A minor dissertation in part fulfilment of the requirements for a Master's in Primary Education

The influence of teachers' regulative discourse, specifically teachers' expectations of learner achievement, on teachers' pedagogic practice in teaching Grade 6 Natural Science in the Western Cape: Two case studies.

Faculty of Humanities

University of Cape Town

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REBECCA CARDER

CRDREB001

SUPERVISOR: DR H JACKLIN

COMPULSORY DECLARATION

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

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ABSTRACT

This study examines how two Grade 6 Natural Science teachers in two low SES schools in the Western Cape teach Natural Science, and what relation this has to the regulative discourse that informs their teaching. Data texts were derived from interviews and lesson observations. The study draws on research relating to teacher expectations and redescribes this in terms of Bernstein's concept of the regulative discourse.

The study concludes that the teachers' regulative discourses and instructional discourses are not wholly developed individually; instead, these discourses, and specifically teachers' expectations of learners are strongly influenced and developed by interactions between curriculum demands and the local school culture.

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CONTENTS

GLOSSARY OF ABBREVIATIONS

ANA	Annual National Assessments
CAPS	Curriculum and Assessment Policy Statement
DoBE	Department of Basic Education
DoE	Department of Education
LOLT	Language of Learning and Teaching
MEC	Member of Executive Council
PCK	Pedagogical Content Knowledge
PIRLS	Progress in International Reading Literacy Study
SES	Socio Economic Status
TIMSS	Trends in International Mathematical and Science Study
WCED	Western Cape Education Department

CHAPTER ONE: INTRODUCTION TO THE STUDY

1.1 Introduction

Over the last several years there has been much contention about the state of education in South Africa. More recently the Grade 12 results have raised cause for concern, as has South Africa's performance in international studies such as PIRLS and TIMSS where South African learners significantly underperform in comparison to their international counterparts. Specifically, when one looks at their achievements in Science we see some fairly troubling statistics. Although there was an improvement in numbers of Grade 12 Science passes in 2012, compared to passes from previous years, only 61.3 percent of Grade 12 Science learners achieved a pass in this discipline (Motshekga, 2013).

One possible cause of poor Science attainment in high school could conceivably stem from the primary years. In the 2004 national systemic evaluations, the Grade 6 average for Science was 41 percent. This fact, while saddening, supports the argument that the issues in Science achievement, at least in part, stem from primary school. In this study, I focus on one of the factors that might influence learners' acquisition of Science in the primary school: the idea that perhaps teacher expectations of their learners' abilities in the mastery and acquisition of learning Science play a role. The following personal anecdote describes an experience that deepened my interest in expectations as a factor impacting achievement:

Having spent some time with my young nephew, I noticed that when he spoke to his one grandmother, he said, "The dog is barking;" yet when speaking with his other grandmother he said "Look granny, a woof-woof! It's woofing!" This obvious disparity in his use of language intrigued me. Upon observations, I realised that he reacted according to how they spoke to him: the one grandmother spoke about dogs and barking, while the other spoke about woof-woofs – their expectations of his ability to understand and use technical terms impacted upon the language he chose to use in communicating with each of them.

Perhaps, as teachers, our expectations of learners' ability to understand and use Science concepts affects the way in which they actually do understand and use them, thus affecting their

Science achievement. This personal experience found support in my initial reading of relevant scholarly literature and confirmed my decision to investigate how our expectations as teachers influence the ways in which we teach Natural Science in Grade 6.

1.2 Topic

The topic of this study is:

The influence of teachers' regulative discourse, specifically teachers' expectations of learner achievement, on teachers' pedagogic practices in teaching Grade 6 Natural Science in the Western Cape.

1.3 Research question

'*In what ways and to what extent do teachers expectations of learners' scientific ability inform their pedagogical approach to teaching Science in terms of the framing of pedagogy to low income Grade 6 learners in two English speaking schools in the Western Cape?'*

Four sub-questions that arise from the main research question are:

- What does the teacher say about the role of Science in learners' lives beyond the classroom context?
- What does the teacher say about his / her expectations of the learners' abilities to understand complex scientific concepts and processes?
- How does the teacher frame Science lessons?
- What, if any, relationships can be discerned between the teacher's pedagogy and his / her expectations of the learners' abilities to understand complex scientific concepts and processes?

In this study I have conceptualised teachers' expectations of learners' achievement in terms of Bernstein's notion of regulative discourse.

1.4 Rationale

In South Africa, Science education is seen as central to the "human development strategy of South Africa" (Mbeki, 2005 – Cited in Reddy, 2006:xi), yet results in previous studies (Reddy, 2006; DoE, 2009; DoBE, 2011) show that Science acquisition appears to be problematic for many South African learners. In 2003, South Africa, along with 49 other countries, participated

in the Trends in Mathematics and Science Study (TIMSS). The study found that South Africa was the lowest achieving country in terms of Science success at Grade 8 level with an average score of 244 points as opposed to the international average of 474 points; with only 13 percent of South African students achieving above the Low International Benchmark for Science (400 points) (Reddy, 2006). Although these results speak to scientific achievement at Grade 8 level, it can be assumed that these also reflect achievement at primary school level. Indeed, the results of the TIMSS study are echoed in the results of the 2004 systemic evaluations undertaken nationally in Mathematics, Language and Natural Science at a Grade 6 level (subsequent national assessments did not include a Natural Science component) with an average Grade 6 score of 41 percent in Natural Science. In fact, 54 percent of Grade 6 learners did not achieve the basic benchmark of Science Achievement while 15 percent of learners only partially achieved this leaving only 31 percent of Grade 6 learners in South Africa achieving the basic benchmark or beyond[1] (DoE, 2009).

While the cause of the poor acquisition of Science by South African students could be accredited to many factors, Reddy (2006) suggests that there is a link between the socio-economic status (SES) of learners' households and their achievement. According to Reddy's report, "the average Mathematics score for learners in schools with few (0-10 percent) economically disadvantaged learners was 479, and 237 in schools where more than 50 percent of the learners come from economically disadvantaged homes – a difference of 242 points." (Reddy, 2006:107). Echoing this, the Western Cape Education MEC suggested that the systemic tests administered to the Grade 6 learners in the province showed that there is a relationship between achievement and economic status: "the poorer the pupils, the more likely they were to lag" (Smith, 2004. Cited in Reeves, C & Muller, J, 2005:4). This appears to indicate that, in South Africa, there is a correlation between the SES of learners' households and their achievement; and that while this relates to Mathematics, it is assumed that the indication would hold true for Science achievement. In short, low SES learners are less likely to acquire the necessary knowledge to succeed in national, standardised assessments.

[1] Achievement was classified into four groups by score – according to a basic benchmark for having acquired sufficient Science knowledge to succeed in the following grade. The four groups are: Not achieved (0 – 39%), Partially achieved (40 – 49%), Achieved (50 – 69%) and Outstanding Achievement (70 – 100%) (DoE, 2009).

What captured my interest, however, is that there are some exceptions to the relationship between SES and achievement. The Department of Basic Education states in the report of the 2011 Annual National Assessments (referred to as the ANA's from here on; these assessments are administered to Grades 3, 6 and 9 in Mathematics and Language) that "though many schools are clearly struggling…there are also schools that do considerably better though they face the same socio-economic challenges. As an example of the latter: 13% of schools in the poorest quintile have at least half of their learners achieving at the top two levels (a score of at least 50%)." (DoBE, 2011:37). Thus, there are some schools where a majority of learners come from low SES households that are outperforming their counterparts with similar demographics. To me, this raises an interesting question: what is it that these schools are doing that results in their learners outperforming their counterparts in the ANA's?

Professor Jonathan Jansen believes that a significant factor in learner achievement is the expectation that teachers place upon learners, signalling this as being the factor that changed the course of his life as a high school learner (Jansen, 2011). After reading this and reflecting on my own personal experiences, I began to wonder if teacher expectations of learners do in fact play a role in learner achievement and to what extent. Furthermore, I began to wonder how teacher expectations relate to a teacher's regulative discourse and their chosen pedagogy in a Science context in low SES schools; and how this knowledge could be used to optimise learning experiences for these learners. While teacher expectation is the focus of this study, I acknowledge that it is only one of many factors that affect teaching and learning in schools.

In order to see if there was any merit in the question I was asking, however, I elected to do a small scale study within two low SES schools in the same suburb in the Western Cape that achieve different results in the ANA's. If a relationship between teacher expectations, pedagogy and learner achievement between these two schools could be determined, then perhaps there would be merit in broadening the study at a later date.

1.5 Value of this contribution to the sociology of education

Although this study is empirical in its nature, it does not aim to make an empirically generalizable claim. Instead, it aims to make a theoretical contribution by describing how teachers' expectations, pedagogy and learners' achievements are related in a small number of

cases. My hope is that in time, the insights that emerge here might be further investigated fully in a large-scale study that might perhaps offer an explanatory account of how expectations inform pedagogy, and that these insights might finally inform the development of learning materials for use in training teachers to effectively teach Science concepts.

1.6 Overview of the study

In this chapter I have outlined the aim and rationale of this study. In the following chapter, I begin by exploring literature that discusses the effects of teacher expectations on both their learners' achievements and the way in which they teach. There is some consensus in this literature that teacher expectations affect the way in which they teach – their pedagogy. According to the literature, teacher expectations do not just lightly affect the teachers' pedagogy but rather mould and inform pedagogy.

After reviewing the literature I set about designing a small-scale study that would explore how the expectations of two teachers from low SES schools inform their pedagogy. Drawing on the literature, I designed a study that would make use of classroom observation, text analysis and interviews in order to find evidence of whether teacher expectations had informed the pedagogy and what possible effect this had on the learners' efforts to learn. I present this research design and the approach to analysis of data in Chapter 3. Once I had collected and analysed the data I examined the findings for evidence linking teacher expectations to pedagogy. The findings are presented and discussed in Chapter 4. Chapter 5 follows as a conclusion to the study; this ties the literature, my assumptions and findings together; and attempts to answer the question of how, if at all, teacher expectations inform their pedagogic approach in teaching Science at a Grade 6 level.

CHAPTER TWO: LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

"Worst of all was a lack of confidence in children's ability to succeed. If people don't believe that children have potential, nobody bothers to question the education methods that are failing them." (Badat, 2013)

The overarching aim of this chapter is to draw on the literature to determine whether there are any correlations between teacher expectation, pedagogical approach and learner achievement. My interest here is in the ways in which teacher expectations influence pedagogy, on the assumption that pedagogy influences learning and achievement.

I explore the literature in four phases: I first examine what is suggested in the literature with regard to factors that can affect learning in schools. Following this, I examine what emerges from the literature with regards to how teacher expectations affect teaching and learning. Next I explore a link between teacher expectations and Bernstein's notion of pedagogical practice, paying particular attention to Bernstein's notion of the regulative discourse (the *how* of teaching, or the rules which govern how each teacher teaches). Both schools in this study draw low SES learners, thus throughout the review of the literature there is mention of the difference in how high SES and low SES benefit from various pedagogies as some of these pedagogical approaches are considered and included in the analysis. Finally, I draw on this literature review to develop a conceptual framework for the study.

2.1 Factors affecting acquisition of scientific concepts

The purpose of schools, according to Michael Young (2007), is to provide all people equal opportunity to acquire powerful knowledge[2] that most would be unable to obtain at home or in the community. This powerful knowledge will then enable these people to innovate and change not only their lives, but also the society in which they live. He goes on to say that schools are to provide specialized knowledge embodied in various domains that enable learners to "move,

[2] Powerful knowledge, according to Young, is specialized knowledge based on various domains (i.e. Science domain, Languages domain) and is not dependent on localized everyday knowledge but is abstract, theoretical and context independent (Young, 2007)

intellectually at least, beyond their local and particular circumstances." (Young, 2007:6). However, judging by the Mathematics and Science results in South Africa, South African schools are not necessarily places where all learners are provided equal opportunity to acquire powerful knowledge. It would, in fact, appear that most South African low SES learners are afforded less opportunity to acquire powerful knowledge than their higher SES peers. What factors, then, affect the opportunity for low SES learners to acquire powerful knowledge and achieve academic success in South Africa?

The literature suggests that teacher expectation is only one of many factors that affect pedagogy and knowledge acquisition, and that it is not the primary contributing factor. To follow is a summary of factors that affect knowledge acquisition. This discussion is limited to factors that bear particular relevance to the South African context: the home background of the learners (socio-economic status of family, parental academic history, as well as access to basic utilities), the socio-economic status of the school and the resources of the school, the medium of instruction in light of the home language of both learners and teachers, the teacher's content knowledge and the teacher's pedagogical content knowledge (PCK). While I acknowledge that much has been written about the role of race in academic success in education (Jones, G & Wheatley, J, 1990; Simpson, A & Erickson, M, 1983; Shepardson, D & Pizzini, E, 1992), South African scholars tend not to separate race and class as there remains a general correlation between race and socio-economic status throughout the country. Therefore, for the purposes of this particular study, it is sufficient to focus on SES on the understanding that the majority of low SES learners are from the previously disenfranchised racial groups.

The effect of learner home background on the potential to acquire powerful knowledge is a well-researched topic. As mentioned above, there appears to be a direct correlation between the socio-economic status of a learner's family and the academic success of that learner (Reeves, C & Muller, J, 2005). Bernsteinian scholars such as Painter (1999) and Morais (2002) suggest that one reason for this is that often the discourse in low SES homes is different from the discourses used in schooling, to a greater degree than in middle and high SES homes. Low SES learners tend to come from homes where the parents focus on solving immediate problems in specific contexts. They tend to tell or show their children what to do, without either giving the children explanations of what is happening and why, or allowing or asking the children to

provide explanations themselves. Painter (1999) suggests that in her experience these children often learn to be passive knowledge receivers and don't learn the skills of de-contextualising knowledge, transferring knowledge from one context to another, recognising open questions and using non-contextual explanations. She, along with Lubienski (2004) and Holland (1981), suggest that these learners tend to be bound by the 'here and now' of situations and information and struggle to move beyond thus leaving low SES learners at a significant disadvantage in recognising and using context independent thought, language and concepts[3] required for academic success at school level.

