in a focused manner and to begin the process of developing a common language of discussion with shared meaning.

Classroom observations served as a conduit between professional development activities, teacher thinking or understanding and classroom practice (City, 2011;

Graves, Gersten & Haageer, 2004). Unless teachers are able to see critical thinking in the complexity of practice, they are unlikely to develop effective means of implementing the practice in the classroom.

Teachers' self-beliefs, their beliefs about learners and about content were central to the organization of the analysis (City et al., 2010). A summary of the constructs of the four teachers who participated in the study is presented under each of their case-studies, in tables in section 5. Each is followed by a brief discussion.

5.2 Interview One: Four Cases

The four teachers in the study utilized a wide range of ideas to form conceptions of their work before participating in the IR intervention. This was consistent with studies in IR and teacher beliefs (Beswick, 2004; City, 2011).

> *When educators think about "changing" instruction, they typically focus not on the instructional core, but on the various structures and processes that surround the core* (City et al., 2010:24)

Jenny, for example, noticed that younger learners had difficulty concentrating in class and moved the class into the school garden to keep them interested. Jenny also realised that the learners had different abilities and that this accounted for some learners engaging in learning while others had different interests. Anika recognized the types of demands that the school placed on her was significant to conceptualize her work and thought that learner identity was important.

Ayanda positioned IsiZulu so that learners could obtain high marks without putting in much effort, because learners would drop the subject from study after grade 9. Linda focused on getting collegial approval for her conceptions and believed in sharing and collaborating. These teachers all selected ideas around the core and brought them into teaching and learning without necessarily bringing the relationship between the elements of the instructional core into play.

Before the IR intervention, subject specialization seemed to be an important organizing principle for structuring the participants' conceptions of their instructional practice. These teachers focused on the subject domain to determine the effectiveness of their lessons. There is a strong relationship between the teachers' focus on subject knowledge and professional development in the South African context (Adler & Patahuddin, 2012; Steyn G.M., 2000). Although the four teachers mentioned technology and learner interest within the same frame of understanding, they linked these to subject knowledge. Subject specialization emerged as a significant idea in the teachers' beliefs about themselves, the learners and the content.

Distinctions can be made between areas of knowledge that support learning in practice (Cook & Brown, 1999). With a focus on subject knowledge, engaging in actual practice may be left to teacher intuition. It is possible that these teachers looked within the subject to understand their professional work and construct their instructional practice. All four teachers reported attending subject-related workshops and training programmes. Jenny, Anika and Linda described the link between the subject and language use in classrooms. In the class, she "*spoke science*" and outside she was like a mother to learners. This illustrated the shifting roles that teachers assume in their professional practice.

5.2.1 Case 1: Jenny

Jenny developed her conceptions of teaching from her school experience and her tertiary education, but mainly from her experience as a teacher. The table below summarizes what she viewed as her role, the role of learners and the role of content before the IR intervention took place. In brief, Jenny organized her conceptions of her work around subjects and her role as a subject teacher. Jenny developed distinctive styles of teaching English, which were linked to process, and Mathematics, where they were linked to concepts and procedures transmission. She utilized technology to enhance learners' reading ability: evidence supports the view that reading and

comprehension could improve through use of technology (Dreyer & Nel, 2003). With experience, Jenny improved her ability to use technology.

Table 10: Summary of Findings: Jenny

Instructional Beliefs		
Self-Beliefs	**Learner Beliefs**	**Content Beliefs**
Teacher prepare lessons *Teacher marks learners' tasks* *Teacher understands how children learn, including own children* *Teacher invests in a subject / having passion/ subject specialist* *Teacher utilizes questions to stimulate learners in the classroom* *Teacher supports learner's concentration by changing the classroom environment* *Teacher breaks down topics for learning* *Teacher uses technology to enhance teaching and learning.*	*Learners have different abilities* *Learners have different interests each year* *Learners write sentences, paragraphs and compositions* *Learners provide feedback in different ways to show understanding* *Learners complete examples in Mathematics*	*Mathematics learning takes place through concepts, procedures and examples.* *Content must be brought to life by creating links to learner interest*

5.2.2 Case 2: Anika

In summary, Anika's roles seemingly revolved around subject teaching and playing the role of a parent. She recognized the need to utilize one "language" to fulfil the role of classroom teacher and another to engage with learners to support them in making transitions from one stage of their lives to the next. Anika believed that subject specialization was important for good teaching. Anika held views about problem-

solving that were both similar to and different from theories about critical thinking. These relate to the role of learners and instruction (Luft, 1999). As a learner from a different country, with a different accent, her Science teacher had supported her in making the transition into the South African public school system and in other age-appropriate transitions.

Table 11: Summary of Findings: Anika

Instructional Beliefs		
Self-Beliefs	**Learner Beliefs**	**Content Beliefs**
Teacher plays the role of a parent as well *Teacher supports learners make transitions* *Teacher works hard* *Teacher studies to improve* *Teacher learns new approaches.*	*Learners are people with emotional needs* *Learners are trying to find themselves* *Learners learn in different ways* *Learners provide explanations in class* *Learners process learning*	*Content changes over time* *Content links to subjects* *Content coverage slows down when the focus is on learner understanding* *Content linked to subjects acquire importance or less importance* *Content is learnt through explanation and discussions*

5.2.3 Case 3: Ayanda

For Ayanda, three main features of her conceptions emerge as significant. Firstly, quiet learners must be included in discussions: this is high on her priority list. Secondly, race played a role in her engagements with learners and colleagues and thirdly, she shaped her teaching according to the perceived status of her subject, in this case, IsiZulu.

Table 12: Summary of Findings: Ayanda

Instructional Beliefs		
Self-beliefs	**Learners Beliefs**	**Content Beliefs**
Teacher utilizes prayer time for reflection *Teacher is concerned about the language level and expectations* *Teacher utilizes technology in teaching and learning* *Teacher's experience of race and impact on participation.* *Teacher sensitive to inclusion in classroom discussions*	*Learners expect to put in minimum effort in learning* *Learners are demotivated.* *Learners develop their language skills* *Learners' participation is promoted in class.*	*Content ranked with IsiZulu occupying a lower status when compared to subjects taken up to National Senior Certificate level* *Content creates opportunities to give learners feedback.* *Content and subject messaging importance.* *Content needs to be assimilated for school success* *Content creating passion for the subject.*

5.2.4 Case 4: Linda

Linda appeared to value collegial approval to develop her conceptions of teaching. Subject understanding and technology featured strongly in her conversations about her instructional practice. She also believed that grounding in knowledge is important for learner growth and development. It frustrated her when learners arrived in a grade without the necessary prior knowledge.

Table 13: Summary of Findings: Linda

Instructional Beliefs		
Self-beliefs	**Learner Beliefs**	**Content Beliefs**
Teacher utilizes technology in the classroom *Teacher has a passion for Mathematics, Science and Geography* *Teacher appreciates collegial approval* *Teacher considers what others think*	*Learners have an affinity for technology* *Learners ability plays a role in teaching and learning* *Learners' disposition plays a role in learning* *Learners have interests and passions of their own*	*Content supported by the school through investment training and technology* *Content may be accessed through technology.* *Content in Mathematics, Science and its relationship to technology*

5.3 Ideas arising from the Interviews

The four teachers understood their general roles in the school and mentioned the importance of preparation, marking and hard work. They accepted that some external ideas influenced their instruction, like parental support and involvement, and outside experiences. Jenny recognized the advantages of varying teaching sites to keep learners interested. Jenny and Anika held lessons in classrooms, in the school gardens, in a laboratory and the media centre.

5.3.1 Teachers' Beliefs: Subject Content

Subject content provided these teachers with tools to connect with learners and with the subject. For all four teachers, Mathematics, Science and English enjoyed a higher status in the school because they featured in learner success when they wrote end-of-the-year examinations and IEB examinations. For Ayanda, IsiZulu enjoys a lower status because of lower levels of demand. She pitched the subject at a level that made it easy for most learners to succeed without necessarily developing the required language skills and knowledge. With three of the four teachers, their passion for their subject was linked to their own schooling experience. Because these teachers

understood their subject well, they felt that they were in a position to plan lessons and divide the subject-matter into units for lessons for teaching and learning.

5.3.2Teachers' Beliefs: Technology

Jenny, Ayanda and Linda described technology as devices to improve the efficiency of their work. The devices (hardware and software) performed tasks efficiently, making more time available for them to complete other teaching tasks. For Jenny, the devices tested reading speed; for Anika, technology assisted with displaying diagrams on a screen; for Linda, it assisted by allowing her to display examples on the whiteboard for learners to complete, and for teaching map-work. Technology might, therefore, enhance specific aspects of the subject (An & Reigeluth, 2012; Dreyer & Nel, 2003) and afford teachers opportunities to extend their instructional practice.

5.3.3 Teachers' Beliefs: Collegial Support

Before the intervention, these teachers focused on changing or enhancing their subject to bring about improvements in their teaching and learning. Responding to the school needs and demands were important to them. Even when they first started teaching, they valued the support they received from their colleagues. Fortunately for these teachers, the school valued innovation and allowed teachers to innovate and also look for means of updating their teaching and learning efforts. The school trained Linda to use a computer programme to teach map-work and bought the equipment for her to use in the classroom for instructional purposes.

The participating teachers constantly engaged in discussions about their work. Ayanda, for example, highlighted the school's innovation with integration as one of the strengths of the school when she first started teaching. Teachers at the school integrated their subjects through themes and common topics for teaching and learning. The school enhanced the subject concepts by bring them into new relationships with other concepts. IR practice was another example of innovation at this school but it was different to other interventions. The teachers who were involved worked together in IR to bring about change in their instructional practice.