Mid to high SES learners, however, tend to come from homes where parents emphasize reasoning and talking when playing and talking to their children. They tend to ask their children questions that require some abstract thinking (such as 'What do you think about...' or 'Why do you think...' questions) and offer commentaries about objects and events (Hoadley, 2008; Painter, 1999; Holland, 1981). Through these interactions with the parents, the children learn to develop ways of understanding and transferring knowledge of all manner of concepts and experiences from one context to another, and begin to develop a basic ability to give explanatory accounts; competencies necessary for successfully using context independent language as found at school. The reasons for this can be traced back to earlier work by Luria and others that show that we develop language strategies in response to the communicative demands of our daily lives. In the workplace, the communicative demands associated with menial forms of labour require fewer abstractions than the communicative demands associated with managerial or skilled labour. Where this becomes problematic is that the discourses of the school require learners to ask questions, reason and discuss topics – discursive strategies that low SES learners are not prepared for (Luria, 1976).

Bernstein and Rose both argue that there is a need for a second site of acquisition that mimics the language and learning style of the classroom, where learners can be assisted in completing homework, studying or clarifying concepts (Bernstein, 1990; Rose, 2004). Usually this would

[3] Holland reports of a study conducted by Lineker where learners were asked to explain the rules of a game they had played to a younger child. The learners from mid to high SES homes were able to give rule based, general instructions; while the majority of learners from low SES homes tended to describe a particular instance of the game rather than provide rule based, general instructions. (Holland, 1981)

be the home of the learner, yet many parents in the low SES households have limited schooling themselves and may be unable to assist their children.

Besides the issue of the discourse of the home being different from that of the school in low SES household, there is a further significant concern at play in the South African context: that of the language of learning and teaching (LOLT) differing from the home language. According to Reddy, in order for successful acquisition of powerful knowledge the LOLT should be the same as the language spoken at home (Reddy, 2006; DoE, 2009) as this allows fullness in understanding of what is being taught. However, Reddy reports that only 18 percent of learners in South Africa indicated that they 'always' spoke the LOLT at home, while 15 percent of learners reported not speaking the LOLT at home (Reddy, 2006). This indicates a major problem in the communication of knowledge to learners by both the teacher and textbooks. If we accept that 82 percent of South African learners are being educated in their second or third language then we must accept that most will experience a deficit understanding of the concepts being taught. In addition, many teachers are teaching in a language that is not their home language. This issue presents a significant challenge to learners in their endeavours toward knowledge acquisition.

Although not particularly addressed in the literature I consulted, a further factor that is pertinent to learning in the South African context is the physical resources to which learners have access to at home. These play a significant role in their opportunity to learn optimally. Food, space to sleep, safety at school and at home and space and light to study at home are all vital aspects to providing for a child's basic needs[4]. A child cannot learn when hungry, tired or feeling emotionally unsafe (DoBE, 2011b). Unfortunately, the basic needs of many low SES children in South Africa are not adequately met, which potentially impedes their opportunity to achieve success in acquiring powerful knowledge in schools.

The socio-economic status of the school and the resources to which the school has access are also contributing factors in learner achievement (Fleisch, 2008). In 2008, the average learner to teacher ratio in South African public schools was 38:1 (DoBE, 2010). According to Reddy, there is a correlation between class size and learner achievement – the smaller the classes, the

[4] I refer here to Maslow's Hierarchy of Needs (van Deventer, I & Kruger, AG, 2003).

higher the rate of achievement (Reddy, 2006). Malcolm Gladwell recently surveyed teachers to find out what, according to them, was the optimal class size. What he found was that most teachers intimated that their ideal class size is between 18 and 28 learners. With fewer learners than 18, discussions and interactions were difficult and less stimulating, while in a class of more than 28 learners there are just too many learners needing attention to be able to effectively teach them all (Gladwell, 2013). Where the average SES of learners is higher, the school fees are also higher and the school is able to purchase more resources (such as desks, textbooks, computers, and subject specific paraphernalia) and employ more teachers (DoE, 2009). Due to this, schools with higher SES learners have greater access to the resources needed for optimal learning which results in these learners having more quality and varied opportunities for learning than their lower SES counterparts.

The final factor that affects acquisition of knowledge that I will briefly discuss is that of teachers' content and pedagogical content knowledge. This issue is highlighted in the work of Shulman. PCK (Pedagogical Content Knowledge) is the way in which teachers transfer the content knowledge that they possess to the learners – it is the intersection between content knowledge and broad pedagogical knowledge that is shared by all teachers. Pedagogical content knowledge includes knowledge of which instructional strategies may be useful for teaching specific content, understanding common misconceptions and difficulties that learners may have with specific content as well as knowledge of how to address these misconceptions before they arise (Shulman, 1986; Anderson, D. & Clark, M., 2012). The teachers' PCK impacts on learner achievement: should a teacher not have the necessary pedagogical knowledge as to which instructional strategies may be beneficial to teaching specific content they will be holding their learners at a disadvantage. Additionally, PCK relies on teachers having a good grasp of the content knowledge itself – the way in which general concepts, principles and conceptual schemes are organized within the discipline; and the understandings, beliefs, philosophy and history of the discipline (Shulman, 1986; Anderson, D. & Clark, M., 2012). Where the problem lies for many learners in Natural Science (irrespective of SES), is that most primary school teachers are generalist teachers who do not have a strong (if any) Science background and who tend to be left to develop content knowledge on their own (Anderson, D. & Clark, M., 2012). A teacher who has limited Science content knowledge, cannot possibly have strong PCK as the two are distinctly intertwined. Even though there is

policy in place that teachers must attend professional development courses to develop their competencies with regards to pedagogy, pedagogical content knowledge and content knowledge, this policy is not enforced, and well run courses can often cost teachers both money and time that they do not have.

Even though each of these factors discussed briefly above bears relevance in their own right whenever one looks at learners' opportunities to acquire powerful, scientific knowledge, particularly in the South African context (Reddy, 2006); this study deliberately does not explore or expound these factors further, but rather seeks to explore and focus on a different factor that plays a key role in the opportunities for low SES learners to acquire powerful knowledge – teacher expectations.

2.2 Teacher expectations and pedagogic practices

"Teachers who teach poorer school children tend to have lower expectations of what learners can achieve." (Fleisch, 2008:122)

Teacher expectations are often viewed as individual features, formed by what each teacher believes the learners to be capable of. However, teacher expectations are formed and framed by a multitude of factors – indeed what they imagine the learners to be capable of, but also through the beliefs and climate of the school as an organisation and the curriculum as an external framing of expectations (Morris, 2014; Jacklin, 2014). But how do the teachers' expectations play out in the classroom?

In the classroom, there are two levels at which teacher expectations come into play. The first level is that of the teacher's expectation of the class as a whole. Should the teacher have low expectations of the class, the style of teaching and cognitive demand of the work taught may differ from a teacher with high expectations of the class. The second level at which teacher expectations comes into play is the level of the individual learners within a class. In this respect, one would look at what expectations a teacher might have of the individual learners and how the teaching is adjusted accordingly per learner. Although the following section is written at the level of teacher expectations of individual learners within a class, it can also be read with the whole class in mind. What is important to note at the outset of this section, however, is that much of the literature in this part of the review dates back to between the 1960's and 1990's and

most contributions were from the United States of America[5]. I will discuss this chronology further, below.

In 1968, sociologist researchers Rosenthal and Jacobson published a study called 'Pygmalion in the Classroom' hypothesizing that teacher expectations of learner achievement had a visible impact on learner achievement. Through their study, Rosenthal and Jacobson claimed that when the teachers expected learners to be capable of achieving academic success and acquiring powerful knowledge, the learners did. When the teachers expected learners to be unable to grasp powerful knowledge or at least be less successful than their peers, the learners were. In other words, the learners lived up to their teacher's expectations of them. This phenomenon is now widely accepted as the *Pygmalion Effect* (Rosenthal, R. Jacobson, L., 1968), and although the study was contested by some academics at the time (Cotton, 1989), it became a springboard for much research into teacher expectations and the effect on learner achievement (Brophy, 1986; Cotton, 1989; Gottfredson, D *et al*, 1995; Kerman, 1979; Cooper, 1979; Rist, 1970; Rubie-Davies, C. Hattie, J. & Hamilton, R., 2006 amongst others). This research addresses several key features that appear to be largely affected by teacher expectation: the types of learning offered to learners, the level of cognitive demand that is selected for the learners, the amount of time spent on ensuring the acquisition of a concept, the social interaction between learners and peers as well as learners and the teacher, and the type of feedback given to learners after answering questions. The next section will explore what the literature has to say about each of these key features.

The literature suggests that low-expectation learners are provided different opportunities and ways of learning new material than are high-expectation learners (Cooper, 1979; Cotton, 1989; Rist, 1970; Rubie-Davies, C. Hattie, J. & Hamilton, R., 2006). Further, the level of cognitive demand at which content matter is taught differs according to the teacher's expectation of

[5] Although there may be several contributing factors to this, one factor is possibly due to the fact that between the 1960's and 1990's there was a large drive in the United States of America to attempt to find ways to improve teaching and learning as the country began to recreate itself and restore equality in education after the Civil Rights Movement. One facet of education that appeared to receive much attention during this time was the effect teacher expectations had on learning and learner achievement. After the 1990's, it seemed as though there was far less emphasis placed on expectation and far more placed on other factors – such as curriculum, resources, and teacher knowledge. As a result; much of the literature referred to in the section on teacher expectation was drawn from sources published in the United States of America between the 1960's and 1990's.

learners. According to Cooper (1979) and Rubie-Davies *et al* (2006), low-expectation learners are given less cognitively demanding work than their high-expectation peers; whilst Cotton (1989) suggests that high-expectation learners are asked more stimulating, higher cognitive questions. This suggests that teachers select different levels of cognitive demand for low expectation and high expectation learners and at times select different material for them to study.

Teacher expectation also influences the time spent on teaching learners. Rubie-Davies *et* al (2006) suggest that teachers tend to slow down their teaching for low expectation learners, repeating the basic structures and facts of concepts rather than building the concepts. Teachers tended to make less use of effective but time consuming teaching methods with low-expectation learners than high-expectation learners, focussing rather on providing learners with the 'rule to follow' or basic underlying concept than allowing them to discover the rule for themselves (see Cotton, 1989 for example). In addition to this, high-expectation learners are often found to receive the majority of the teaching time, while low-expectation learners are often ignored or left to their own devices (Rist, 1970). Cooper too, reports that teachers tend to spend more time engaged in academic interaction with high-expectation learners than low-expectation learners (Cooper, 1979). Calling on learners to answer questions, express ideas or give opinions constitutes one useful technique of involving them in lessons; yet it has been found that high-expectation learners are given response opportunities three to four times more frequently than low-expectation learners (Kerman, 1979). High-expectation learners are also, for instance, given more clues, allowed a longer period of time to answer questions and given more prompts when answering directed questions. Cotton (1989) echoes this, suggesting that low-expectation learners are given less time to answer questions before the question is redirected to another peer. What this shows is that more time is spent on providing low-expectation learners with the basic skills and knowledge that is necessary for success but that they are not expected to be able to answer questions of a higher cognitive demand. The high-expectation learners benefit the most from extended thinking, questioning and answering of questions – affording them greater opportunity for success and widening the gap between the two groups.

The social interactions and spacing of the classroom are also affected by teacher expectation in several ways. In the use of the classroom's physical space, high-expectation learners tend to be

seated in closer proximity to the teacher and each other (Cotton, 1989; Rist, 1970). This allows high-expectation learners greater ease of access to both the teacher and other learners who may be able to offer greater assistance in their learning; whilst low-expectation learners are grouped together, generally further away from the teacher; affording little opportunity for peer support and less attention from the teacher (Gottfredson, D. Marciniak, E. Birdseye, A. & Gottfredson, G., 1995).

The second difference in terms of social interaction is the learning environment into which the learners are placed: low-expectation learners are given a far more structured environment where behaviour is carefully controlled and learners are given minimum independence and little opportunity to interact with their peers. High-expectation learners, however, are afforded greater independence in both learning and choice of work and greater opportunities to work cooperatively with peers (Rist, 1970; Gottfredson, D. Marciniak, E. Birdseye, A. & Gottfredson, G., 1995; Rubie-Davies, C. Hattie, J. & Hamilton, R., 2006). A further difference in terms of social interactions is the interaction between teacher and learner. According to Gottfredson *et al* (1995) and Cotton (1989), teachers make less eye-contact, give fewer smiles and less positive head nodding in response to learner responses, and interrupt more frequently when dealing with low-expectation learners than with high-expectation learners. Teachers also tend to interact with low-expectation learners on a more private and individual basis rather than publically as they do with the high-expectation learners (Cotton, 1989; Gottfredson, D. Marciniak, E. Birdseye, A. & Gottfredson, G., 1995).

Cotton (1989) and Cooper (1979) discuss the way in which the teacher shows the learners what is expected of them conceptually as well as behaviourally through feedback (s)he provides. When the teacher asks a question for open discussion in class, the response given to low-expectation learners will tend to differ from the responses given to high-expectation learners. When a high-expectation learner is unable to find the answer in the desired time the teacher may give clues or rephrase the question in such a way as to aid the learner in finding the correct answer. Should the learner still be unable to answer the question the teacher may answer the question with an explanation or move on to ask another learner the question. Should the high-expectation learner proffer the correct answer, they tend to be rewarded with a smile and nod

and the teacher reinforces the answer by some form of repetition. However, when a low-expectation learner is unable to answer the question in the desired time, the teacher will tend to either give them the answer, or move on straight away to another learner. The teacher will be unlikely to give clues or rephrase the question to the low-expectation learner or give public feedback to the answer (Cotton, 1989; Cooper, 1979). In addition to this, Cotton suggests that teachers are likely to provide briefer and less informative feedback to the questions posed by low-expectation learners than to those posed by high-expectation learners – this can be verbal feedback or feedback provided through the marking of books (Cotton, 1989). In this way, high expectation learners are provided with the feedback necessary to develop their thought processes and conceptual understandings, and it is implied by the teacher that the learner is capable of developing their conceptual understanding. On the other hand, by providing the low expectation with the answer and not pushing them to find it on their own, the teacher is implicitly communicating to low-expectation learners that they are not capable of developing conceptual understanding and complex thought (Bernstein, 1990; Muller, J. Davies, B. & Morais, A., 2004; Rose, 2004; Hoadley, 2008).

These studies suggest that teachers' expectations affect the ways in which they teach: their pedagogy. What struck me while reading this literature was the similarity between what the writers were discussing in terms of behaviours and pedagogy affected by expectation, and what Bernsteinian theory said about the same matter. Bernsteinian theory proposes that teachers' pedagogies significantly impact their learners' ability to acquire powerful knowledge. Bernstein's theory describes teaching in terms of the concept of framing: the degree of control the teacher exercises over selection, sequencing, pacing, hierarchical rules and evaluative criteria. All the ways in which teacher expectations of learners influence their pedagogy discussed in this chapter so far can be redescribed in relation to this notion of framing: the types of learning offered and the level of cognitive demand that is selected for the learners can be read in terms of Bernstein's notion of selection and sequencing; the amount of time spent on ensuring the acquisition of a concept can be read in terms of the notion of pacing; the social interaction between learners and peers as well as learners and teacher alludes to the hierarchical structure of the class, and the type of feedback given to learners after answering questions echoes Bernstein's notion of evaluative criteria.

The issue of the effects of teacher expectations came up more frequently between the 1960's and 1990's than in more recent literature. However, the redescription of this issue in Bernsteinian terms emerges in more recent literature, including Bernstein (1990); Muller, J. Davies, B. & Morais, A., (2004); Rose (2004); Hoadley (2008) as mentioned above. Bernsteinian descriptions relate expectations to a broader, more coherently theorised description of pedagogy, and to the teachers' (albeit implicit) theories of teaching and learning – i.e. the teachers' regulative discourse. Redescribing earlier insights in terms of Bernstein's notions of framing and regulative discourse also enables me to take into consideration theoretical insights emerging from this earlier work. In light of this, I chose to redescribe insights emerging from the earlier literature regarding expectations within a Bernsteinian approach.

2.3 Bernsteinian theory of pedagogy

In the following section, insights drawn from the literature on teacher expectations are redescribed in terms of Bernstein's concept of framing. In light of the fact that the schools in this study are both in low SES contexts, I also comment on the implications of framing for such learners.

According to Bernstein, pedagogy comprises two forms of discourse: the instructional (what content is taught) and the regulative (the rules that govern how the content is taught not only in terms of how the teacher presents the information but also the rules that govern how the learners behave, interact with and respond to each other, the teacher and the information). These rules are derived from the teachers' (sometimes implicit) theories of teaching and learning. The regulative discourse is always dominant over the instructional discourse as the material that is selected, the organisation of the material and the way in which it is taught are all shaped by the idea (be it the teachers' or the curriculum writer's idea) of who the learners are and what they are capable of (Jacklin, 2014; Bernstein, 1996). I propose that in fact, teacher expectations can be redefined in a more sophisticated, elaborated way as part of the regulative discourse[6].

[6] This could be why there is little work about teacher expectations in later years, as scholars are now framing teacher expectations in terms of the regulative discourse.

When exploring the literature pertaining to teacher expectations, we found that opportunities to learn new material and the level of cognitive demand differed between high and low expectation learners. Looking through a Bernsteinian lens, however, we would say that the selection differs between high and low expectation learners. Selection refers to the subject content that is chosen by the teacher to present to learners as powerful knowledge and can be viewed both on the macro and micro scale. Macro-selection refers to the large-scale selection of what content is covered in a curriculum. This is generally prescribed in the curriculum. In other words, the teachers' pedagogy is externally framed by the curriculum. Where the external framing of the curriculum is strong, the teacher does not have much scope for deviation. Where the external framing of the curriculum is weak, teachers have more control in determining what content to teach and how to teach it (Morris, 2014).

Selection on the micro-scale refers to the level at which the selected material is taught and elaborated upon – it is here that teachers have the most control over framing (Morais, 2002). A strong framing of selection would entail the teacher holding strong control over what knowledge is taught when and the level at which it is taught, with little deviation from this. Weak framing, however, is seen when the teacher allows learner interests and questions to interrupt and possibly deviate from the planned selection for a time – either to provide further elaboration and clarification on the topic, or to diverge briefly into content similar in nature in order to extend learners' knowledge.

Bernstein (1990) suggests that often teachers of low SES learners hold a strong framing of selection – not allowing the learner to question too much or deviate from the material selected by the teacher. Often such teachers reduce the quantity or quality of content to be acquired in order to give these learners greater chance to succeed. However, Morais, Neves and Pires suggest that this is not actually necessary as "there is no need to lower the level of conceptual demand in order for all children to succeed at school" (Morais, A. Neves, I. & Pires, D, 2004: 86). Rather, the level of conceptual demand should be raised, as it is a crucial step in providing all learners with the opportunity to acquire powerful knowledge.

Sequencing is the order in which content is taught. Strong framing of sequencing would see the teacher having firm control over the order in which the content is taught and the structure of the

lessons, not allowing much deviation. Weaker framing of sequencing would see the teacher allowing more fluidity in the content, allowing learners' interests and questions to guide the way in which the lesson flows (Bernstein, 1990).

Framing of pacing, or the amount of time spent on conveying concepts and knowledge, can also be strong or weak. According to the literature on teacher expectations, pacing might vary in strength depending on whether the teacher has high or low expectations of learners (Cooper, 1979; Cotton, 1989; Morais, 2002; Rist, 1970; Rubie-Davies, C. Hattie, J. & Hamilton, R., 2006). While the strength of framing can vary from lesson to lesson, it can also vary from learner to learner. Strong framing of pacing would see the teacher holding very tightly to the planned timing of various activities, allowing little deviation from the schedule – be it timetable schedule or the schedule of, or within, the individual lesson. Weaker framing of pacing is seen when the teacher allows the planned timing or pacing to deviate in the lesson(s) depending on the learners' needs at the time (Bernstein, 1990; Morais, 2002).

Morais (2002) argues that successful learning depends on a weak framing of pacing, where the pacing should be slowed or sped up at the pace of the learner. Weakened pacing, according to Morais (2002), doesn't necessarily equate to increasing the time learners spend at school, but can occur by increasing intra-disciplinary discourse resulting in learners having more exposure to concepts over less time. Morais, Neves and Pires (2004) suggest that pacing should be set by teachers to the learners' aptitude, but as Fleisch (2008) suggests, should not be slowed down to the pace of the slowest student and keeping every learner at that pace. While this can slow the transmission of concepts and requires constant evaluation of acquisition by the teachers (emphasizing the importance of weakened teacher-learner boundaries) the pace is able to fluctuate according to the needs of each learner and effective learning can take place (Morais, Neves, Pires, 2004).

Framing of social relations comprises two facets: how the interpersonal relationships are structured and with whom the control in these relationships lies; and the physical space of the classroom – how it is organised. In this way, the hierarchy of the classroom establishes the conditions for order, character and manner in which all participants share (Bernstein, 1990). In terms of the interpersonal relationships between members of the class, where the framing is

weakened and the teacher weakens the degree of control, the learners are given more freedom of speech and participation in lessons and also guide class discussions and topics (to an extent). Learners are allowed to interact with each other during lessons and the teacher interacts with the learners in a more 'informal' manner (Morais, 2002). A strong degree of framing would see the teacher holding greater control over who speaks and when – the teacher dictates the interpersonal interactions of the classroom. In this way, the control would lie with the teacher, not the learners. Similarly, when the framing over the physical space of the classroom is weakened, the teacher allows the learners more freedom of movement and association with peers during lessons. Conversely, strong framing over the physical space of the classroom leads to learners experiencing little freedom of movement and association with peers during lessons (Bernstein, 1990).

According to Morais (2002) social relations should be weakly framed, with free and easy interaction between teacher and learners and between the learners themselves. In this way, a context where learners can question, discuss and share ideas with the teacher and other learners is created, providing opportunities to internalize concepts collaboratively (Morais, 2002). In addition, Lubienski suggests that when learners feel safe to contribute to class discussions by means of offering opinions, asking questions and answering questions, they will learn at a higher rate than when they passively receive information (Lubienski, 2004). Morais goes further to suggest that a relaxed social environment will lead to a greater evaluative ability on the part of the teacher, allowing greater opportunities for explicating the evaluative criteria (Morais, 2002).

The final feature of framing that appears in teacher expectation literature is that of the evaluative criteria: or feedback given to learners regarding what behaviour and responses are appropriate. The framing of evaluative criteria can also be weak or strong. Weak framing of evaluative criteria can be seen where the rules are not clear to learners and they are not explicitly made aware of what constitutes valid communication, position or knowledge (Bernstein, 1990; Lubienski, 2004; Morais, 2002).

Where the framing of evaluative criteria is strong, the evaluative criteria are made explicit and learners are made aware of what constitutes valid communication, position, or knowledge. In

other words, for learners to have opportunity to acquire powerful knowledge, the teacher needs to state explicitly what content or concepts are going to be evaluated and how a correct response might look. For optimal strength of evaluative criteria, there needs to be weak framing of pacing and hierarchical rules. The more interplay that exists between teacher-learner and learner-learner the more opportunities there will be for making the evaluative criteria more explicit (Morais, 2002) and learners will have greater chance to succeed.

The review of the literature relating to teachers' expectations, redescribed in Bernsteinian terms, suggests that the regulative discourse that teachers hold does in fact affect and inform pedagogical choices, and is likely to affect learners' opportunities to acquire powerful, scientific knowledge.

2.4 Development of a conceptual and analytic framework

The study requires that I describe the pedagogic practices of the teacher as a basis for identifying relations between these practices and teachers' regulative discourse. To this end, I describe their pedagogic practices in terms of the five facets of Bernstein's notion of framing, i.e. selection, sequencing, pacing, social hierarchy and the explication of evaluative criteria. This framework will guide the study towards generating an account of how pedagogic decisions are influenced by teachers' regulative discourse.

On the pages that follow, we see two diagrams. Figure 1 shows the first level of analysis – identifying the facets of framing as determined through Bernsteinian theory and how they relate to pedagogy (and implicitly, to learner achievement). Figure 2 expresses the conceptual framework for the study. When we read Figure 2, we see the Bernsteinian concepts of framing (selection, sequencing, pacing, social hierarchy and the framing of the evaluative criteria) linked to features identified in earlier teacher expectation literature[7]; and read how these all relate to pedagogy and learner achievement.

[7] Please note that the subcategories stemming from the teacher expectation literature are not exhaustive but were selected due to their congruence with Bernsteinian theory.

As teacher expectation can differ from expectations of the class as a whole and from learner to learner, these diagrams must be read on two levels: the class as a whole and the individuals within the class. When the diagrams are read as the teacher's expectation of the class as the whole, we look at how this expectation is informed by and informs the overarching pedagogical approaches the teacher makes with respect to the entire class (For example, the teacher might say, "This is the bright class" or "This is the slow class", indicating their level of expectation for the class in question).

When the diagrams are read on the individual level, we look at the teacher's expectation for the individual learners in the class and how this is informed by and informs the pedagogical approaches the teacher makes to the individual learners. For illustrative purposes, although a teacher may have high expectations of the class as a whole and thus utilise one set of pedagogical approaches, she may have low expectations of one or two learners in her class, and utilise an approach for those learners that differs from the rest.