Anika, for example, argued that subject specialization was important for her and she felt that working with a Mathematics teacher only would suit her development needs better. She also prized the contributions made by textbook authors and the approaches they used to craft their textbooks. Jenny felt that specializing in English Literature might play a significant role in her conception of instructional practice.

5.3.4 Understanding Learners

While the three teachers modelled their teaching on their schooling experience when they were learners, Ayanda identified a gap in this experience and filled it. Because Ayanda felt excluded at school, she made every effort in her current practice to bring quiet learners into the discussions. She drew learners into classroom conversations, linking learning to their views. Rusznyak and Walton (2014) refer to understanding that is developed from their own schooling as “apprenticeship of observation”. Jenny, Anika and Linda may also have gained a deeper understanding of teaching and learning by trial and error. They understood the need to use questions to engage learners.

5.3.5 Learners’ Abilities

Teacher’s views about learners, influenced their engagement with learners (Barak & Shakhman, 2008). Jenny and Linda believed that learner had different abilities and ability levels and this explained variable achievement. They located the cause of any problems outside the instructional core (Stephens, 2011). Linda understood that learner arrived in her classroom without mastering content from previous grades, which should serve as foundations for their continued learning and development. Jenny realised that learners learn in different ways and that they connected emotionally when learning was linked to their interests. Ayanda felt that the subject motivated a learner to learn. Learners liked some subjects more than others, or invested more effort in some subjects because they were important for promotion.

5.3.6 Learner Beliefs: Subject Motivation

Learners might be motivated to learn some subjects more than others. The three teachers motivated learners to learn subjects that determined their promotion or school success. Learners were motivated to learn English, Science and Mathematics but they struggled to learn IsiZulu.

Learners' preferences also played a role in motivating them to apply themselves to some subjects more than others. All four teachers understood the role that learners' motivation plays in teaching and learning: these teachers viewed interest and motivation as something that learners brought with them into the classroom, but they tried to mitigate negative attitudes, especially when learners were demotivated. Jenny spent time understanding the classes she taught and found that each year learners in the same grade had different interests.

Ayanda drew learners into conversations and Anika switched from a "teacher" role to a "parent" role to motivate them. Linda maintained that learners were drawn to technology and this motivated them to learn a subject like Geography.

5.3.7 Learner Beliefs: Feedback

If at least half the learners showed signs of learning, teachers felt that their lessons were successful. Jenny measured lesson success by watching learners' facial expressions. This gave this teacher an immediate sense of how successful the lesson was. She also gained a sense of success from other sources of evidence, like marking learners' books, and from their test results. The learners also provided other forms of feedback, like their interest in the lesson and their lesson focus. Jenny went to the extent of asking learners for their feedback about her lessons.

5.3.8 Working with Content

Jenny "brought content to life" in the classroom by creating a strong relationship between the learner interests and the subject content. She reorganized, sequenced, linked and used technology to do so. Jenny, Anika and Linda were particular about the

language they used in the classroom and aimed to "speak Science" or "Mathematics" in the classroom (Setati & Adler, 2000). When the teachers interacted with learners outside the classroom, they used a different language. They sometimes switched roles and changed the content of conversations to connect to learners. Three of the teachers adopted teaching roles and parenting roles. Because the learners were interested in technology, technology connected learners to content.

5.3.9 Content Beliefs: Subject Specialization

Subjects are significant in the school context: parents, the school, these teachers, universities and learners attributed significance to them. For Jenny, teaching English took the form of concepts and process, while Mathematics teaching took the form of instilling concepts and procedures by means of teaching and examples. The participants in the study mentioned the importance of English, Mathematics, Science and Technology.

5.3.10 Content Beliefs: The Changing Educational Landscape

Content and how teachers work with it changes constantly. The school where this study was conducted worked with the integrated curriculum when Outcomes Based Education was introduced and they currently worked with subjects as part of CAPS. Content and context were important for determining the shape the classroom content took. Anika tracked the changing educational landscape to inform her conceptions of instructional practice. Ayanda was in a situation where she taught many learners, spread across the grades, because of the subject she teaches, IsiZulu. The school, as per official policy, allocated limited time for this language: one or two periods per week for each class.

5.3.11 Summary of Findings

Although the four teachers appeared to draw their conceptions from a multitude of areas and discourses, their discussions focused on their passion for their subjects and the need to cover content to prepare learners for the final examination. They showed their strong association with subject knowledge when they made a distinction between

their teaching roles, talking Science or Mathematics in class, and their pastoral roles outside the classroom.

In relation to their beliefs about themselves, they talked about subject specialization, using technology to teach their subjects and to develop their questioning techniques. In relation to their beliefs about learners, they listed learner ability, learner affinity for a subject and reading learner expressions to determine understanding and interest. Their beliefs about content related to subject specialization, the use of technology and content organization.

Based on their initial conceptualization of their work, teachers possess subject content knowledge but rely on their intuition for instruction (Cook & Brown, 1999). Subject knowledge and understanding dominated the discussion in the first interview, before the IR intervention.

5.4 Interview 2: Four Cases

After the IR intervention, the teachers' interaction shifted from a subject focus to a focus on learners and learning. The teachers' beliefs shifted from conceptions of a "subject" to movement in the classroom to get closer to the learners, and then to listening to learners' questions and conversations (Mercer & Sam, 2006). They had observed teachers in the classroom acknowledging learners and getting closer to them. The participants' instructional focus was on learner mannerisms, concentration levels, questions and answers, and interaction with peers. Jenny, Anika, Ayanda and Linda debated the value of teacher-centred lessons versus learner-centred lessons. Instead of focusing on learners having different abilities, the focus shifted to learners engaging in learning. Jenny, Anika and Linda looked at how learners processed and re-explained concepts in the classroom.

The participants were experimenting with deeper engagement over a longer duration to support learning. They had a deeper sense of planning and of doing different things

in each lesson to support wider learning goals. Subject knowledge became a component of what they learnt within IR practice.

Despite the general shift in teacher conversation, the notion of subject importance still featured as a competing priority among the participants (Kegan & Lahey, 2009; Palmer, 1993). They worried about learners' dispositions, discussed mannerisms that contributed to meaningful learner questions and engagement. They had further opportunities to explore these ideas afterwards. During their IR practice, they had opportunities to engage in discussion to shift their instructional priorities.

5.4.1 Case 1: Jenny

The salient points that emerged after a year-long intervention, and after focusing on critical thinking, related to the language that the teachers used to discuss learning, as well as beliefs that enhance learning and contribute to learner growth and development (Palmer, 1993). Jenny discussed content as both a static and a malleable entity in critical thinking. She also discussed ways in which learners demonstrate learning in the classroom: through discussions and explanations, for instance. Jenny discussed learning and the need to have longer blocks of time to engage learners in a different sort of learning, like a theme-related project that required learners to engage in multiple activities like reading and making items in class. This was the first time this teacher spoke about making or constructing something in the classroom as a form of learning.

Table 14: Summary of Findings: Jenny

Instructional Beliefs		
Self-beliefs	**Learner Beliefs**	**Content Beliefs**
Teacher needs a longer duration of time with learners to teach critical thinking *Teacher observed younger teachers using different teaching techniques* *Teacher utilized more movement in the classroom to get closer to learners* *Teacher uses open ended questions to open up discussion – what if and why don't you- questions* *Teacher needs more opportunities to try out new ideas*	*Learners have their own interests* *Learners demonstrate learning in the classroom through discussions* *Learner questions show gaps in their understanding.* *Learners in grade 7 struggle to concentrate for long duration.* *Learners need more time with content to develop deeper understanding* *Learners play different roles to learn different ideas.*	*Content defines critical thinking* *Content is organized differently in different subjects* *Content is learnt differently in each subject- English = Process/ Mathematics= concept, procedure and examples* *Content may be expanded by using technology* *Content is tied to school plan (timetable)*

5.4.2 Case 2: Anika

Anika developed her sense of critical thinking and found that linking subject content to social issues and real-life situations were two distinct ways of thinking about critical thinking. She also saw the need to listen to her learners more and to move around the classroom to capture their conversations (Mercer & Sam,2006). Anika thought that content could be shaped to meet different ends. Learners played different roles in the classroom, like listening, completing tasks or discussing. If learners transferred their understanding to another context, this was also an example critical thinking.

Table 15: Summary of Findings: Anika

Instructional Beliefs		
Teacher Beliefs	**Learner Beliefs**	**Content Beliefs**
Teacher takes into account school approval and school requirements *Teacher evaluates the learner talk and noise levels to ensure productive learning conversations* *Teacher listens to learner conversations or learner verbal exchanges* *Teacher links teaching to social issues (HIV) and to real life situations* *Teacher changed teaching classrooms to promote learner interaction* *Teacher engaged learners in critical thinking and problem solving*	*Learners engage in academic conversations (talk Mathematics and Science)* *Learners converse with appropriate manners (conversation dispositions)* *Learners play roles in the classroom depending on what the teachers want learners to learn (concepts, procedures, experiment)* *Learners show learning by explaining concepts or ideas in their own words* *Learners show learning if they can apply learning in other settings* *Learners may support each other's learning*	*Content extends beyond the textbook content in teaching and learning* *Content may be extended through questions to foster critical thinking* *Content depth promotes deeper learning* *Content links to school and collegial priorities* *Content may be shaped to achieve different ends*

5.4.3 Case 3: Ayanda

Ayanda started participating in the IR practice in the year of the study, so this kind of intervention was new to her. The main points that emerged from the findings were the need to engage learners, especially the quiet ones; the need to link History to present-day situations; and the need to deal with social issues. Ayanda discussed her struggle to pace her lessons. She currently attributed the slow pace to her style of teaching, but continued to explore the idea. She shared her History teaching with a teacher in another class unit and monitored this teacher's pace of teaching against her own.