Figure 1

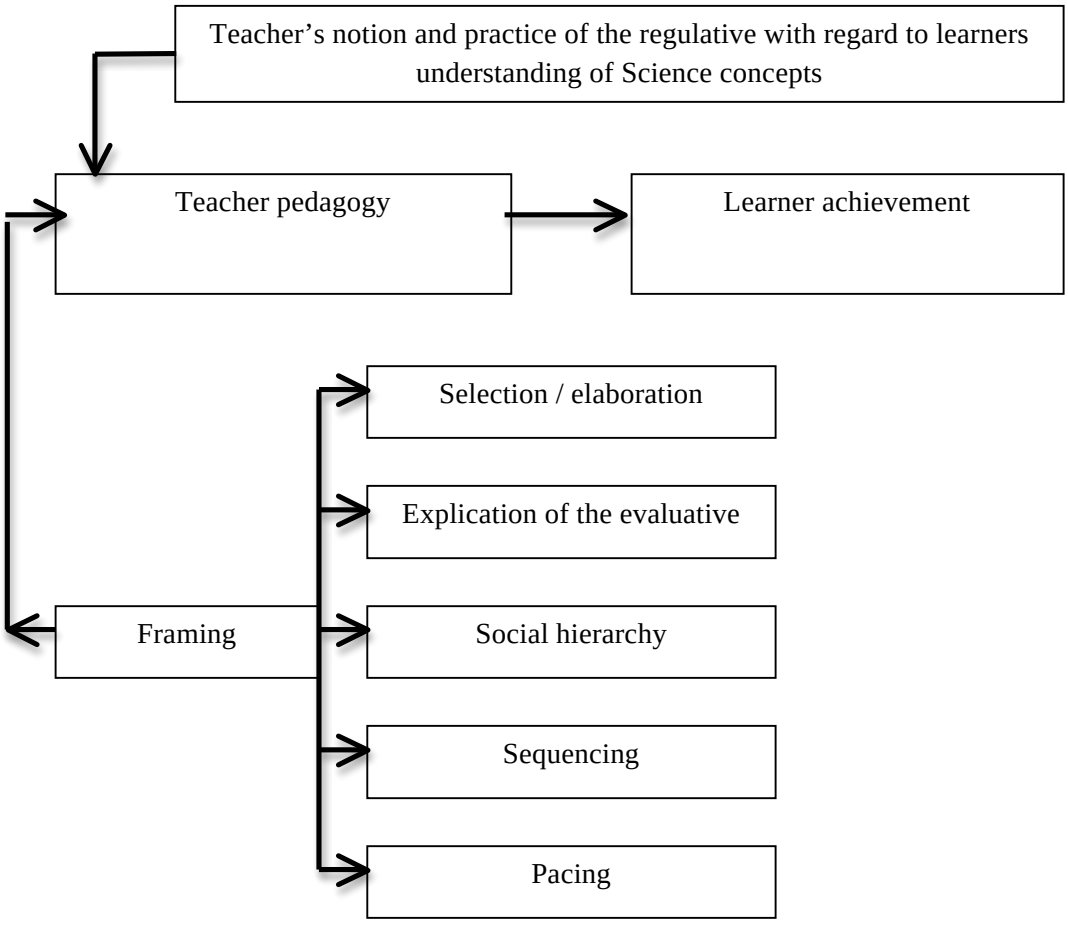
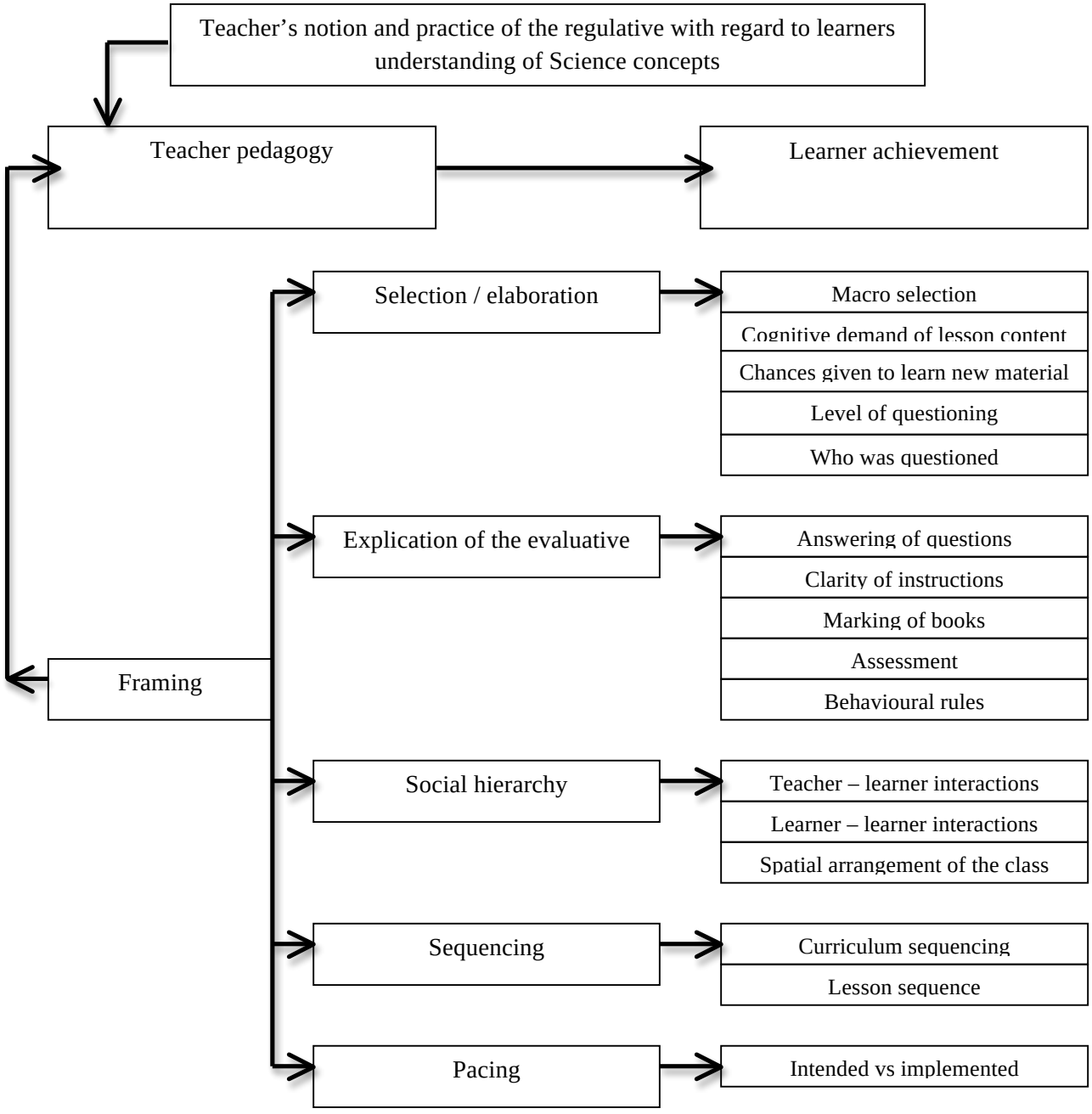

Teacher's notion and practice of the regulative with regard to learners understanding of Science concepts
Teacher pedagogy
Learner achievement
Selection / elaboration
Explication of the evaluative
Framing
Social hierarchy
Sequencing
Pacing

Figure 2


Teacher's notion and practice of the regulative with regard to learners understanding of Science concepts
Teacher pedagogy
Learner achievement
Selection / elaboration
Macro selection
Cognitive demand of lesson content
Chances given to learn new material
Level of questioning
Who was questioned
Explication of the evaluative
Answering of questions
Clarity of instructions
Marking of books
Assessment
Behavioural rules
Framing
Social hierarchy
Teacher – learner interactions
Learner – learner interactions
Spatial arrangement of the class
Sequencing
Curriculum sequencing
Lesson sequence
Pacing
Intended vs implemented

CHAPTER THREE: DESIGN

In order to explore the questions of whether and how teachers' regulative discourse informs their pedagogy I visited, observed and interviewed teachers from two schools, produced multiple data texts, and drew conclusions from the analysis of this data. Although this study is empirical in its nature, it does not aim to make an empirically generalizable claim. Instead, it aims to make a theoretical contribution by describing how teachers' expectations and pedagogy are related in a small number of cases. This chapter is a description of the research design, including the approach to analysis of the data collected for this study.

3.1 Research design

In order to gather the data to answer the question of teacher pedagogy being informed by regulative discourse, I elected to study two Grade 6 teachers teaching Natural Science in different low SES schools, making use of a qualitative study that used multiple data sources. The data sources consisted of the following: lesson observations where features of framing were looked for and recorded; samples of learner books, seating plan, teachers' mark book and lesson plans for later analysis; and transcriptions of interviews with the teachers. What follows is an explanation of how the schools were selected and how the data was produced for this study.

School selection

I needed to identify two low SES schools in the same area and quintile with varying learner results so that I could examine the influence that regulative discourse had on pedagogy and learner achievement. I approached the Western Cape Education Department to help me in locating these schools. The criteria for selection were that they must be English medium primary schools, within the same suburb (preferably), with similar learner demographics (low SES) and similar access to resources but with differing results in the last Grade 6 Annual National Assessments. The rationale behind criteria was as follows: my question is whether teachers' regulative discourse informs pedagogical choices and learner achievement. There are, however, several factors that affect learners' chances of learning and a teacher's pedagogy. I wished to rule out these other factors as far as possible in this study by selecting two schools that have a very similar makeup (socio-economic status of school and learners, access to

resources and language of teaching and learning). In this way, the comparison relied more on teachers' regulative discourse and learner achievement and less on other social and economic factors. The other criterion for selection was the necessity for the schools to have different ANA results. The rationale behind this was that if the schools are of similar demographic make-up but achieve different results in the ANA's, there is likely to be a difference in the teaching between the schools.

Once the WCED allowed me access to their data of ANA results per quintile I identified a list of schools that fit my criteria. Upon contacting the schools to enquire if they would be willing to participate in the study, I found two that fit my criteria that were willing – I call these schools Alexander Primary and Benjamin Primary. Both schools are Quintile 4 English medium schools that draw learners from similar low SES neighbourhoods (the schools are less than two kilometres apart). Although it appeared through upkeep of uniform and general presentation of learners that Alexander Primary had some learners who were a little more affluent than those of Benjamin Primary there was not a significant variance in the number of fee paying learners or in the school fees of the school, and I concluded that the schools drew learners of a similar enough background to enable comparison. In terms of academic variance, in the 2012 ANA's, Alexander Primary outscored Benjamin Primary by 32.9 percent in the percentage of learners that passed Language, and by 37.6 percent in the percentage of learners that passed Mathematics. I concluded that these variances in learner academic achievement would be sufficient to justify comparison between the ways in which the teachers teach.

Once I had obtained permission to proceed from the WCED and both principals, I met with the teachers I would be studying to request their participation, to find suitable times for interviews and observations and to explain my intentions to all parties concerned.

Observations

Data derived from interviews would provide an account of what the teachers said regarding their regulative discourse and pedagogy. However, I also needed to observe instances of their pedagogic practices and examine learners' workbooks. In this way I would be able to compare and relate what they said about their regulative discourse and pedagogies to what happened in the observed lessons.

Two consecutive observations were scheduled with each teacher. Each observation would last for the duration of the lesson. Once I had received permission from the learners, their parents and the teachers, to observe and audio record the lessons, I proceeded with the observations. At the start of each lesson, I began audio recording and left the tablet computer (on which the lesson was being recorded) running for the duration of the lesson. This audio was later transcribed in order to provide data for analysis. While the lessons proceeded I looked for and noted on paper instances where aspects of classification, framing and teacher expectations were evident. In particular, I looked at:

- The selection of material covered in the lessons.

  In looking at this, I looked for instances where material differed from learner to learner, even if subtly; and if there was any difference in level of difficulty in the work given to learners. I also looked here for any differences in what the teachers considered acceptable work between learners.

- The progression (sequencing) of the lessons.

  In this I explored how the teacher introduced the lesson, proceeded to the main segment of the lesson and then concluded it. I looked for any instances where the sequencing of the lesson differed from the lesson plan the teacher had given me, and where the sequencing of the lesson differed from learner to learner.

- The pacing of the lessons, or how each lesson was structured in terms of time.

  I looked for evidence of time allocation for sections or concepts differing from the lesson plan in front of me, as well as instances where learners were given extra or less time to complete a task than the teacher had said (s)he would give to the class.

- The social hierarchy.

  Observing this feature involved looking at several features of practice during each lesson observation. First, I determined if there was a difference in the seating arrangement to what the teacher had given me on the class's seating plan, and noted down how the physical classroom space was organised (how the desks were arranged, where the teacher's desk

was, if there was a communal space, etc.). Next I looked to see how many times the teacher asked each learner to respond to questions and tallied these interactions on the seating plan so that I could later determine with which learners the teacher mainly interacted. I also noted what type of response was given to each learner as they answered the questions. I noted where in the classroom the teachers positioned themselves predominantly and with whom the predominant interactions took place. Looking for this enabled me to determine whether the teacher appeared to favour spending time with high or low expectation learners[8]. A further behaviour I looked for and noted each instance it was displayed was whether the teacher allowed learners to collaborate with each other and communicate with each other during lessons. Finally, I characterised the relationship the teacher appeared to have with the class as a whole based on the type of interactions (s)he had with the class – for instance, did the teacher joke with the class or was the teacher serious and distant throughout the lesson? Did the learners appear to freely interact with the teacher or were they unresponsive? Who appeared to have control in terms of relationships and behaviour – teacher or class?

- <u>The evaluative criteria; or how the teacher made what constituted acceptable behaviour and work clear to the learners</u>.

  During the observations, I noted what type of response the teacher gave each learner when they answered questions – for instance, did the response clarify the answer or enhance the answer? I noted instances where the teacher gave instructions to the learners and determined by the learners' reaction whether the instructions were clear and explicit, or if they were a little more implicit. I also observed how the work was marked during or after each lesson. In terms of what constituted acceptable behaviour, I looked to see if there was a list of the class rules displayed in each lesson. In addition, I noted instances where the teacher reprimanded learners for breaking a class rule or praised them for following a rule. Out of interest I noted which learners were reprimanded most often during the lessons.

[8] Learners were determined as high expectation learners or low expectation learners based on both their academic marks as well as what the teachers said about the various learners. Both teachers identified several learners during the interviews as the 'clever learners' or the learners that were 'passionate about Science' – these learners were deemed as the high expectation learners. The inverse was true for the low expectation learners.

- General classroom atmosphere and appearance. This included what the classroom looked, sounded and felt like to me as an observer. Although this does not form part of the features of framing that I explored in this study, I believe that observing this was of some interest as it would give an overall impression of the class, the teacher and, to an extent, the school that would contextualise the analysis. In this regard, I looked to see if there were displays on the walls (posters, learners' work, for instance), what state of repair the windows, doors and desks were in, and how tidy the classroom was. In addition I noted whether the learners wore their school attire neatly and uniformly or if they were untidily dressed. Prior to walking into the classrooms, I stood outside (out of sight) and listened to the level of noise within the classrooms. I also made a note of the general class volume while the teacher was talking, while the learners were working and in 'dead time' (where the teacher was dealing with an interruption, or waiting for the bell to ring after the lesson, etc.).

Interviews

As I required information as to how the teachers view their learners and what their expectations of the learners' abilities are, I determined that I would need to interview each teacher extensively. I did this at a time of their choosing after completing the lesson observations so that I could include questions that arose from watching the lesson. The interviews lasted approximately one and a half hours each and were audio recorded on a tablet computer and later transcribed. Each interview consisted of 50 set questions with another five questions added during the interview. The interview schedule consisted of questions covering the following topics: general background of the teacher and school; teacher expectation of the class as a whole; teacher expectation of individual learners' abilities to acquire Science concepts and knowledge; teacher expectation of individual learners' futures; selection of material; sequencing of material and lessons; pacing of lessons; social hierarchy of the class (including the teacher); evaluative criteria; view on using Science specific terminology in lessons; and using the everyday to clarify the scientific concepts and knowledge. The motive for covering all of these topics and not merely the topic of expectation, or regulative discourse, was to determine what the teacher believes his or her pedagogy to be, in addition to determining what expectations the

teacher has of his or her learners. Below is a sample of questions pertaining to teachers' regulative discourse[9]:

9. In your opinion, what is the point of teaching Science to primary school learners? 10. Do you think your learners are capable of understanding a complex Science process such as photosynthesis? 14. Do you believe your learners will use Science further in life beyond school? Please elaborate.

Texts

As part of my data set I collected various texts for analysis. To follow is an account of which texts I collected and the rationale behind each.

Seating plan: each teacher gave the seating plan of the class to me prior to the first lesson observation. The rationale behind collecting the seating plan was twofold. Practically, the seating plan allowed me to see who was who in the classes as I needed their names for recording purposes but had never met the learners before. From an analysis point of view, the seating arrangements allowed me to determine where the high achieving learners and low achieving learners sit and their proximity to the teacher and their peers.

Lesson plan: the lesson plan for the lessons to be observed was given to me prior to the lesson so that I would be able to determine whether the sequencing and pacing of the lesson differed from what was planned. It also allowed me to compare the lesson content to the curriculum. What I found when exploring the lesson plans was that one teacher had photocopied the relevant pages from the curriculum for me and that, while the other teacher had created a lesson plan in her own format, it came directly from the curriculum.

Lesson resources: the resources (notes) that the learners would be given during the lesson were also given to me so that I could determine whether the content of the resources matched the lesson plan. The resources would also help me determine the level of cognitive demand expected of the learners.

[9] For a full list of interview questions, please refer to Appendix B.

Mark sheet: each teacher provided me with a class list containing Term Three Science marks per learner. This enabled me to work out an average class mark, but also to determine which learners were high achieving and which were low achieving, aiding me in the analysis of how the teacher interacted with these learners. For the most part I assumed during the observations that the high achieving learners would be the high expectation learners and vice versa. During the interview I confirmed with the teacher whether my assumptions were correct or not and amended notes accordingly.

Sample of learners' books: each teacher provided me with a random sample (of my choosing) of learner workbooks. I then selected pages at random from each book and photographed the pages for later analysis. The rationale for this was to determine how the teacher marks the workbooks as part of describing the evaluative criteria.

3.2 Data analysis

Once all the data had been collected, transcribed and collated, I began with the analysis. As there were several data sets from which to draw multiple strands of information, I determined that the most practical method would be to create an analysis table. This table was comprised of five columns: the overarching feature which I would be examining; the specific feature that needed examining; from which data sets the information was extracted; the question I asked (of the data) and finally precisely what I was looking for in the data. A sample of this table follows below (for the full table, see Appendix A):

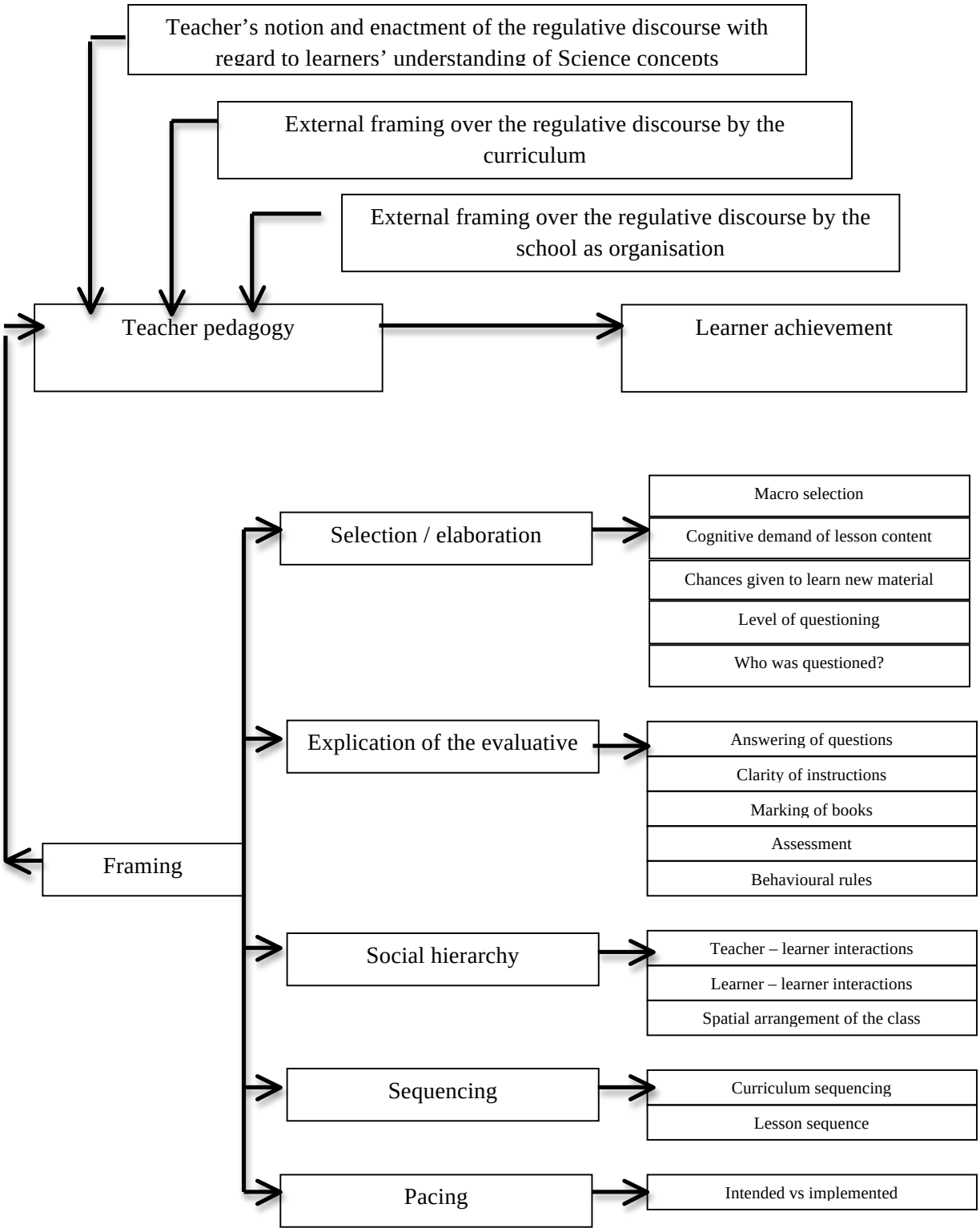
Overarching Feature From Theoretical Framework	**Specific Feature**	**Relevant data sets**	**Questions asked of the data (This includes actual interview questions as well as questions asked of the observation transcripts and the texts)**	**What is looked For**
Pedagogy: Selection—Macro Selection (Instructional Discourse)	Topic and material selected	•Interview Questions •Lesson Plans •CAPS documents	• **Interview questions:** How do you choose what Science material to teach? • **Lesson plans:** What content is detailed in the lesson plan? • **CAPS documents:** What does the CAPS document stipulate should be taught?	- What did the teachers say about how they chose what material to teach? - What content is covered in the lesson plan? - What content is covered in the CAPS document? - How does the lesson plan differ from the CAPS document?

Then I combed the various data sets in order to extract the necessary data that would enable me to answer the questions posed in the final column of the analysis table. The results were then recorded as per individual strand of framing: selection, sequencing, pacing, social hierarchy and evaluative criteria. Two very clear issues arose while working with the data: the first was that the regulative discourse could not be isolated from the various strands of framing but rather needed to be looked at within each strand. Secondly, it became clear that there were three themes that kept recurring through the data: uniformity within teaching the classes (lack of individual attention); the effects of the curriculum on pedagogical decisions and actions; and the role of the social order of the school as an organisation. I decided to then use my initial analysis to inform discussions about how the various strands of framing were at play within each of these themes. In order to do this, I created a second, basic table that would enable me to pull out relevant aspects of framing within the different themes. In this table, we see which aspects of framing were pertinent to each subheading:

Aspect of Framing	**Uniformity in teaching of learners**	**Effects of curriculum on pedagogical choices**	**Role of the social order of the school as an organisation**
Selection	✓	✓	
Sequencing	✓	✓	
Pacing	✓	✓	
Social Hierarchy	✓		✓
Evaluative Criteria	✓		✓

As a consequence of my recognition of the effects of the curriculum and school culture on pedagogy, I revised my initial conceptual framework to include these two factors. My final analytic framework is represented in Figure 3 on the next page.

Figure 3


Teacher's notion and enactment of the regulative discourse with regard to learners' understanding of Science concepts
External framing over the regulative discourse by the curriculum
External framing over the regulative discourse by the school as organisation
Teacher pedagogy
Learner achievement
Framing
Selection / elaboration
Macro selection
Cognitive demand of lesson content
Chances given to learn new material
Level of questioning
Who was questioned?
Explication of the evaluative
Answering of questions
Clarity of instructions
Marking of books
Assessment
Behavioural rules
Social hierarchy
Teacher – learner interactions
Learner – learner interactions
Spatial arrangement of the class
Sequencing
Curriculum sequencing
Lesson sequence
Pacing
Intended vs implemented

Using a combination of this table and my previous analysis I was able to analyse each of these headings according to the various aspects of framing as mentioned above. The findings of this secondary analysis are discussed in Chapter 4.

3.3 Ethical considerations

As this study required me to observe teachers and learners there were several ethical considerations that needed to be taken into account. Initially, once schools had been identified and selected, I obtained permission from the WCED to conduct research in the schools. Then I obtained written permission from the principals allowing me to conduct research in their schools. After explaining to both the learners and the teachers what I was doing in their school, I gave each learner two permission slips – one for their parents and one for themselves. These permission slips granted me permission to observe and audio-record the lessons and gave me access to the learners' results for Term 3 and their workbooks. The identities of the schools, teachers and learners in this study are held confidentially, with pseudonyms given where necessary. The raw data containing the identities of all parties involved in the study is stored on a password-protected flash-drive, and any hard copies of data were locked away when not being worked on.

3.4 Validity of the study

To ensure the validity of this study, I ensured that the interviews and observations were recorded as accurately as possible through the use of audio recordings. These recordings were later transcribed and the transcriptions checked against the recordings for consistency. When it came to reporting what had been observed and had been said in interviews, I reported as clearly and honestly as possible, choosing not to make inferences or evaluative judgements based on what had been seen and heard, but rather to report what had been seen or heard.

3.5 Limitations of the study

There were several limitations to this study, each of which impacted upon the findings to varying degrees.

Teachers per school

The first limitation was the fact that I only studied one teacher per school. In hindsight, it could have been more interesting to study all the teachers that teach Natural Science to Grade 6s at each school so as to get a firm grasp of what was taking place in each school. What I found by only studying one teacher per school was that what I was seeing in the lessons was not necessarily a reflection of what was taking place throughout the school. In Benjamin Primary particularly, I found that the teacher I studied bucked the trend of the school and taught differently from the rest of the staff – it would have been interesting to study the rest of the staff to get an overview of the school.

Assessment of learner achievement

A further limitation to be highlighted here is what I experienced with regards to identifying how the expectations and pedagogy affected learners' achievement in Science. Once I had gathered and transcribed my data and set about analysing it, I realised that although the ANA results were a good way in which to identify which schools to study, they didn't provide sufficient information about Science achievement. Both schools admitted that they focus on Mathematics and English for the main term prior to the ANA tests so that their learners obtain good results. As a result, the ANA results were not indicative of general teaching, pedagogy and learner ability, but rather of the time spent preparing for the assessments. Should the study be repeated, I would advise that an assessment drawn up by the researcher be administered to the learners in order to view their actual level of acquisition of the concepts and knowledge taught in the observed lessons.

Content of lessons observed

Finally and perhaps most frustratingly, was the fact that although both schools were meant to be teaching the same content as per the curriculum, they were not. Alexander Primary was following the curriculum explicitly, while Benjamin Primary had inverted the curriculum and was teaching Term 1 and 2 content during Terms 3 and 4. Thus, when I observed the teachers, one was teaching the class about types of telescopes and the other was teaching their class about

mixtures and solutions. The result of this was that I was unable to directly compare the teachers' approaches and pedagogy in relation to the same topic.

These limitations directly impacted on the results of the study and on the conclusions drawn from the study, as they provided limited insights into how teacher expectations impacted and influenced pedagogy, and did not allow for a fully comprehensive comparison between the two teachers that were studied.

CHAPTER FOUR: PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Overview of the schools

Both of the schools in this study were situated within a two-kilometre radius in a low SES neighbourhood on the Cape Flats, but displayed very different characteristics. In this section I briefly unpack the differences and similarities of the schools to provide a context in which to read the findings of the study.

The first school that I visited was Alexander Primary. I was greeted at the gates by a security guard and asked to sign in. Following this I was escorted to the secretary's office where I was asked to wait in order to see the principal. At this point, the principal had not yet agreed to allow me to study his school as he wished to meet me first. I was struck by the calm of the school – it was early morning and there was a gentle murmur of children working in classes. There was orderliness and a sense of serenity. The school building itself, although run down, was neat and clean, with displays of learners' work on the passage walls. After a lengthy meeting with the principal, he agreed to allow me to conduct my study at his school. He appeared to be a very 'hands on' principal, eager to welcome anyone who could help his school and his learners. I met with the teacher I was to study and was shown around the school to get a general feel of the place. What struck me was that, although the learners were clearly low SES, they were dressed neatly and in accordance with the school's policy. They sat neatly in rows and worked relatively quietly and all of the teachers were in their classrooms and involved with their learners.

The second school I visited was Benjamin Primary, two kilometres up the road from Alexander Primary. Again I was met at the gates by security and asked to sign in, then escorted to the secretary's office to wait for a meeting with the principal. This principal had already agreed telephonically to allow me to study his school and did not seem particularly interested in what I would be doing with the data I collected. After a brief meeting he introduced me to the teacher I would be observing and asked me to liaise all further visits directly through her. I did not see the principal again as he was absent on any subsequent visits. The teacher took me on a tour around the school and I was struck by the contrast to Alexander Primary. In this school, there were several learners milling around the corridors, several classes were unattended by teachers, and the

noise level of the overall school was high. Although the learners were wearing school uniforms, there appeared to be no pride taken in the uniform – the majority of the learners had their shirts un-tucked, jackets unzipped, looking generally 'scruffy'. The overall impression that I left the school with was one of sadness, disillusionment and neglect.

These initial viewings of the school, along with their very different ANA results, led to my forming some preconceptions about how each teacher would approach teaching their learners. I speculated that the Teacher Adams, from Alexander Primary, would exhibit more of the 'optimal' pedagogic practices in lessons than Teacher Banks, from the poorly achieving Benjamin Primary. I deduced that it would be simple to see the differences in their pedagogies and that the regulative discourse would be largely what allowed the very different results. But, as the discussion of findings will show, this expectation turned out to be too simplistic.