Table 16: Summary of Findings: Ayanda

Instructional Beliefs		
Self-Beliefs	**Learner Beliefs**	**Content Beliefs**
Teacher challenged her racial perceptions through observations *Teacher sees experimentation as disruptive* *Teacher thinks teaching style determines syllabus completion* *Teacher developing an understanding of pacing lessons to complete syllabus* *Teacher understands that prior learning is built in lesson planning* *Teacher acknowledges that she may change her own movement in the classroom to get closer to learners*	*Learners need validation* *Learner engages in discussions* *Learners need to understand social challenges like security* *Learners ask questions to engage in their learning* *Learners make link in history to present situation* *Learners encouraged expressing their views in the classroom*	*Content liked to learner voice* *Content sharing encouraged.* *Content covered for external examinations* *Content linked to outside information*

5.4.4 Case 4: Linda

Some of the key features of Linda's conception of her work, after a year of IR intervention, included the support from her colleagues, experimenting with new ideas and bringing learner experiences and observations into teaching and learning (Waring, 2011). Linda developed a set of ideas that included learners rewording definitions of concepts, asking questions and bringing in their experiences and observations. These ideas enabled her to determine whether learners were engaging in their learning.

Table 17: Summary of Findings: Linda

Instructional Beliefs		
Self-beliefs	**Learner Beliefs**	**Content Beliefs**
Teacher reflects on teaching ideas with staff *Teacher experiments in her classroom to gauge what works* *Teacher support learners link learner observation and experiences with teaching.* *Teacher plans taking into account learner prior understanding* *Teacher observed new teaching techniques from other teachers*	*Learners re-explain concepts in their own words* *Learners bring in their experiences and observations into discussions in classrooms* *Learner utilized prior knowledge in the classroom* *Learners engage in learner-centred learning when they ask and answer questions* *Learners write on the board and change power point presentations*	*Content*

5.4.5 Teacher Beliefs: Observing Colleagues Teaching

IR practice develops teachers' observation skills (City et al., 2010). They gather evidence of practice and are exposed to a range of teaching techniques. Jenny and Ayanda reported that they observed younger teachers using new approaches in their classrooms. They also observed teachers moving around in the classroom to maintain closer contact with learners.

> *Instructional rounds end with observing teachers identifying instructional practices they'll continue to use because they saw other teachers employing them effectively, practices they use that they will now examine in light of what they observed, and practices they don't currently use but will try because they saw other teachers use them well (Marzano, 2011:81)*

Ayanda observed that a teacher acknowledged a learner's questions, continued with teaching and later provided a learner with a response. Observation provided Ayanda with opportunities to reflect on her own teaching. The participants observed lessons with the intention of gathering data and reflecting on their own practice. All four teachers identified lesson observation as one of the key features in the IR practice, and one that made a significant impact on their conceptions of their teaching.

5.4.6 Teacher Beliefs: Critical Thinking

IR practice at the school had focused all twelve IR participants on critical thinking, and the four teachers in the study developed their understanding of critical thinking through their discussions in the IR debriefing sessions and IR classroom observations. Jenny, Anika, Ayanda and Linda explored the ways in which learners engaged with their learning and conjured up different images of learning. These teachers looked closely at their roles and the roles of learners and content (Meyer-Looze, 2015). Jenny argued that critical thinking required a longer duration of engagement and organized content. Jenny and Linda supported critical thinking through learner engagement, using face-to-face contact, technology, verbal and written feedback. In addition, these teachers combined permutations of content and meta-content to enrich learners' learning experiences.

In this study, "meta-content" refers to ideas that teachers combine with the subject content or textbook content. It relates to teachers' beliefs about how they can combine different ideas to make their instruction more effective and this includes beliefs about technology (Ertmer, 2005). Anika, Ayanda and Linda linked subject content (History, Geography, and Science) to real-life situations (Correa, Perry, Sims, Miller& Fang, 2008). They also combined subject content, teaching statistics, with social issues like HIV. Jenny and Linda identified learners' experiences and observations as features of critical thinking.

5.4.7 Teacher Beliefs: Questions

These teachers explored the use of questions, conversations and discussions to stimulate critical thinking. Questions played a crucial role in learner engagement. Jenny used “what if” and “why don’t you” questions to engage learners’ thinking. Anika and Ayanda integrated critical thinking into the learning tasks learners performed in Mathematics and History classes. Anika and Jenny got learners to solve challenging mathematical problems. They utilized questions to engage learners in thinking about their learning and its content. These teachers also extended the idea of utilizing questions as a tool to foster learner engagement and dialogue.

The participants took learner prior knowledge into account. Ayanda thought that eliciting prior knowledge was part of the sequence of the lesson. Jenny, Anika and Linda held other views about prior knowledge that included taking learners’ experiences, observations and interests into account and linking content to real-life situations. For these teachers, the prior knowledge of learners was also a factor to consider when planning, and they were sometimes frustrated when learners did not have levels of information or understanding that met the grade requirements.

5.4.8 Teacher Beliefs: Professional Work

Before the introduction of IR practice, teachers practised largely in isolation and crafted their instructional practice intuitively, from their own experiences in school and from their own teaching experience (City et al., 2010). The participants challenged their own ideas concerning the nature of their work after participating in the IR practice. They also observed other teachers utilizing new teaching techniques. Ayanda challenged her perceptions about African teachers’ participation in professional development because she observes another teacher, Anika, who is from a similar background, participating in IR. Priorities to improve her practice and herself influenced her decision to participate in professional development (Kegan & Lahey, 2009). Jenny, Anika, Ayanda and Linda expressed different priorities initially, but through IR they developed agreements around their roles, such as utilizing questions and engaging with learners.

5.4.9 Teacher Beliefs: Teacher Movement in the Classroom

When Jenny and Ayanda observed other teachers teaching, they noticed that some teachers moved away from the norm of standing in front of the classroom and maintaining an overview of learners in order to monitor their physical reactions: as Jenny expressed it, to see “if the light bulbs go on”. All four teachers found that they needed to walk around to order to listen to learner conversations, not only to monitor their facial expressions, but to listen to them and to get a sense of their learning.

This was an example of teachers developing a shared understanding of a small part of their work (Burns, 2011). These teachers linked their movements in the classroom to learner conversations and promoting learning. Three of the four teachers reported that they changed their movements in the classroom and Ayanda reported that her teaching was constrained because she still stood in front of the class. She acknowledged the point and the need to change.

Anika changed from teaching in the Science laboratory to teaching in a standard classroom because it gave her more opportunities to rearrange the furniture and switch learners’ places in order to promote learner interaction. The participants interrogated interaction patterns, not only in terms of learner groups, but in relation to the nature of the interactions, for example utilizing technology when developing writing skills. For three weeks they explored ways of scheduling and delivering greater support on a number of levels. Jenny explored her interaction with one learner, in which she extended the cycle of feedback. She built on her interactions with learners by playing a greater listening role and through electronic communication.

5.4.10 Learner Beliefs: Engagement

These teachers explored the idea of learner engagement in enhancing learning and developed ideas that were useful for classroom practice. When combined with the language teachers used in the classroom, for example, scientific talk, it meant that teachers engaged learners in the specific language that was underpinned by concepts

(Fitzgerald et al., 2009).This brought the relationship between their roles, roles of learners and content into a stronger relationship (City, 2011).

In the IR debriefing session, the twelve participants in the IR practice debated learner participation in learning and argued that pair-work as opposed to group work resulted in better participation – that more learners became involved in discussions when they worked in pairs. The engagement supported the view that learners constructed an understanding of their world (Buchanan, Burts, Bidner, White and Charlesworth , 1998). In some settings, like the science laboratory, it was more difficult to get learners to engage in learning than others.

5.4.11 Learner Beliefs: Dispositions

The participants understood that learners took on different roles that contributed to their learning. For Jenny, Anika and Linda, learners played the role of listening when they introduced new concepts. They also had to listen to their peers sometimes, and at other times they expressed the views and ideas they had learnt in their own words. At other times, especially with critical thinking, forms of learning were expanded. Jenny envisaged the following for critical thinking for 2016: the learners will make items, research ideas, compare ideas and work with other learners. The interaction pattern of learners changed and was linked to the purpose of critical thinking. Learners had to act differently, depending on what they were learning. This was an example of the school making an adjustment to the school timetable to accommodate and extend the teaching of critical thinking.

5.3.12 Learner Beliefs: Characteristics and Age

The four teachers felt that learners in different grades reacted differently to teaching and they needed active engagement or involvement to keep them focused. Powell and Napoliello (2005) supported the view that teachers who participated in IR were better equipped to cater for learners' differentiated needs. The participants focused learners' attention by changing the setting for learning, identifying and including learning material related to the learners' interest, getting learners to write on the board and

change presentations on their iPads. Ayanda identified quiet learners in order to bring them into the classroom discussions.

5.4.13 Learner Beliefs: Questions

Jenny, Anika and Linda encouraged learners to ask and answer their questions, placing the learning with the learners. They thought that learners identified gaps in their knowledge by doing this, identifying what they did not understand and asking questions that related to the gaps in their knowledge. The learner's questions placed the locus of learning with the learner. The learners asked and answered questions and the participants spent time listening to them to check on how and what their learners were learning.

All four teachers agreed that getting learners to engage actively in their learning was a time-consuming task and teacher tended to revert to teacher-centred approaches when they needed to meet the school's demands and administer external or regular end-of-year examinations. The need to complete the syllabus meant that efforts to encourage learners' views and active engagement took a back seat. The intervention allowed the teachers space to talk about their work and they agreed to take the discussion forward.

5.4.14 Content Belief: Assessment

The four teachers mentioned the importance of the end-of-year examinations, which also determine the importance of content and this motivated teacher to support learners in a way that favoured content delivery. At this point, as these teachers wrestled with priorities at the end of the year, examinations took centre stage. However, the participants talked about priorities like covering content to ensure examination success, or developing a deeper understanding through learner engagement, learner questions, learner voices and learner discussions. At the time of the study, the school set aside time to promote learner engagement and Jenny described a task that learners would complete: it took a form that required application of critical and creative thinking skills divided into levels of complexity.

5.4.15 Content Belief: Structure

According to the four participants, the school played a significant role in shaping how content was learnt. Teachers took cues from the school structure to determine what and how they taught. Teachers participating in IR challenged teacher thinking around engagement with content. Periods were thirty-five-minute-long, so learners arrived in class for lessons and then moved on to the next class for another lesson, with provision made for practical work in Science and Technology. These teachers therefore prepared for thirty-five minute engagements with learners. To teach critical thinking, teachers had to rethink their current norms of practice (Ellis et al., 2015). The four teachers argued that they needed more time for learner-centred lessons, without dismissing the need to cover adequate content through teacher-centred lessons. The school created a structured space with adequate time - three hours - for experimenting with the idea of critical thinking and longer engagement with learners in 2016. This was consistent with some researchers' view that teachers who experiment and reflect on practice often shift their instructional practice (Thoonen,Sleegers, Oort, Peetsma & Geijsel , 2011).

In addition to the longer duration of time, these teachers understood that knowledge organization should shape content engagement. The participants reflected on their teaching practice. The Mathematics teachers understood that knowledge was organized so that it scaffolder the following year's learning, therefore content coverage was essential. Jenny understood that greater flexibility existed in subjects like English to experiment with content so as to support different outcomes.

5.4.16 Content Belief: Critical Thinking

Subject content shapes notions of critical thinking. In Mathematics, for Anika and Jenny, critical thinking mean extending the complexity of the problem that learners solved, while in English, critical thinking was a process. Engaging content critically also entailed the appropriate use of questions, like the open-ended questions (*What if …? Why don't you …?*).

History, for Ayanda, meant understanding the present in the light of the past and in Science, for Anika, it meant relating the content to real-life situations. Anika argued that critical thinking also meant identifying inconsistencies between theory and practice. She used the example of volume, where the mathematical calculation and the actual practice of filling the container with water showed inconsistencies.

5.4.17 Content Belief: Technology

Sandstorms do not commonly occur in South Africa and are not part of many learners' experience. With technology, teachers can enrich the learning experience by showing video-clips of unfamiliar ideas like what a sandstorm looks and feels like. Jenny supported learning using technology devices (Mishra & Koehler, 2006). Anika and Linda maximized teaching time by using technology to display examples and diagrams that would take them time to draw on the whiteboard. These uses of technology freed teacher to listen to learners conversing about the learning content.

5.4.18 Content Belief: Concepts

The four teachers argued that concepts played a critical role in teaching and learning. They understood that learners were engaged in learning when they were able to articulate the concepts in their own words, or link the concepts to their own understanding, experiences and observations. When learners applied their understanding of the concepts in different situations, they demonstrate their depth of understanding.

5.4.19 Summary

After a year of intervention, the participating teachers were beginning to ask questions about their own conceptions of their work. In terms of their own beliefs the four teachers expressed their views about teaching techniques, critical thinking, use of open-ended questions and their movements in the classroom to interact with learning and to engage learners. This was consistent with evidence from City who argued that attention shifted from the content to the learners and the task they were engaged in

(City, 2011).This study and others showed that teachers create an understanding in relation to their roles and the roles of learners in the presence of content (City et al., 2010; Fowler-Finn, 2013). In terms of their beliefs about learners, these teachers mentioned learners' degree of engagement, dispositions for learning, concentration levels, signs of learning and questions that learners ask and answer in class as significant. In relation to content beliefs, the main ideas related to content structure, assessment, notions of critical thinking and the use of concepts to promote learning.

Research pointed to the difficulty associated with changing teachers' beliefs and practice (Nespor, 1987). IR practice disrupted the four teachers' conceptions about their professional work and there was evidence that this was enacted in their instructional practice, indicating shifts in the teachers' thinking, from a subject focus to a learning focus. Importantly, these teachers were directly involved in their professional development as agents of change (Rieckhoff &Vier, 2012). However, it would be premature to draw firm conclusions about the interventions in a South African context because of the site and sample of this study. More research is needed with a representative sample that reflects the population of teachers in South Africa.

5.5 Debriefing Analysis

5.5.1 Introduction

Despite attending many professional development courses, teachers get few opportunities to talk about and shift their actual work or the work that they perform in the classroom. IR frames the professional development of teachers and supports them in developing a better understanding of how they go about utilizing their conceptions of their work to construct their instructional practice (Roberts, 2012). Up to this point in South Africa, few or no opportunities exist for teacher to interrogate evidence of their actual work as they construct their instructional practice in the presence of learners and content.

The four teachers, Jenny, Anika, Ayanda and Linda, together with eight other high school teachers, observed a broader group of teachers and gathered on-site and real-

time evidence of teaching to develop critical thinking among the students. They gathered evidence of teachers' and learners' roles in the presence of content. After each observation session, teachers participating in the IR practice gathered for a debriefing session in which they had opportunities to add to the evidence they had collected, collaboratively organize the evidence, identify patterns and used the results to inform their next level of work (Fowler-Finn, 2013). The evidence of critical thinking was generated at debriefing sessions and promoted causal engagement among participants between the thought of critical thinking and implementation in the classroom.

5.5.2 Debriefing: Session One

The four participants explored the idea of critical thinking as teachers shape it and focused on the teachers' verbal actions in the classroom. This was indicated by thirty-seven pieces of evidence out of the forty-four they presented and classified during the debriefing session. The role of the teacher represented the current conceptions and commitment in their instructional practice (Kegan & Lahey, 2001). The participants discussed key evidence related to critical thinking, like looking at outside sources other than those the teachers provided in the classroom, and teachers asking questions to stimulate critical thinking. The interaction patterns resembled a traditional classroom where the teacher asked a question, the learners responded and the teacher evaluated or confirmed the response.

The IR participants explored the role of learners in the classroom in the presence of content and focused their discussion on seating arrangements, the extent to which they worked individually and their interaction with other learners in the classroom (City, 2011). They explored ideas on the role of learners and brought the idea of seating arrangements, working individually and working in groups into the same discussion.

5.5.3 Debriefing: Session Two

The focus shifted from the first to the second debriefing session and the IR participants looked at what the learners were doing in the classroom. Sixty-one pieces of evidence showed a focus on learners and eight on the teacher, although these numbers were not clear-cut because some of the evidence that was discussed and classified belonged in more than one category. Although the focus shifted, the teachers' roles were discussed and the data matched that obtained in the first debriefing session. The teachers controlled, paced and sequenced lessons by providing learners with the correct answers, conducting experiments, asking questions and providing guidance. The teachers played a central role and the learners' role was more diluted; however, the teachers began to discuss what learners were actually doing in the classroom, based on the evidence collected.

The evidence relating to learners' roles not only increased in amount but the participants also improved the quality of their reporting. The IR participants reported on the actual number of learners who were engaged in the lesson. They counted the number of learners raising their hands and the number of learners participating in discussions. Learners asked clarification questions, listened to the teacher, worked in groups and followed instructions. The participants talked about what went on in the classroom, based on evidence (Marzano, 2011).The teachers also presented evidence of disengagement, like learners occupying their time by using their electronic devices.

5.5.4 Debriefing Session Three

The IR participants presented detailed evidence of learner engagement. They looked closely at the relationship between arrangement of desks in the classroom, the number of learners interacting and teacher movement in the classroom. They also looked at how teachers enhance engagement, and one piece of evidence supported the view that all seventeen learners were engaged in learning.

The participants widened their understanding of learner engagement to include group work, learner-initiated interaction, being challenged by learning tasks, being part of a dialogue or a conversation in the classroom and using their own words to demonstrate understanding. The ideas they discussed alluded to learner-centred teaching (Seng, 2014). In their expanded understanding, they also explored the ways learners participate in the classroom, including enhancing physical activity like cutting paper or using technology, through which they explored and expanded the ways of knowing that are traditionally ignored in classroom (Cook & Brown, 1999) and that traditional examinations fail to assess.

Teachers themselves were exploring new roles to enhance learning that include communication skills, seating arrangement to promote learning, moving and monitoring learner dialogue and conversations, engaging those who do not understand, developing learner expectations and developing learner interest. Communication skills are critical for fostering greater learner engagement (Patterson & Crumpler, 2009). Researchers, for example, have utilized practical chemistry demonstrations to stimulate and engage learner interest in Science (Sunassee, Young, Sewry, Harrison & Shallcross, 2012).

5.5.5 Conclusion

The evidence presented and discussed during the debriefing session shifted from talk focused on teacher-centred activities to learner-centred activities. The participants, including Jenny, Anika, Ayanda and Ayanda, discussed the roles of teachers and learners in the final sessions, and key beliefs that teachers need to focus on to enhance learning. They discussed concrete ideas on how to place the learning in the hands of the learners. The participants had started the process of discussing learner-centred lessons and still needed to develop these further. The participants discussed some representations of learner-centred lessons.