4.2 Description and discussion of data: Themes

Throughout the initial analysis, three themes continuously arose: uniformity within teaching the classes (lack of individual attention); the constraints of the curriculum on pedagogical decisions and actions; and the constraints of the social order of the school as an organisation. In the section that follows, I examine how each of these themes can be traced in the pedagogy of each teacher.

4.2.1 Uniformity in teaching whole classes

What the consulted literature posits is that a teacher's regulative discourse will cause differentiation in the way that they frame their teaching. For example, theory suggests that a teacher will differentiate the pacing between high and low expectation learners: allowing low expectation learners more time to complete the same amount, or even less, work than high expectation learners. What I found, however, is that the two teachers that I studied displayed some, but little differentiation between high and low expectation learners. In the section that follows I examine the differentiation, or lack thereof, within the framing of the observed lessons.

Framing of selection

Selection is divided into two sub-sections: macro selection where we explore the selection of which material to teach, and micro selection where we explore the level at which the teachers choose to pitch their lessons and elaborate the content.

The curriculum is highly specified regarding content, both teachers showed no differentiation between high and low expectation individual learners within the classes in terms of macro selection, teaching the whole class the content specified by CAPS.

In terms of the micro selection, though, one would expect to see some difference in the levels the teachers chose to pitch the lessons for high or low expectation learners. One might expect to see the high expectation learners provided with either more work or more cognitively demanding work than low expectation learners. What I observed, however, was that the class was provided with the same level and quantity of work to complete with no differentiation. Where some of the questions in the activities may have been more cognitively demanding than others – designed to challenge learners, the learners in both classes worked in pairs and groups to locate the answers in various sources, leaving it impossible to determine who had answered these questions. Additionally, questions – both on the worksheets and asked by the teacher – required recall, with none of the questions calling for application or working knowledge of the content taught. When it came to eliciting oral responses, both classes tended to chorus answers in unison.

Where some differentiation could be seen in terms of selection was in the ways in which learners were addressed. At Alexander Primary, of the 28 learners present in the class, only 15 were asked individual questions or volunteered answers. Of these 15 learners, only one had scored below 60% in Term 3 for Natural Science. In this way, we see that it is predominantly high expectation learners who participated in answering questions. Similarly, at Benjamin Primary, only 18 of the 31 learners were asked directly to answer the 42 questions. Of the 42 questions, 21 were asked of three boys. These three boys are, by the teacher's admission, the learners who "really strongly, passionately involved in Science… they into it… but I think they will take it somewhere." (Teacher Banks, 17 October 2013). Although one of the three learners was not a top-achieving learner in other subjects, he did better in Natural Science than in any other subject.

Framing of sequencing

Again, on an individual level, one would expect to see some differentiation in the sequencing between high and low expectation learners. However I found no differentiation. On a whole class level, both teachers appeared to hold a fairly strong degree of control over the sequencing; however it was not possible to fully determine whether the intended and implemented sequencing were the same as there was little detail about the sequence on the lesson plans.

Framing of pacing

It is in the framing of the pacing that one would expect to see the most differentiation between high and low expectation learners. However, it was found in both classes that all of the learners were given the same amount of time to complete the same amount of work – irrespective of their ability. Once the time allocated per task was completed or once most of the learners had completed the activity, both teachers utilised peer marking immediately, going through and discussing the answers, irrespective of whether all learners had completed the task or not. Teacher Banks appeared to differentiate the pacing a little more than Teacher Adams, as was seen during the first observation and reported during the interview. In the first lesson observation with Teacher Banks the learners had to complete an assessment activity at the end of the lesson; however, when she saw that most learners had not completed the assessment by the end of the lesson, they were allowed to continue after break. In this regard, we see some relaxation of the framing of pacing by Teacher Banks in order to accommodate all learners – high expectation and low expectation alike. According to Teacher Banks, she also relaxed the control of the pacing by asking learners who fail assessments to stay in at break so that she could reteach the concepts that they had not understood (Teacher Banks, 17 October 2013). However, there was no opportunity for me to confirm this through observation. Teacher Adams, however, showed very strong control over the framing of pacing, with no deviations from the intended pacing and absolutely no differentiation in the pacing.

Framing of the social hierarchy

It is in the framing of the social hierarchy that the most differentiation between high and low expectation learners was evident in both classes. The social hierarchy follows the interactions between the teachers and their classes.

Teacher Adams indicated, in interviews, that he believes that all learners should be treated with respect in the classroom: "I respect them, they respect me. So if I ask them something, most of them would do what I say." (Teacher Adams, 18 October 2013). He believed that mutual co-operation and respect lead to an optimal learning environment. In his perception, he responded in much the same way, irrespective of who asked the question. If the question followed the topic and was relevant, the teacher would aim to answer the question thoroughly. What the teacher did admit to, however, is that although he aimed to include everybody, often more attention was paid to the actively engaged learners as "some of them are in a world of their own… so when you talk the more active ones give a response…" (Teacher Adams, 18 October 2013).

In this class, the actively engaged learners were the high expectation learners. The high expectation learners were interacted with far more than the low expectation learners. We see this specifically with the questions answered in class – only one low expectation learner was asked a direct question during the lesson itself. Later, however, a further two low expectation learners were asked to provide feedback on the answers they had written down while the class was marking the activity. Interestingly, while most of the interactions with the high expectation learners were academic in nature, most of the interactions with the low expectation learners were disciplinary in nature. There were also differences in seating arrangements: the low expectation learners were grouped together at the back of the classroom, far away from the teacher, while the high expectation learners were seated closer to the teacher. However, non-verbal communication, such as eye contact, head nodding, encouraging smiles, etc., appeared to be the same between high and low expectation learners. However, as the low expectation learners did not interact much in the lesson, it was difficult to determine fully whether the non-verbal communication was as equal between the two groups as it appeared.

When I analysed Teacher Banks's interview transcripts and lesson observations, a similar pattern emerged. Like Teacher Adams, Teacher Banks believed in mutual respect and care between the teacher and learners. Teacher Banks also believed that the majority of her class understood where the line of propriety is in the interactions: "We have laughter, we have jokes… they know what is expected of them… they know their place… the majority of them…" (Teacher Banks, 17 October 2013). However, the teacher did admit to having written off three learners as they did not behave in accordance with the class rules and did not co-operate as members of the class.

As with Teacher Adams, Teacher Banks appeared to interact with the high expectation learners far more than with the low expectation learners. This was evident when questions were asked with 21 of the 42 questions being asked specifically of the three highest expectation learners in the class, and only four low expectation learners being asked questions. Interestingly, unlike the high expectation learners, when the low expectation learners were asked direct questions that they could not answer, they were allowed to 'pass the question on' immediately, without being pushed to think of an answer. As with Teacher Adams, Teacher Banks' interactions with the three lowest expectation learners were more disciplinary in nature than academic.

In Teacher Banks's class the low expectation learners were seated amongst four of the six groups, with none being placed in the two groups closest to the teacher's table. Although the non-verbal interaction between the teacher and the learners appeared virtually the same irrespective of expectation, the three lowest expectation learners were not given many encouraging smiles or head nods, as most of the communication with them was disciplinary in nature.

Thus, although there was some differentiation in the social hierarchy of the two classes in terms of who was asked questions, how much time was allowed for them to answer the questions before moving on, and who was paid more attention in class (high expectation learners); there was not as much differentiation evident as might have been expected.

Framing of the evaluative criteria

In terms of differentiation of the framing of the evaluative criteria, prior research suggests that one might see differentiation between high and low expectation learners with regards to the way questions are asked and answered, the giving of instructions, the marking of books, preparation for assessment and the explication of and adherence to class rules. Interestingly, in both of the observed classes there was some, but not much differentiation in any of these aspects of the evaluative criteria.

With regards to the asking of questions, predominantly high expectation learners were asked questions in both classes[10]. As to how questions were answered by learners, the teachers' approaches differed between high and low expectation learners to some degree. Teacher Adams

[10] Refer to page 43 for a full discussion about who questions were directed to.

allowed all of the learners that were asked questions at least two attempts to answer the question correctly, providing the learners with additional prompts and clues to answer the question if they could not initially do so. However, as there were not many questions asked of low expectation learners, it is difficult to determine the strength of this differentiation. Teacher Banks, however, only prompted the high expectation learners when they failed to answer a question correctly the first time. The lower expectation learners were allowed to 'pass the question on' to another learner immediately if they could not answer it. They were not given extra information or clues to enable them to answer the questions themselves.

In terms of the giving of instructions, it appeared that both teachers provided explicit and clear initial instructions to all learners. On one occasion, Teacher Banks noticed that several of the low expectation learners had drawn a graph incorrectly. She then re-explained the concept, giving more detailed instructions than she had before.

With regards to the marking of books, prior research suggested that one would expect to see some differentiation in the marking of books, with low expectation learners receiving more thorough input during the marking. However, there was no perceivable differentiation in the marking of books. Both Teacher Adams and Teacher Banks made use of the cross / tick method of marking when they marked books, or just signed that they had seen the learners had done the work. In most cases, both teachers went through the work with the class immediately after the activity had been completed and allowed the learners to self-mark or peer mark. The learners were expected to write in the correct answers, but if they did not write in the correct answers, the teacher did not do so for them. There was no differentiation between the high and low expectation learners in this regard.

In terms of the assessment preparation, again there was no differentiation evident in either class. Where some variation could be seen, however, is in Teacher Banks' post-assessment approach. According to Teacher Banks, when learners failed tests they were given a chance to rewrite the same test in order to better their mark. Those who displayed conceptual flaws in their understanding of the work were asked to remain behind during a break the following day to be given extra input and clear these up. Teacher Adams, while analysing assessment results with the class, did not provide input about them after the fact to either high or low expectation learners.

Both teachers had explicit class rules that the classes seemed to be aware of. There was no evident differentiation in the way in which the rules were enforced across the board. Although Teacher Banks stated that she had class rules and explained the consequences for not adhering to the rules, at no point did I see the consequences implemented during the lessons, despite the rules being broken many times by various members of the class. Teacher Adams appeared to have a very well disciplined class, and so, although he had class rules and consequences for the breaking of these rules, I did not see any of the rules being broken at all. In this regard there was no differentiation in the way in which each teacher approached the class rules and discipline between the different learners in their classes.

In this section we have looked at where there were both differences and similarities in the framing of selection, sequencing, pacing, social hierarchy and the explication of evaluative criteria. We have seen that there was some differentiation in the way the teachers treated the high and low expectation learners with regard to asking and answering questions, allowing some extra time for those who had not finished work on time (Teacher Banks) and some differentiation in the way in which learners were interacted with. However, in terms of selection, sequencing, pacing and the explication of the evaluative criteria, to a large extent the learners were treated and taught uniformly. This raises the question: why did these teachers teach the learners uniformly, despite acknowledging that they had higher expectations of some? The next section offers some insights in response to this question.

4.2.2 Effects of the curriculum on pedagogy

Bernstein refers to the influence of the curriculum on pedagogy as external framing. The pedagogic practices of teachers in this study were strongly influenced, or externally framed, by the curriculum. As the curriculum in South Africa is highly prescriptive as to what needs to be covered and assessed, and by when it needs to be covered and assessed, there is little room for the teachers to deviate from this with regards to high and low expectation learners. The notion of individual or group expectations is premised on the idea that teaching is adapted and differentiated according to the class or the individuals, i.e. according to teachers' regulative discourse with regard to learners.

In fact, where there is little or no adaptation, because teaching is externally framed by curriculum and by school demands and culture, teacher expectations do not play out at this level. Instead, the regulative discourse is established within the curriculum and mediated by the culture of the school as a whole. Furthermore, this external framing leads to homogenisation of learners, i.e. the teachers interact with all the learners in much the same way, collectively, rather than individually. This next section describes how this external regulation operated in the observed lessons.

Framing of selection

The South African curriculum (CAPS) is highly specified, detailing exactly what must be covered when and to what extent of detail for each subject - and Natural Science is no exception. As a result, teachers are left with very little play in how they select content to teach and the order in which to teach it.

According to Teacher Adams, CAPS "basically tells you what you need to teach" (Teacher Adams, 18 October 2013) and he follows this explicitly. He does, however, also use additional information that he gathers from external sources so as to bulk up the content that is stipulated. When I asked him for a copy of his lesson plan for the observed lessons, he handed me a photocopy of the CAPS document on which he had highlighted the week's lesson content 'Systems for looking into space'. The content and concepts that were stipulated on the document were the focal point of the lesson, and the suggested activities put forth in CAPS were the exact activities that the learners engaged in during class time[11]. This highlights a teacher's limitations in terms of determining material and content according to CAPS.

Teacher Banks also stated that "I follow the CAPS document and CAPS is pretty explicitly laid out, what information the learners have to leave within Grade 6, with knowing." (Teacher Banks, 17 October 2013). As a result, the teacher used the policy as a guideline and used two textbooks and the Internet from which to get additional information for her learners. The lesson plan that was provided was completely in line with what CAPS stipulated for the topic "Solids, liquids and

[11] At this point in the term, the suggested activity for the learning activity in CAPS is: "Reading a case study about telescopes such as simple telescopes, SALT, SKA" (DoBE; 2011a). This is exactly what the learners did as an activity for this lesson.

gases: arrangement of particles, melting and solidifying and mixtures". The main points of information detailed in the lesson plan came out of the policy verbatim. The activities that were done with the class included both the suggested activities from the policy document and others that had come from textbooks.

In summary, it was clear that the curriculum played a very large role in determining the selection on both a macro and a micro level, and impacted upon how the teachers taught Natural Science.

Framing of sequencing

With regard to the sequencing of the content taught within a term (macro-sequencing), the curriculum is also highly prescriptive. When Teacher Banks joined the school, the previous teacher was following the recalled textbook (which was organized in a different way to CAPS) as no one had a copy of the CAPS document at the school. As a result the Grade 6 learners were covering the Science content in a backward fashion, having covered term 3 and 4 content in term 1 and 2. Although we see that Teacher Banks was not following the exact sequencing as laid out in the curriculum, she was following the order of the material within each term. Thus, although she was teaching Term 1 material in Term 3, she was teaching the content in the sequence that it appeared in the curriculum document. Indeed, Teacher Adams was also teaching the content in the prescribed sequence.

Due to the prescriptive nature of the macro sequencing, with CAPS stipulating exactly what needs to be taught by when, and in what sequence; the micro sequencing (individual lesson structure) of the teacher is inhibited. For example, if the curriculum states that the teacher must teach systems for looking into space during week three of the term, and stipulates that the concepts to be taught must cover "telescopes are used to look into space and gather information; South Africa has built and uses some of the largest telescopes" (DoBE, 2011a: 63), the teacher has very little leeway in determining how to sequence these lessons. Logically the first lesson should introduce the concept of a telescope and how it works; and a lesson by convention requires an introduction, content delivery and an activity. Thus, although the teacher may have some autonomy in selecting the material to teach how a telescope works, they will have little autonomy in the sequencing of the lesson itself.

As both teachers followed the curriculum comprehensively in terms of sequencing, it was evident that the curriculum played a significant role in determining the sequencing on both a macro and micro level, and impacted upon how the teachers taught Natural Science.

Framing of pacing

The curriculum stipulates that Grade 6 learners must have three and a half hours of Natural Sciences and Technology per week. This time must be spent teaching both the Natural Science and the Technology components of the subject. In Teacher Adams' opinion this is not enough time. The teacher feels that sufficient time was allowed for each subject when the two subjects were separated into Natural Sciences and Technology, each with its own time allocation. However, with the combination of the two subjects, he feels that the time is insufficient. Teacher Banks appears to echo this sentiment, stating: "I don't think there is enough time allocated…. There's too much work, there's not enough time to do everything." (Teacher Banks, 17 October 2013). As a result of this, topics are often skimmed over and taught sufficiently for the assessments as stipulated by CAPS, but no further: "with CAPS they tell you that you need to do an investigation and you need to do this now, so you need to cover the work to be able to do the assessment." (Teacher Banks, 17 October 2013).

When the teachers were asked what they do if they had used the allocated time for covering a topic and there were still learners who don't understand the concept or topic, the teachers described their methods as follows. Teacher Adams stated that he is "not interested in time, we will make sure that most of them…will understand before we move on." (Teacher Adams, 18 October 2013). At his school, they do not make use of a bell between periods, so teachers have a little more flexibility in terms of their timetables. Teacher Banks, however, has an additional approach. Teacher Banks makes use of prolonging periods to cover the work in a way that the learners will understand and also makes use of remedial classes at break time. During break the learners who failed a test remain behind and are retaught the concepts that they didn't understand.

Thus the prescriptive nature of the curriculum influenced the framing of the teachers' pedagogic choices and actions. The teachers showed more flexibility and control in terms of the framing of pacing than they did with regard to selection and sequencing. However, even in this regard they were limited by the nature of the external framing of the curriculum. Although one cannot tell if

the teachers would have taught differently had the curriculum not been as highly prescriptive, it is clear that their pedagogy in terms of the framing of selection, sequencing and pacing was very much affected by the prescriptive nature of CAPS.

4.2.3 Role of the social order of the school as an organisation

The final recurring theme that emerged from the analysis was the manner in which the nature of the school as an organisation affected how the teachers in this study viewed the learners in their care, as well as how they taught. Although prior research regarding teacher expectations said very little about how the nature of the school as an organisation affects teacher expectations and the pedagogy of the teacher, it became clear through the analysis that it has a direct impact on this. In the section that follows we examine the data to determine how and to what extent this is the case in the two schools studied.

Contextual constraints

One of the major constraints that the school as an organisation had on the pedagogic practice for both teachers was that of the pressure placed on the teachers to achieve good results in the Annual National Assessments in Mathematics and English. This pressure directly affected the teachers' pedagogical approaches in terms of how Teacher Adams framed selection and pacing and how Teacher Banks framed sequencing and pacing.

Both teachers indicated several times during the interviews that they were under pressure from both the district office and the school management team to achieve good results in the Mathematics and English ANAs. This is a direct outcome of the department releasing results of individual schools within a district to every other school in the district. So there is competition between the schools to outperform each other. Additionally, district offices place pressure on the principals for their schools to perform better than they did the previous year so that the district results look better each year. Due to this, teachers are encouraged (implicitly) to spend a lot of time preparing their learners for the ANA tests and time is often 'stolen' from other subjects to enhance the learners' Mathematics and English understanding and abilities. Teacher Banks (17 October 2013) mentioned that due to this fact there would be some content that would not be covered by the end of the year, affecting her ability to fully follow the sequencing stipulated by CAPS, while Teacher Adams admitted that often topics were skimmed over in order to just cover

them before assessments (Teacher Adams, 18 October 2013), affecting the level at which he could select the depth of material to cover.

In terms of pacing, although both teachers had the stipulated three and a half hours of Natural Science and Technology timetabled, both teachers indicated in interviews that this was often not adhered to, particularly in Term 3 when they were preparing for ANAs. According to the teachers, at many points during the term Mathematics and English lessons took priority over all other subjects and other lessons were covered haphazardly. Although at the time of the observations the ANAs had just been written and both said that they were spending extra time covering Natural Science and Social Science content, evidence of this could not be seen in Teacher Adams's class, as his class was learning the correct content for the time of the term and the lessons were of the duration specified on his timetable. However, in Teacher Banks's case, this fluctuation of pacing was seen fairly substantially. Teacher Banks's first lesson that I observed lasted one hour and 30 minutes, including the lesson and the activity, and the class were scheduled to continue working on the activity after break (I left at break time so cannot report how long the learners continued to work on the activity after break time). When I arrived to observe Teacher Banks's second lesson, the learners were already writing down a note from the board but this note had not yet been discussed. The remainder of the lesson for which I was present lasted a further one hour and thirteen minutes.

The teachers' framing of the explication of evaluative rules with regard to learners' behaviour was also influenced by the overarching spirit and ethos of discipline in place at each school. As I mentioned in the overview of the schools at the beginning of this chapter, I had a very different experience at each of the schools due to the approach to discipline at each school.

At Alexander Primary, the school appeared to be orderly and well structured, with a consistency to discipline throughout. The principal was at school everyday that I visited and was extremely hands-on in the running of his school. Teacher Adams also explained to me that, as the principal did not teach any classes and as the Deputy Principals both had full teaching loads, the principal offered to take over all of the discipline in the school. Due to this, there was consistency in discipline throughout the school as both the teachers and the learners knew that there was one disciplinarian with whom the buck stopped. As a possible result of this, the classroom was well ordered as the learners and teachers knew that the principal was in the building and may at any

point arrive in the vicinity of their classroom. Learners knew what the boundaries were and at which points they would be sent to the principal for discipline if they did not behave in class. This lent the teachers more authority over their learners.

At Benjamin Primary, however, there appeared to a very different atmosphere and ethos towards discipline in the school. The teachers at Benjamin Primary were left largely to their own devices to manage their classes as they saw fit. There appeared to be no one in management to whom learners could be sent when misbehaving. The overall noise level of the school was incredibly loud and when I walked around the school I walked past several classrooms where the teachers were not present and the learners were milling around either inside or outside the rooms. Teacher Banks's opinion about discipline appeared formed by this school, in that the rules "never work(s), in any class" (Teacher Banks, 17 October 2013). As a result, although the class had explicit rules and consequences, these rules and consequences were not followed. In a sense it felt to me as though the teacher was relatively powerless against the general lack of discipline of the school as a whole.

In both schools, therefore, the degree to which the teacher could regulate learners' behaviour was enabled or constrained by disciplinary practices in the school as a whole.

Implications of the role of the school as an organisation on the regulative discourse relating to the learners as a group

The early literature on teacher expectations tended to view teacher expectations as individual beliefs that can be formed in a vacuum and imposed upon any given classroom situation, acting as a fix for a problem situation as we see in the literature about the Pygmalion Effect. However, this study suggests that teachers' expectations of their classes as a whole do not stem only from what the teachers' inherent belief about who their learners are but also from shared assumptions within the school. These shared assumptions are embedded in the shared practices within the school.

Through informal discussion with the principal[12] and interviews with Teacher Adams, it became evident that Alexander Primary is driven by the principal pushing to improve the school facilities, appearance and name – this in turn appears to feed Teacher Adams's motivation to push himself and the learners in his class. As a result of the principal at Alexander Primary pushing for improvement, we see instances of Teacher Adams finding images and information in personal time on personal laptops and bringing said images and information to show the learners in order to broaden their horizons (Teacher Adams, Lesson Observation 1 and 2, 2013).

Despite the principal wishing to improve the quality of school facilities and education that the learners receive, he indicated that his view of the learners was that although they had the potential to become whatever they wished, most would stay in the area and work for the local council or supermarkets when they finished school. When interviewed, Teacher Adams (18 October 2013) stated much the same about his learners, going further to say that although his learners were capable of understanding complex Science processes and concepts, he needed to simplify the concepts for them:

> "If you simplify it, then they will be able to understand it. Telling them about it is not going to help much. You will have those kids who will grasp the concept, others you need to break it down…" (Teacher Adams: 18 October 2013)

Although the school ethos at Benjamin Primary appeared to be very different from that of Alexander Primary, the teacher that I observed did not fit the mould of her school, which lends a complexity to the issue of alignment between school ethos and the practices of teachers.

When interviewed, Teacher Banks stated that while she also believed her learners had the potential to become whatever they want after school, most would go on to work for the local council or supermarkets and stay in the area (Teacher Adams, 18 October 2013; Teacher Banks, 17 October 2013). She also suggested that although her learners would be capable of

[12] At my first visit to the school, I had a lengthy informal conversation with the principal that I did not record. In this conversation he indicated his philosophy on running a school and the way in which he was trying to improve the quality of education and schooling that the learners at Alexander Primary experience.

understanding complex Science processes and concepts, these need to be simplified for the learners:

> "I also have to take into consideration the surrounding that they come from. So I'm not going to go deep that it's beyond them, but I'm going to go onto their level using things that they know…. But I think I don't go too deep into solidifying them so solid." (Teacher Banks: 17 October 2013)

Despite this, Teacher Banks had a good relationship with her class and pushed them to succeed when other teachers had given up on them. In fact, in her first term (Term 2) at the school she offered to take all learners who managed to improve their first term marks by 20% across the board to Ratanga Junction. According to Teacher Banks, she initially thought that "they won't get it, I mean, look at the marks, it's really bad. And they just come out and they surprise you and they shine and they get that extra mark." (Teacher Banks, 17 October 2013). Teacher Banks, however, is the only member of staff at Benjamin Primary to go to such lengths to improve the lives of her learners at present, and she goes on later to say that she cannot afford to keep paying out of her own pocket for incentives and gifts, so one wonders how long she would continue being able to go to such lengths.

Another factor that has bearing on the school as an organisation and the role it plays in how teachers' notion of the regulative is formed and moulded is the stability of the social order of the community from which the learners come. According to Teacher Adams and Teacher Banks, the learners from Alexander Primary come from a more established part of the area, while the learners at Benjamin Primary, although only two kilometres away, are drawn from the 'poorer' end of the area.

Although it would appear from what Teacher Adams and Teacher Banks say that the parents of learners at Alexander Primary appear more involved in their children's schooling than those at Benjamin Primary, we do not know whether parents really are different, whether the more positive interaction is at least in part a consequence of more orderly functioning of Alexander Primary, or whether in fact, more engaged parents gravitate towards the more orderly school. What we do know is that there is a degree of alignment between the degree of orderliness of the school, the behaviour of the parents and the relation between teachers and

parents. The ways in which these are expressed are as follows: paying of fees, dress of learners and the attendance of parent meetings.

At Alexander Primary, the fees are R350 per annum and approximately 60 percent of the parents of learners in Teacher Adams's class had not yet paid their fees in full for the year. However, Teacher Adams indicated that he felt the parents of the learners in his class were somewhat involved in their children's education – attending meetings with him when called and ensuring that their children were well dressed and prepared for school.

At Benjamin Primary, the fees are R275 per annum and as with Teacher Adams's class, approximately 60percent of the parents of learners in her class had not yet paid their fees in full for the year. Unlike Teacher Adams, however, Teacher Banks felt that the parents of the learners in her class were largely disengaged from the learning process of their children, not attending meetings with teachers or ensuring that their learners were neatly dressed or prepared for school (Teacher Banks, 17 October 2013).

The next chapter will review the insights that have emerged from this analysis and relate these to prior research.

CHAPTER FIVE: CONCLUSION

5.1 Revisiting the literature

Early literature suggests individual teacher expectations play a significant role in the way in which teachers treat the individuals in their classes. It suggests that there is a marked difference in how teachers treat the high and low expectation individuals within the same class, the high expectation individuals being provided with 'optimal' learning environments and opportunities. Previous studies on this subject suggest that teachers provide a more relaxed framing over selection, sequencing and pacing with high expectation learners and hold a much firmer framing with low expectation learners (Cooper, 1979; Cotton, 1989; Rist, 1970; Rubie-Davies, Hatie & Hamilton, 2006; Morais, 2002). Additionally, this literature suggests that high expectation learners are given far more teacher-learner and learner-learner interaction in the social hierarchy of the classroom and receive more positive body language and verbal expressions from the teacher. The low-expectation learners, however, according to this literature, tend to be placed physically further away from the teacher in the classroom and receive less teacher-learner and learner-learner interaction, as well as less positive body language and verbal expressions from the teacher (Cooper, 1979; Cotton, 1989; Gottfredson *et al*, 1995; Rubie-Davies, Hattie & Hamilton, 2006). In this way, we see that the framing over the social hierarchy is much weaker for the high expectation learners than the low expectation learners. Finally, this literature suggests that the explication of the evaluative criteria is made clearer to the high expectation learners than the low expectation learners – more feedback tends to be given in the answering of both verbal and written questions to the high expectation learners (Cotton, 1989; Cooper, 1979; Bernstein, 1990; Muller, Davies & Morais, 2004; Hoadley, 2008). Thus we see that the literature makes clear distinctions in how a teacher's pedagogy shifts depending on whether he / she is dealing with a high expectation or a low expectation learner.