Taking into account the literature on learner-centred learning, these teachers discussed many aspects of engagement that are scattered in interventions that focuses on one or a few of these.

The discussion and evidence presented during this debriefing session suggested that these teachers, including the study participants, were examining older conceptions of their work because IR practice had made these conceptions visible; they discussed new conceptions derived from both the observations and the IR debriefing discussions. They utilized collegial collaboration to develop visual experience of new ideas and they discussed these on the basis of evidence in order to develop them further (Fullan,2006). They participated in a disciplined process to get to this point, but like any professional development, this intervention needed to be of a high quality.

5.6 Lesson Observation Analysis

5.6.1 Introduction

In many professional developments courses, the relationship between learning and implementation in the classroom takes a peripheral role. IR practice centralized the collection of instructional evidence, classification and interpretation of the evidence for the purpose of shifting or changing practice (City et al., 2010). The idea was to learn from deliberate practice (Marzano, 2011). The IR practice generated a series of hypotheses for teachers to test in the classroom, like hypothesising critical thinking relationships in the classroom, so that these could serve as causal chains for trial and error and experimentation. In the absence of a rigorous process to guide implementation, many professional development programmes relied on teacher intuition for implementation. Teacher intuition may be describe as mental models that teachers hold implicitly (Cartwright, 2002). Although professional development programmes are systematic approaches to changing practice, they seldom result in sustainable changes in the classroom.

In the next section, the researcher analyses the findings from lesson observations and presents four teachers' implementation ideas worked through in IR practice.

5.6.2 Teacher Belief: Classroom Arrangement

The four teachers utilized the arrangement of the classroom to promote learner engagement. Jenny arranged her class to get learners to take the roles of speakers and listeners. She utilized pair-work to get all the learners in the class to participate in the lesson (Achmad & Yusuf, 2014).

Linda also favoured pair-work: this is illustrated by her classroom arrangement. Although Ayanda had learners sitting in pairs, she utilized whole-class discussion in her History lesson. Anika, on the other hand, utilized groups of three and four to get learners to engage.

5.6.3 Teacher Belief: Movement in the Classroom

Jenny and Anika moved around the classroom to listen to learner conversations in relation to the lesson. They were particularly interested in the learners' explanations. Ayanda, on the other hand, listened to whole-class discussions. Only one learner spoke at a time, restricting the conversation. In Linda's case, she remained seated at her table throughout the lesson, but this was an unusual type of a lesson and it was not possible to determine how much she usually moved around. Linda monitored learners' submission of tasks and discussed the impending test. Although Linda's lesson was not typical of her, it nevertheless showed that teachers do engage in other tasks, and that these also contribute to learning. In this case, the teacher established demand and monitored the demand.

5.6.4 Teacher Belief: Lesson Sequence

The role of the teacher remains central in creating a learner-centred environment and the sequence of the lessons opens up frameworks to support learners engagement (Seng, 2014).

All four of the participants sequenced their lessons to support learner engagement around learning. Jenny started the lesson by creating speaking and listening to experiences for all the learners, before proceeding to read an article about good

listening skills. She utilized the experience she crafted for learners to enable them to understand the text on listening skills. Anika discussed previous lessons, completed examples on the whiteboard as part of whole-class teaching and then distributed worksheets for learners to engage with in groups. Ayanda allowed a learner to read a paragraph and to then ask questions to stimulate and guide discussion before moving on to the next paragraph and the next discussion. Linda had a different goal, so she documented assignment submission and invited questions about test revision.

5.6.5 Learner Belief: Engagement

The learners in all four classes followed the teachers' instructions and participated in the lesson activities. A large amount of learner engagement contributed significantly to learner achievement (Wiliam, 2011). There are many views on learner engagement including engagement with a subject focus, where engagement is supported by management of behaviour in the classroom (McCoy, 2013) but in this study the focus was on engaging learners in their learning. In Jenny's class, all the learners were engaged and in Anika's class learner engagement increased when they worked in groups. The learners in Ayanda's class engaged by bringing into the lesson real-life issues around power, security, wealth, religion and culture. In Linda's class, the learners engaged by asking questions about the test and producing evidence of their work. Highly effective teachers adapt the context challenge and engage all learners (Routman, 2012). The four teachers developed a sense of learner engagement as they explored what this meant in practical terms.

5.6.6 Learner Belief: Activities

The four teachers used learners as resources for learning and they did so using different strategies. Jenny engaged the learners in activities that included speaking, listening, re-telling stories, peer assessment and finally, listening to the teacher reading (Wiliam, 2011). After listening to a story, the learners re-told it and the speakers assessed the listeners. The teacher moderated the learners' assessment where she felt that the peer assessment was too stringent or too lenient. Learners also asked questions.

In Anika's class, the learners listened to the teacher, followed procedures displayed on the board and completed a calculation from a worksheet. They also asked questions to clarify their thinking, generated explanations and formulated answers that their peers agreed on.

In Ayanda's class, three learners read different paragraphs while the others listened to them read and followed the text on their iPads. The learners contributed to a discussion related to the paragraph and the issues the teacher and learners identified. In Linda's class, the learners negotiated new submission dates and asked questions related to the test.

5.6.7 Content Belief: Topics

Jenny organized the lesson around a text on listening skills and set up experiences for learners so they could understand the text better when it was read to them. Anika focused on calculating forces and on key concepts related to the calculation, like force, area, shape and size. She used a conflicting situation to engage learners (Hewson & Hewson, 1984). Anika organized her lesson around calculating forces. Ayanda utilized content about the Ashanti people to organize her lesson. Linda focused on assignment submission, latitude and longitude.

5.6.8 Content Belief: Context

Although the participants covered specific topics, the four of them shaped content further. Jenny set up a listening experience for the learners. Anika identified the relevant concepts and executed the procedure for calculating the answer with the class. Ayanda identified topics that allowed her to relate the text to current social issues. Jenny, Anika and Ayanda catered for the cultural diversity in the class through relevant content, language and peer interaction (Villegas & Tamara, 2002; Alsubaie, 2015). Linda concentrated on the form of the task, a mind-map, for learners to demonstrate their understanding. The focus was on what learners were doing in the classroom.

5.6.9 Conclusion

The four teachers implemented strategies to improve learner engagement in the classroom. Their shifts were consistent with other studies that included new conceptualizations of teaching and learning that fostered greater learner engagement (Lee, Zhang, Song & Huang, 2013). Jenny got all the learners in the class to participate in the lesson; Anika also got all learners to engage in group-work.

In addition to learner engagement, they also utilized teacher movement in the classroom for monitoring and supporting learners and, more importantly, to listen to learn conversations. When learners took charge of their learning, they showed greater autonomy and learnt from their experiences (Seng, 2014).

Ayanda increased opportunities to engage learners in the classroom by calling on learners to participate in discussions, inviting learners to read paragraphs and allowing them to bring their interpretations into the discussion. Learners spent more time in conversations with peers.

These teachers were asking more questions about what learners were learning, instead of focusing only on what they were presenting to the learners (Wiliam, 2013). Two of the four teachers responded to cultural diversity in the classroom by allowing learners to communicate with each other using their home languages where necessary. It was not enough to simply look at the knowledge that was being transmitted in the classroom but also necessary to pay attention to meaning creation.

Discussions between the teachers and learners and among learners emerged as a significant idea to promote learning (Seedhouse, 1996). The conversations and discussions serve as a window for engaging learners' thinking, and in this case, critical thinking. Learner-generated questions and conversations can enrich learning opportunities provided they are focused on central ideas and ideas immediately associated with them.

Considering how specialization is created in the medical field (Bodnar, Fowler & Saint , 2013), this study allowed a closer look at what teachers are thinking about when conceptualizing their practice, as well as specialization can be extended to affect beliefs and practice.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

Teachers attend professional development activities and then struggle to implement what they have learnt in their classrooms. They also find it difficult to make the necessary shifts in their instructional practice that would allow them to take advantage of their learning. The literature on South African teacher professional development indicates that this is a common experience for many teachers, although some researchers including Aluko (2009) and Adler and Reed (2002) argued that professional development does change teachers' instructional practice.

This study set out to investigate why teacher have difficulty in constructing instructional practice that reflects their professional development. Nespor (1987), Pajares (1992) and Prawat (1992) argued that teachers' belief systems shaped the instruction teachers produced in their classrooms and the organized knowledge that teacher developers exposed teachers to played only a small part. However, contemporary forms of professional development that impacted on the teachers' belief systems were more likely to produce shifts in teachers' instructional practice.

This study focused on how teachers, and not teacher developers, conceptualized their professional work and how they constructed their instructional practice. The study went a step further, exploring how the teachers' belief systems were implicated in the conceptualization of their professional work and the extent to which the construction of their instructional practice could be shifted through IR.

IR practice, a unique form of professional development based on the medical rounds practice, seems to offer possibilities for shifting teacher belief systems and hence their instructional practice. IR develops teachers' reasoning around their work. The medical profession utilizes medical rounds to allow specialists, experienced physicians, interns and students to shape their conceptions of their work under the guidance of experts. The medical profession adopted 'grand rounds' for sustainable faculty development

(Medina, Williams & Fentem, 2010), so that students within the medical profession learn how to organize knowledge directed towards diagnosis and treatment. IR carries the principles of grand rounds into the teaching profession.

In broad terms, IR practice approaches the teachers' knowledge and skills through their belief systems, which influenced teachers' knowledge and skills. IR questions the very frameworks involved in shaping the teachers instructional practice or the instructional choices they make. More importantly, it provides opportunities for teachers to create decisional knowledge by linking learning to actionable classroom changes through observations.

The literature on professional development in South Africa shows a wide range of programmes, from longer university courses, including university-focused projects, to a bouquet of in-service courses developed by other role players. The findings from the literature indicated that each developer focused on using a similar framework to organize and deliver content. However, there was an indication that mismatches might have occurred between the complexities of the teachers' work environment and settings common to professional development programmes, such as workshops conducted in large venues. Although it was impossible to capture every aspect of a teacher's work, the professional development activity that supported teachers in working within their own complex belief systems and work environments were likely to produce better outcomes.

Dixon et al., (2014) argued, for example, that the workshop framework limited the interaction between the teacher developer and the participants because it neglected to reflect the realities of what teachers were asked to do in the classroom. Adler and Patahuddin (2012) claimed that content knowledge development training reported limited impact on the teachers' instructional practice.

To further understand the phenomenon , the study examined adult learning theories, in particular informational learning, transformational learning and adult development

levels (Argyris, 1976; Merriam & Bierema, 2014). In relation to informational and transformational learning, theorists distinguish between learning that focuses on informational learning and learning that focuses on transformational learning. However, they argue that the two are not mutually exclusive and that in informational learning adults learn to work well with the existing conceptions which inform their work, while in transformational learning, they learn new conceptions which transform their work.

Significantly, learning theory might provide broader options for understanding and crafting adult learning, especially in the changing educational landscape. For example, curriculum changes require teachers to organize, teach and assess content, and many teachers have yet to understand what this looks like in practice.

The study also looked at theories of change in order to understand the difficulties associated with it when making instructional shifts (Kegan & Lahey, 2001). Theorists in the field agree that individual and organizational change was difficult (Kegan & Lahey, 2009). They understood that individuals hold implicit and deep-rooted beliefs and assumptions and have competing priorities that keep them from changing. They need opportunities to reflect on these beliefs.

They also understood that when individuals learn, organizations also learn. When individuals learn together, they can, potentially, shift organizational thinking (Kegan & Lahey, 2016). In the case of teachers, their own conceptions of their work and construction of their instructional practice was rooted in their belief systems that prevented changes from taking place, or enabled them. The context or situation contributed to teacher choices.

IR practice is an organized plan for a learning intervention that links teacher belief systems to instructional practice. Those participating in the IR practice work with identified problems of practice, like teaching critical thinking skills to conducting classroom observations, gathering evidence of practice and holding debriefing

sessions with the intention of developing the next level of work (City et al., 2010). This is currently one of the few interventions in South Africa that focused on teachers collecting data from their instructional practice. IR practice makes a clear distinction between the teachers and the practice, with the intention of opening up the teachers' instructional practice to critical scrutiny.

The teachers' belief systems described in this study might have held the key to understanding how teachers conceptualize and conduct their instructional practice, hence qualitative research methods were adopted in order to understand the phenomenon (Pajares, 1992). The study focused on promoting the teachers' in-depth understanding of their professional work. In other words, it investigated how teachers understood their work and produced related behaviours. The study did not target the actual behaviour of teachers, but was concerned with how teachers shift their understanding of instructional practice while taking into account teacher behaviour in the classroom, as described through lesson observations.

Interviews served as the primary tool for gathering data. Before the intervention was implemented, the researcher interviewed four teachers who agreed to participate in both the IR practice and the study. The interviews were repeated a year later, when the formal intervention with the facilitator support came to an end. The researcher also conducted three debriefing sessions which took place at the beginning, middle and end of the study intervention. The researcher observed that the debriefing session made it possible to gather more data and, potentially, to develop a deeper understanding of teacher conversations about their work. Finally, the researcher conducted classroom visits to get a deeper sense of the teachers' actual practice.

6.2 Instructional Practices

Before the IR practice, and consistent with City, Elmore and Fiarman (2010), the teachers reported a variety of influences that shaped their conceptions of teaching and learning. In general, teachers' earlier experience of being learners at school, teachers they valued while being learners in school, the support they received from their

colleagues and their personal experiences in the classroom shaped their conceptions of their work (Evers Heijden & Kreijns, 2016). The IEB examinations and internal end-of-year examinations motivated them to cover the syllabus for examination purposes. Teachers focused their instructional practice on subject content because of the examinations. Subject-teaching was also their main focus because they were passionate about the subject. Analysis of the first and second interview illuminated the following factors that impacted on instructional choices:

Table 18: Summary of Beliefs for First and Second Interviews

Interview 1	**Interview 2**
Teacher General Beliefs	
Subject Specialization	*Observations*
Technology	*Critical Thinking*
Collegial Support	*Questions*
Teacher Beliefs about Learners	
Understanding Learners	*Engagement*
Learner Ability	*Dispositions*
Motivation from Subject	*Questions*
Feedback	
Teacher Content Beliefs	
Content	*Assessment*
Specialization	*Structure*
Education Landscape	*Critical Thinking*

When the key ideas as reflected in the above table was compared from interview one to interview two, teacher beliefs that were significant shifted from mainly focusing on external factors that influenced learning to mainly internal factors that make a difference to learning. To highlight one fundamental shift, teachers in the study believed that learners had different abilities and that some learners would learn the content while others would struggle. The teachers' belief about learner ability influenced their action in their classroom. When a few learners responded positively

through facial expressions or raising their hands the teacher went on with other lessons. By the second interview, teachers expressed ideas about learn engagement, disposition and questions. Teaching was about what learners were doing in the classroom to create meaning. Teachers listened to learner dialogue and were interested in the type of questions they were asking to support learning. The data indicated that teachers shifted from a broader influence on learning to a narrow set of ideas implicated causing learning.

Teacher beliefs provided a possible explanation for teacher action and the theory of action explains the gap that could exist between theories that teachers hold and practice. The gap allows for a myriad of influences that may or may not impact on the actual learning that takes place in the classroom. With this in mind, the IR practice and in particular the role of teachers, learners and content focused teacher thinking on instructional practice and helped refocus teacher beliefs on learner engagement among others.

6.3 Critical Evaluation of the Project

Getting teachers to participate in the intervention had its challenges. As with many other interventions, teachers resisted participating in this one for various reasons: these included not finding the time in their busy schedules and feeling that the sessions would be a waste of time.

The school had motivated strongly for the intervention to take place and twelve teachers in the high school had participated in previous sessions. Six teachers initially volunteered to participate in this study, and of these, two teachers did not continue because of prior commitments: the timing of the final interview and lesson observations conflicted with their schedules. Teacher were busy preparing learners for the final examination.

The teachers participating in this study had busy schedules and had to meet their daily goals of teaching and engaging in other school activities like meetings and

administrative work, while also trying to fulfil personal commitments. These teachers had other priorities, so the IR intervention might not have been a key focus for them. However, this did not mean that the participants were not committed to the intervention. They made themselves available for all IR-related activities.

The quality of interventions could influence the professional development outcomes. As with many teacher development interventions, the quality of the intervention varied. The literature on professional development in South Africa has pointed to both external and internal features of professional development that make a difference to the quality of the delivery. With IR practice, an IR expert facilitated the practice at different points. The intervention also relied on school-based facilitators who had taken a course in IR. In this case the resources, including the facilitators, ensured that the intervention maintained a high quality.

IR practice is a complex intervention, introduced in this school for first time; experiences related to IR are limited. In the South African context, this was the first known school to implement it. The intervention and the study relied on an international expert and school facilitators to extend their experience in the intervention. The school provided leadership, supported the initiative and generally made the intervention and the study possible (Coldren & Spillane, 2007).

Qualitative research provided the means of conducting an in-depth investigation of the participating teachers' conceptions of their work. However, the insights gained from this research cannot be generalized to the general teaching population. The sample was not representative of the general teaching population, especially those teaching in rural public schools. The participants, in this instance, were teachers at a private school noted for the excellent quality of the teaching and its innovative approach to education.

As mentioned previously, this was the first known school in South Africa to implement IR practice, suggesting that this was the beginning of a process of building experience

around the practice. It also meant that facilitators at this school were extending their experience of the facilitation and implementation of IR. As a new practice, teachers were also developing their experience and improving their skills, at the same time learning a new language of description and discussion.

In the second interview, it was evident that teachers tried new ideas in their classrooms but it was unclear whether they utilized the actual hypotheses they had developed in the debriefing sessions to carry out in practice. The relationship between the creation of a hypothesis and a teacher's experimentation was not clear at this point. In other words, teachers who participated in the study did not explicitly state that hypotheses and experimentation in the classroom corresponded, although classroom observation did indicate some level of implementation.

The interview questions influenced the teachers' responses but they were general enough for teacher to give a wide range of responses. The questions were semi-structured and open-ended, giving participants opportunities to select their responses. The teachers responded by expressing their own ideas; this was evident in the data and the analysis of the data. Essentially, it was clear that the nature of the questions could have influenced the participant's responses, but it also acknowledged that they were open enough to allow participants to give a wide range of expressions. Judging by the responses, the latter seems more likely because participants emphasised what they thought were significant and expressed their ideas and feelings in uniquely personal ways.

The study successfully identified shifts in the way teachers thought about their work. Before the intervention, teachers constructed their instructional practice by focusing on the delivery of curriculum content as the main motivation for decision making. A striking example was the use of technology. Before the intervention, the participants used it to teach content more efficiently; after the intervention, they changed their focus to using technology to enhance learning. One participant started to use technology to enhance the quality of contact time that extended beyond the

boundaries of the classroom. In short, participating teachers shifted their instructional conversation from a focus on content knowledge to a focus on learners and learning.

6.4 Suggestions for Future Research

IR practice is a powerful instrument for shifting teacher conceptions of their work. As the study demonstrated, the practice in South Africa is at an embryonic stage. The potential to learn from such practice and to experience how instructional practice improved as a result was significant, especially in the South African context, where over twenty years of teacher development has yielded relatively little improvement. Future research into IR practice in South Africa is needed because of the following:

- Adult learning theories support such interventions taking into account the need for improvement in this field and the possibilities for adult learning
- Researchers studying individual and organizational change support a less traditional approach to teacher development, or to professional development, than many of the current models for that matter. As much as the intervention needs outside facilitation, a significant feature of the intervention is that it is teacher-led and allows teacher to observe, describe and interrogate their own instructional practice and to support their colleagues through the process
- This kind of intervention is noted for establishing new relationships among and between tiers of workers, hence understanding new conceptions of work may occur at different levels.
- The practice also supports inter-school exchanges that result in broadening the scope of teacher understanding and practice.

In terms of future research, the permutations of IR that were used might dictate areas of investigation and the nature of understanding:

- Beginning with this study, the debriefing session could be studied on its own, to enhance the practice and to understand the nature of such discussions.

- The creation and testing of hypotheses is another potential area of investigation.
- The relationship between what teachers describe as practice and what they actually do in the classroom is another area of study. How do teachers narrow the gap between what they say they are doing and what they are actually doing in the classroom?
- This intervention also made it possible to understand the changing roles of learners in the classroom.
- Organizational shifts might also be studied to understand the nature of individual and organizational shifts.
- A similar study would also be recommended for low-performing schools, or public schools, for that matter.

6.5 Recommendations

1. Based on the study, it is recommended that the IR practice is continued in the current school, with teachers developing their facilitation and IR practice skills and extending them to a wider circle of colleagues.
2. The frequency of IR at the school should be increased so that it becomes part of the instructional improvement practice.
3. The practice could be extended to the rest of the school, including the primary school staff.
4. With IR interventions, human resource development for the facilitators is key to successful implementation.
5. Successful dissemination of the intervention requires that facilitators commit to the process of developing as both facilitators and participants.
6. The intervention must be carefully monitored from the beginning to make sure that facilitators and staff build the necessary momentum, especially in view of busy staff schedules and the intervention operates outside the regular routines of the school. The intervention should be built into the school routine.

7. This study highlights the need to look more closely at how teacher beliefs retain their conceptions of their work and to identify beliefs related to the instructional core and, in particular, the relationships between teacher, learner and content.
8. Because this is a small study, more research is needed with a bigger sample to understand better how teachers conceptualize and construct their instructional practice.
9. More research is also needed into IR practice as an intervention strategy, specifically in a South African context.
10. Understanding how IR intervention relates to other school improvement strategies would also contribute to better understanding of how teachers' conceptions may be shifted.
11. Examining the relationship between teacher conceptions of their instructional practice and shifts in their actual instructional practice could make further contributions to developing insights into how teachers' instructional practice could be strengthened.
12. Finally, understanding the relationship between the specific hypotheses created during IR and their implementation in the classroom could also contribute to teacher growth and development.

6.6 Key Points Arising from the Study

Norms of Practice

"Teaching is a profession without a common practice" (City et al., 2010) and changing the nature of pre-service and in-service training in order to establish such norms of practice provides the trajectory for future teacher growth and development.

Placing teachers at the centre of learning

Linking teacher growth and development within a framework of adult learning adds a new dimension to professional development, in which the teachers play a central role in developing conceptions of their work. IR creates opportunities for teacher to act as agents of their own development and growth.

Working with On-site Construction of IR practice

There are few processes or professional development activities that support teachers understanding of their real-time constructions of their instructional practice like IR practice when it is linked to the problem of practice and lesson observation. The problem of practice focuses the professional development.

Creating Specialization

With IR practice, teacher developers may rethink the notion of specialization and what it means to create the professional identity of teachers. In this study focusing on teachers' professional thinking as a resource for making actionable decisions takes precedence over developing subject identity.

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APPENDICES

Appendix A: Letter to Head of College

3 March 2015

Dear Mr. X

My name is Mr. Renny Somnath and I am a PhD student in the School of Education at the University of the Witwatersrand, where my supervisor is Professor James Stiles. I am doing research on **Shifts in Beliefs, Knowledge and Skills: Teachers' Experience of Instructional Rounds Practice.**

My research involves tracking teachers participating in Instructional Rounds practice for one year to gain an understanding of teacher learning as a consequence of the Instructional Rounds intervention. The tracking will be in the form of interviews, observation of the debriefing sessions following the Instructional Rounds sessions and observations of class lessons.

I have chosen your school because of your school's ability to introduce and to sustain innovative programmes, particularly the Instructional Rounds intervention.

I am inviting your school to participate in this research, thereby contributing to understanding teacher learning and Instructional Rounds practice.

The research participants will not be advantaged or disadvantaged in any way. They will be reassured that they can withdraw their permission at any time during this project without any penalty. There are no foreseeable risks in participating in this study. The participants will not be paid for this study.

The names of the research participants and identity of the school will be kept confidential at all times and in all academic writing about the study. Your individual privacy will be maintained in all published and written data resulting from the study.

All research data will be destroyed between 3-5 years after completion of the project.

Please let me know if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

……..
Mr. R. Somnath

Appendix B: Letter to the Principal

3 March 2015

Dear Ms. Z

My name is Mr. Renny Somnath and I am a PhD student in the School of Education at the University of the Witwatersrand, where my supervisor is Professor James Stiles. I am doing research on **Shifts in Beliefs, Knowledge and Skills: Teachers' Experience of Instructional Rounds Practice.**

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The names of the research participants and identity of the school will be kept confidential at all times and in all academic writing about the study. Your individual privacy will be maintained in all published and written data resulting from the study.

All research data will be destroyed between 3-5 years after completion of the project.

Please let me know if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

……..

Mr. R. Somnath
2073 Westbrook Estate
rennysomnath@gmail.com
0795086877

Appendix C: Letter to Teachers

3 March 2015

Dear Ms. Y

My name is Mr. Renny Somnath and I am a PhD student in the School of Education at the University of the Witwatersrand.

I am doing research on Shifts in Teacher Beliefs, Knowledge and Skills: Teachers' Experience of Instructional Rounds Practice.

My research involves following teachers who are participating in Instructional Rounds (IR) practice for one year to gain an understanding of teacher learning as a consequence of participating in the Instructional Rounds sessions. To do this, I will conduct individual interviews, observe one of your regular lessons and observe the debriefing sessions following the Instructional Rounds sessions.

I have identified your school as having the ability to introduce and to sustain innovative programmes, particularly the Instructional Rounds intervention. I would therefore like to invite you to participate in this study.

Your name and identity will be kept confidential at all times and in all academic writing about the study. Your individual privacy will be maintained in all published and written data resulting from the study through the use of pseudonyms and the careful editing of any biographical data (your subject area, etc.). Your participation in my research project will have no impact on your participation in the Instructional Rounds process that the school is conducting.

You will not be advantaged or disadvantaged in any way. Your participation is voluntary, so you can withdraw your permission at any time during this project without any penalty. There are no foreseeable risks in participating and you will not be paid for

this study. All research data will be destroyed between 3-5 years after completion of analysis of the project.

Please let me know if you require any further information.

Thank you very much for your help.

Yours sincerely,

……..

Mr. R. Somnath
2073 Westbrook Estate
rennysomnath@gmail.com
0795086877

Appendix D: Consent Form for Teachers

Shifts in Beliefs, Knowledge and Skills: Teachers Experience of Instructional Rounds Practice

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

I, _____ give my consent for the following:

Permission to review/collect documents/artefacts **Circle one**

I agree that material from the Instructional Rounds process can be used for this study only.

YES/NO

Permission to be audiotaped

I agree to be audiotaped during the interview or observation. YES/NO

I know that the audiotapes will be used for this project only. YES/NO

Permission to be interviewed

I would like to be interviewed for this study. YES/NO

I know that I can stop the interview at any time and don't have to answer all the questions asked. YES/NO

Permission to be observed

I agree to be observed teaching for this study. YES/NO

I know that I can request that observation end at any point. YES/NO

Informed Consent

I understand that:

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

Sign_____ Date_____

Appendix E: Letter to the School Governing Body

3 March 2015

Dear Sir/Madam

My name is Mr. Renny Somnath and I am a PhD student in the School of Education at the University of the Witwatersrand where my supervisor is Professor James Stiles. I am doing research on Shifts in Beliefs, Knowledge and Skills: Teachers Experience of Instructional Rounds Practice

My research involves tracking teachers participating in Instructional Rounds practice for one year to understand teacher learning as a consequence of the instructional rounds intervention. The tracking is in the form of interviews, observation of the debriefing sessions and observations of class lessons.

The reason why I have chosen your school is because of the school's ability to introduce and to sustain innovation and in this case the instructional rounds intervention. I am inviting your school to participate in this research to make a contribution to understanding teacher learning and understanding instructional rounds practice.

The research participants will not be advantaged or disadvantaged in any way. They will be reassured that they can withdraw their permission at any time during this project without any penalty. There are no foreseeable risks in participating in this study. The participants will not be paid for this study.

The names of the research participants and identity of the school will be kept confidential at all times and in all academic writing about the study. Your individual privacy will be maintained in all published and written data resulting from the study.

All research data will be destroyed between 3-5 years after completion of the project. I have discussed my research with the Head of College, the High School Leadership Team and the teachers who are participating in the IR process.

Please let me know if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

……..

Mr. R. Somnath
2073 Westbrook Estate
rsomnath@sadtu.org.za
0795086877

Appendix F: Letter to Parents

3 March 2015

Dear Parent

My name is Renny Somnath and I am a PhD student in the School of Education at the University of the Witwatersrand and my supervisor is Professor James Stiles.

I am doing research on Shifts in Beliefs, Knowledge and Skills: Teachers Experience in Instructional Rounds.

My research involves following teachers participating in Instructional Rounds practice for one year to understand teacher learning as a consequence of the instructional rounds intervention. The tracking will take the form of interviews, observation of the debriefing sessions and observations of class lessons.

Your child is in one of the classes which I will observe. During the observation, I will sit in the back of the class and take notes. I may also audiotape the lesson to assist me in the research. Although my main interest is the classroom teacher, the nature of teaching is an interactive one and this means that I must seek your and your child's, permission to observe the class. Your child's participation in this will be restricted to the lesson that will be observed.

Your child will not be advantaged or disadvantaged in any way. There are no foreseeable risks in participating and no one will not be paid for this study.

Apart from this form, I will not maintain any written reference to your child's name and identity. This form will be kept confidential at all times and no children's names will appear in my notes or in any academic writing about the study.

All research data will be destroyed between 3-5 years after completion of the project. Please let me know if you require any further information and I look forward to your response.

Thank you very much for your help.

Yours sincerely,

Mr. R. Somnath

2073 Westbrook Estate
rsomnath@sadtu.org.za
0795086877

Appendix G: Parent's Consent Form

Shifts in Beliefs, Knowledge and Skills: Teacher Experience of Instructional Rounds Practice.

Please fill in and return the reply slip below indicating your willingness to allow your child to participate in the research project called:

I, _____ the parent of _____

Circle one

Permission to observe my child in class

I agree that my child may be observed in class. YES/NO

Permission to be audiotaped

I agree that my child may be audiotaped during observations. YES/NO

I know that the audiotapes will be used for this project only YES/NO

Informed Consent

I understand that:

- my child's name and information will only be retained on these forms. No further notation will be made of her/his name in any notes taken for the research. He/she can ask not to be audiotaped,
- all the data collected during this study will be destroyed within 3-5 years after completion of my project.

Sign_____ Date_____

Appendix H: Letter to Learners and Consent Form

08.09.2014

Dear Learner

My name is Renny Somnath and I am a PhD student in the School of Education at the University of the Witwatersrand and my supervisor is Professor James Stiles.

I am doing research on **Shifts in Beliefs, Knowledge and Skills: Teachers Experience of Instructional Rounds Practice.**

My research involves trying to understand how teachers make choices about teaching. Part of my research involves watching your teacher teach some of her lessons.

I was wondering whether you would mind if I observed your classroom during a lesson. You would be expected to participate in the classroom lesson as you normally do in other lessons. I will observe the teachers and audio tape the lesson to understand the interaction between the teachers and learners in this classroom. While my purpose is not to observe you and your fellow learners, because I am entering the classroom I need to seek your permission to observe the teacher.

I will not be using your own name and if I refer to students at all in my notes it would be through a generic made-up name. Also, all collected information will be stored safely and destroyed between 3-5 years after I have completed my project.

Remember, this is not a test, it is not for marks and it is voluntary, which means that you don't have to give me permission to sit and observe the class.

Your parents have also been given an information sheet and consent form, but at the end of the day it is your decision to allow me to observe you.

I look forward to working with you.

Please feel free to contact me if you have any questions.

Thank you

Mr. R. Somnath
2073, Westbrook Estate
rsomnath@sadtu.org.za
0795086877

Appendix I: Learner Consent Form

Please fill in the reply slip below if you agree to participate in my study called:

My name is: _____

Circle one

Permission to observe you in class

I agree to be observed in class. YES/NO

Permission to be audiotaped

I agree to be audiotaped during the observation lesson YES/NO

I know that the audiotapes will be used for this project only YES/NO

Informed Consent

I understand that:

- my name and information will be kept confidential and will only appear on these forms. My name will not appear in any other notes for the research. I can withdraw from the study at any time.
- I can ask not to be audio taped
- all the data collected during this study will be destroyed within 3-5 years after completion of my project.

Sign_____ Date_____

Appendix J: Semi-structured Interview Schedule

Research Questions

1. What motivated you to become a teacher?
2. What was it like for you when you first started teaching?
3. Describe your best teacher or teachers and what was he or she like?
4. Tell me about the kind of things you have done to learn more about your teaching?
5. What kinds of things have you changed in your teaching because of the learning?
6. Tell me about you experiences that made a difference in your teaching?
7. Where do you get information for improving your work at school?
8. Tell me about a typical day at work?
9. What kinds of challenges do you experience in your teaching practice?
10. What else would you like to share that you think is the higlight of your work?

Appendix K: Final Interview: Semi-structured Interview Schedule

1. How would you describe your experience of instructional rounds?
2. What significant lessons did you learn from the rounds practice?
3. In the previous rounds session student engagement and prior knowledge emerged as key ideas grounding critical and creative thinking skills. To what extent are ideas significant and has this assisted you in your own planning?
4. What are your impressions about the tension between completing the syllabus and experimenting with critical and creative thinking in your classroom?
5. To what extent did the hypothesis and experimentation in your classroom assist you in reflecting on critical and creative thinking?

   What will it take for teachers to know that students are engaging with their learning (e.g., thinking critically) so that students have ownership of their learning?

   - Between silence and chaos- constructive noise bouncing ideas off each other.
   - Using foundational understanding productively- earlier knowledge/ cross-over knowledge/teacher or learner led.
   - Nature of questions
   - How do you enforce listening the question?
   - Challenge in highly structured (vertical) subject to make space for learning
6. What is your understanding of critical and creative thinking?
7. What evidence of critical and creative thinking do you see in the final classroom observation for this year?
8. What are you doing differently in your classroom?
9. Reflecting on rounds, how do you think the school should proceed in future? What next? What will it take for you to fully implement critical and creative thinking in your classroom?

Appendix L: IR Schedule for March 2015

INSTRUCTIONAL ROUNDS MARCH 2015

ROUNDS TEAM:

GROUP 1	GROUP 2
IR Participant 1	IR Participant 6
IR Participant 2	IR Participant 7 Jenny
IR Participant 3	IR Participant 8 Ayanda
IR Participant 4 Linda	IR Participant 9
IR Participant 5 Anika	IR Participant 10

MONDAY, 9 MARCH 2015				
DAY 3: GROUP 1				
LESSON 5:				
TIME	TEACHER	VENUE	GRADE	LESSON
10:50 - 11:10	Teacher 1	Media Centre	9	Eng. Lit
11:12 - 11:30	Teacher 2	Room 14	12	Dramatic Arts

LESSON 8:				
TIME	TEACHER	VENUE	GRADE	LESSON
13:17-13:35	Teacher 3	Room 24	11	English
13:37 -13:55	Teacher 4	Room 3	10	Maths
DAY 3: GROUP 2				
LESSON 2				
TIME	TEACHER	VENUE	GRADE	LESSON
08:30 -08:50	Teacher 5	Room 2	8	RELO
08:52 -09:10	Teacher 6	Room 8	10	English
LESSON 8:				
TIME	TEACHER	VENUE	GRADE	LESSON
13:17-13:35	Teacher 7	Room 3	10	Maths
13:37 -13:55	Teacher 8	Room 24	11	English

TUESDAY, 10 MARCH 2015

DAY 4: GROUP 1

LESSON 1:

TIME	TEACHER	VENUE	GRADE	LESSON
07:50 - 08:10	Teacher 9	Tech Room	10	History
08:12 - 08:30	Teacher 10	Room 10	9	Afr FAL

LESSON 6:

TIME	TEACHER	VENUE	GRADE	LESSON
11:30 - 11:50	Teacher	Lab 3	11	PhySci
11:52 - 12:10	Linda	Art Room	11	Visual Art

DAY 4: GROUP 2

LESSON 1:

TIME	TEACHER	VENUE	GRADE	LESSON
07:50 - 08:10	Teacher 10	Room 10	9	Afr FAL
08:12 - 08:30	Teacher 9	Tech Room	10	History

LESSON 5:				
TIME	TEACHER	VENUE	GRADE	LESSON
10:50 - 11:10	Teacher 11	Room 16	10	Accounting
11:12 - 11:30	Teacher 12	Room 4	7	Afrikaans

Appendix M: Instructional Rounds Classroom Observations and Debriefing Sessions

Notes

- The school was flexible and may not have followed the schedule strictly because of unanticipated disruptions. These dates served as guiding dates for Instructional Rounds activities.
- They factored in contingencies like availability of staff during free sessions and important events like processes for external examinations.
- The researcher attended selected events to become familiar with Instructional Rounds and events that were directly relevant to the study.

Lesson Observations	Teachers	Debriefing Observations	Teachers
09.03.2015-10.03.2015	12 Instructional Rounds Participants and volunteers for lesson observations	11.03.2015-12.03.2015	Instructional Rounds Participants
28.05.2015-29.06.2015	12 Instructional Rounds Participants and volunteers for lesson observations	01.06.2015-02.06.2015	Instructional Rounds Participants
21.10.2015-22.10.2015	12 Instructional Rounds Participants and volunteers for lesson observations	23.10.2015-24.10.2015	Instructional Rounds Participants