This study, although utilising a small sample, meaning that findings and generalisations should be treated with caution, identified differences in teachers' responses to high and low expectation learners, particularly within the social hierarchy and explication of evaluative criteria in terms of how long and how many opportunities learners were given to answer questions posed by the teacher. While these differences were identified, what is of greater interest is that these

differences were considerably smaller, in number and scale, than earlier research, from different contexts, would lead us to expect. The selection, sequencing and pacing were fairly uniform in each class, with small discrepancies in terms of allowing extra time for those who had not finished tasks, or allowing high expectation learners to answer more questions than their counterparts. It also seemed that although the teachers both identified high and low expectation learners in their classes, due to external pressures of a highly structured curriculum, both teachers adopted a relatively uniform approach in terms of selection, sequencing and pacing of their classes.

5.2 Shaping of the regulative discourse

Both early research relating to teachers' expectations and more recent work from a Bernsteinian perspective focus on teachers' regulative discourse and suggest that teachers' views of learners are largely individual. Not much focus had been placed on the role that the school as an organisation or the curriculum play in shaping the regulative discourse of teachers.

This study has shown that, while teacher expectations affect the class as a whole, they are not derived in an individualistic way. Although the teachers treated the classes relatively homogenously, there is some differentiation within the way individuals within the classes are treated and taught. Additionally, this study has shown that while the individual teachers' views and beliefs are not irrelevant, these are influenced and constrained by the social order of the school as an organisation and the effects of the curriculum.

The role of the social order of the school as an organisation

It was evident in the practices of both teachers that shared practices and arrangements at the schools influenced their priorities as pressure was placed on teachers to achieve good results for external examinations (ANAs) and that there were shared belief and assumptions across the schools about who the learners are what they are capable of. The time constraints placed on the Science curriculum left teachers with little opportunity to adapt or differentiate their teaching.

A second factor that shaped teacher expectations was the perceived ethos and discipline of the school. At Alexander Primary the principal ensured that the rules and consequences were clear. As a result, the expectation of Teacher Adams was that the learners would work quietly, stay in

their classroom and follow instructions. At Benjamin Primary, however, there was a perceived relative chaos throughout the school (in comparison with Alexander Primary) with learners being disruptive, unruly and out of class often. This meant that Teacher Banks's efforts to keep control of her class was constrained. As Teacher Banks was a first year teacher, we cannot know how she would adapt to this environment in the long term.

This study suggests that there is also a shared view of learners' capabilities and future possibilities within schools, and that this influences the efforts of individual teachers to realise learners' potential. This we see with Teacher Banks at Benjamin Primary: although at the time of the study she went to great lengths to improve the lives of her learners through rewards and outings, she said in an interview (Banks, 17 October 2013) that she could not afford to keep paying out of her pocket for rewards and incentives. Thus, although she may have had high expectations of her learners and be prepared to go the extra mile for her learners, because she was receiving little support from the school as an organisation, she may have to adjust her expectations and the extent to which she would be able to motivate and reward her learners to do well.

Similarly, the teachers' perceptions of the parental involvement in learners' education also form and shape teachers' expectations. This study showed that there is an apparent alignment between the degree of orderliness of the school, the behaviour of the parents and the relation between the teachers and parents. Thus, this study showed that it would appear as though the school as an organisation plays as significant role in shaping a teacher's notion of the regulative and pedagogy, as does the curriculum.

The effects of the curriculum

The effects of the curriculum on the regulative discourse and pedagogy of the teachers is not one that I have found widely studied, yet in the South African context, cannot be ignored. The South African curriculum, CAPS, is a highly prescriptive document that details precisely what must be taught in what time frame. In this sense, the pedagogy of the teacher in terms of pacing, selection and sequencing is largely dictated by the curriculum. As a result, there is little room for movement within the curriculum, so even if the teachers have expectations of their learners that may exceed the curriculum's implied expectations of the learners they have not the time nor

scope available to fully teach beyond the curriculum – the teacher's own expectations of the learners are harnessed and possibly hindered by the sheer volume of content to be covered within the curriculum within certain timeframes. However, this is not entirely negative. The curriculum states what content all learners must be able to achieve or understand by the end of a certain time period, which forces teachers to teach even the low expectation learners this content; ensuring that even the low expectation learners are exposed to this content. Rather, what the curriculum inadvertently forces the teacher to do is to teach uniformly to all learners, rather than adjusting his or her pedagogy according to whether he or she is teaching high or low expectation learners. Although one cannot tell whether the teachers in this study would have taught differently were the curriculum not as prescriptive as it is, it is clear that the nature of the curriculum in itself, even if it does not shape the notion of the regulative, does shape the pedagogy of the teacher.

5.3 Implications

In light of the above, what are the implications for the future of teacher expectation studies in South Africa? At the beginning of this study I asked the question of how two teacher's expectations inform the way in which they teach Natural Science to low income Grade 6 learners in the Western Cape, in order to possibly find a way to address the lack of Science achievement amongst South African learners. I wished to find out why some low-income schools achieve better results than other low-income schools, and how teacher expectations play a role in this. Although this study was small in nature and utilised a very small sample, meaning that findings and generalisations should be treated with caution, I found that there was a parallel between the teacher expectation literature and Bernstein's notion of the regulative discourse and so explored teacher expectations through the lens of the regulative discourse. What this allowed me to do was to see the interrelatedness of the regulative and the instructional discourse; and also the interrelatedness between the curriculum, the culture of the school and teachers' pedagogy. This exploration allowed me to see that although there is a relationship between teacher expectation and pedagogy, this relationship is not as direct and individualised as is implied in earlier research.

Instead the regulative discourse and pedagogy of the teacher are both shaped by the broader institutional and social environment and by the curriculum.

REFERENCES

Adams, 2013a. *Interview transcript*. [Interview by R. Claassen] Cape Town, 18 October 2013.

Adams, 2013b. *Lesson observation one*. [Observation by R. Claassen] Cape Town, 17 October 2013.

Adams, 2013c. *Lesson observation two.* [Observation by R. Claassen] Cape Town, 18 October 2013.

Anderson, D. & Clark, M. 2012. Development of syntactic subject matter knowledge and pedagogical content knowledge for science by a generalist elementary teacher. *Teachers and Teaching: Theory and Practice.* 18 pp. 315-330.

Badat, S. 2013. *www.apple.com.* [Online]
Available at: http://www.apple.com/za/education/profiles/essa
[Accessed 21 April 2013].

Banks, 2013a. *Interview transcript*. [Interviewed by R. Claassen] Cape Town, 17 October 2013.

Banks, 2013b. *Lesson observation one.* [Observed by R. Claassen] Cape Town, 17 October 2013.

Banks, 2013c. *Lesson observation two.* [Observed by R. Claassen] Cape Town, 25 October 2013.

Bernstein, B. 1990. *Class, codes and control volume IV.* London: Routledge.

Bernstein, B. 1996. *Pedagogy, symbolic control and identity.* London: Taylor and Francis.

Brophy, J. 1986. *Research linking teacher behavior to student achievement: potential implications for instruction of Chapter 1 students.* Washington D.C, ERIC.

Cooper, H. 1979. Pygmalion grows up: a model for teacher expectation communication and performance influence. *Review of Educational Research.* 49(3) pp. 389 - 410.

Cotton, K. 1989. *Expectations and Student Outcomes,* s.l.: School improvement research series.

DoBE, 2010. *Report on the Annual School Survey: 2007/2008.* Pretoria: Department of Basic Education.

DoBE, 2011. *Curriculum and Assessment Policy Statement Grades 4 – 6, Natural Sciences and Technology.* Pretoria: Government Printing Works.

DoBE, 2011. *Report on the Annual National Assessments of 2011.* Pretoria: Department of Education.

DoE, 2009. *Trends in Education Macro-Indicators: South Africa.* Pretoria: Department of Education.

Fleisch, B. 2008. *Primary education in crisis.* Cape Town: Juta.

Gladwell, M. 2013. *David and Goliath.* South Africa: Allen Lane.

Gottfredson, D. Marciniak, E. Birdseye, A. & Gottfredson, G. 1995. Increasing teacher expectations for student achievement. *The Journal of Educational Research,* 88(3) pp. 155-163.

Hoadley, U. 2008. Social class and pedagogy: a model for the investigation of pedagogic variation. *British Journal of Sociology of Education,* 29(1) pp. 63-78.

Holland, J. 1981. Social class and changes in orientations to meaning. *Sociology,* 15 pp. 1-18.

Jacklin, H. 2014. *The imagined subject of schooling in the logic of policy.* Unpublished paper. Cape Town: University of Cape Town.

Jansen, J. 2011. *Times Live.* [Online]
Available at: http://www.timeslive.co.za/opinion/columnists/2011/02/16/teacher-who-changed-my-life [Accessed 24 February 2013].

Jones, G & Wheatley, J. 1990. Gender differences in teacher-student interactions in science classrooms. *Journal of Research in Science Teaching,* 27(9) pp. 861-874.

Kerman, S. 1979. "Why did you call on me? I didn't have my hand up!" Teacher expectations and student achievement. *The Phi Delta Kappan,* 60(10) pp. 716-718.

Lubienski, S. 2004. Decoding mathematics instruction: a critical examination of an invisible pedagogy. In: J. D. B. &. M. A. Muller, ed. *Reading Bernstein, Researching Bernstein.* London: Routledge Falmer.

Luria, A. 1976. *Cognitive development – its cultural and social foundations.* Cambridge, Massachusetts: Harvard University Press.

Morais, A. Neves, I. & Pires, D. 2004. The what and the how of teaching and learning. In: J. D. B. &. M. A. Muller, ed. *Reading Bernstein Researching Bernstein.* London: RoutledgeFalmer, pp. 75 - 90.

Morais, A. 2002. Basil Bernstein at the Micro Level of the Classroom. *British Journal of Sociology of Education.* 23(4), pp. 559-569.

Morris, A. 2014. *School Science for six year olds: a neo-Vygotskian approach to curriculum analysis.* Unpublished M.Ed dissertation. Cape Town: University of Cape Town.

Motshekga, A. 2013. *Statement during the announcement of the 2012 National Senior Certificate Grade 12 Examination Results by Mrs Angie Motshekga, Minister of Basic Education.* Johannesburg, Department of Basic Education.

Muller, J. Davies, B. & Morais, A. 2004. *Reading Bernstein, Researching Bernstein.* 1st ed. London: RoutledgeFalmer.

Painter, C. 1999. Preparing for school: developing a semantic style for educational knowledge. In: F. Christie, ed. *Pedagogy and the shaping of consciousness.* London: Continuum, pp. 1-9.

Reddy, V. 2006. *Mathematics and science achievement at South African schools in TIMSS 2003.* Cape Town: HSRC.

Reeves, C & Muller, J. 2005. Picking up the pace: variation in the structure and organisation of learning school mathematics. *Journal of Education* 37 pp. 1-28.

Rist, R. 1970. *Student social class and teacher expectations: the self-fulfilling prophecy in ghetto education.* Washington: Washington University.

Rose, D. 2004. Sequencing and pacing of hidden curriculum: how indigenous children are left out of the chain. In: J. D. B. &. M. A. Muller, ed. *Reading Bernstein, Researching Bernstein.* London: RoutledgeFalmer.

Rosenthal, R. Jacobson, L. 1968. *Pygmalion in the classroom.* New York: Holt, Rinehart & Winston.

Rubie-Davies, C. Hattie, J. & Hamilton, R. 2006. Expecting the best for students: teacher expectations and academic outcomes. *British Journal of Educational Psychology.* 76 pp. 429-444.

Shepardson, D. & Pizzini, E. 1992. Gender bias in female elementary teachers' perceptions of the scientific ability of students. *Science Education.* 76(2) pp. 147-153.

Shulman, L.1986. Those who understand: knowledge and growth in teaching. *Educational Researcher.* 15 pp. 4-14.

Sikoyo, L. & Jacklin, H. 2009. Exploring the boundary between school science and everyday knowledge in primary school pedagogic practices. *British Journal of Sociology of Education,* 30(6) pp. 713-726.

Simpson, A. & Erickson, M. 1983. Teachers' verbal and nonverbal communication patterns as a function of teacher race, student gender, and student race. *American Education Research Journal.* 20(2) pp. 183-198.

van Deventer, I. & Kruger, AG. 2003. *An educator's guide to school management skills.* Pretoria: Van Schaik.

Young, M. 2007. What are schools for? In: H. L. H. &. P. J. Daniels, ed. *The Routledge Companion to Education.* London: Routledge.

APPENDIX A: Initial Table of Analysis

Overarching Feature From Theoretical Framework	Specific Feature	Relevant data sets	Questions asked of the data (This includes actual interview questions as well as questions asked of the observation transcripts and the texts)	What is looked For
Teacher expectations: Whole Class **(Regulative Discourse)**	Regulative Discourse	• Interview questions	• **Interview questions:** - What type of jobs do you think most of your learners will end up in one day**?** - What is the typical learner that you would find at this school? - What do you see as a good average for your class Science tests for this group of learners? - Do you think your learners are capable of understanding a complex Science process such as photosynthesis? - Is your class able to understand and use scientific terminology as part of their dialogue in Science lessons? - Do you believe your learners will use NS further in life, beyond school? Please elaborate. - Do you think your learners are interested in Science? - How would you describe your relationship with your class?	- What type of jobs did the teacher indicate the learners would end up doing after school? - What type of learner did the teacher indicate would be found at the school? - What does the teacher say is a good average for the class for Science tests? - Does the teacher think the learners are capable of understanding complex Science processes and concepts? - Does the teacher believe the learners are capable of understanding and using Science specific terminology in lessons? - Does the teacher believe any of the learners will use NS beyond school? - Does the teacher believe the learners are interested in Science? - How does the teacher describe his / her overall relationship with the class?
Teacher expectation: Individuals **(Regulative Discourse)**	Regulative Discourse	• Interview questions	• **Interview questions:** - How would you describe your relationship with the top-achieving learners, middle achieving learners and bottom achieving learners? - When you get asked a	- How did the teacher describe his or her relationships with top achieving, mid achieving and low achieving learners? - Did the teacher indicate a difference in the way in which (s)he views and interacts with certain learners? What is this difference? - What did the teacher say about

			question by a learner, how would your response differ depending on who asked it? - Do you believe any of your learners will use NS further in life, beyond school? Please elaborate.	his / her response to questions asked differing between learners? - What did the teacher say about his / her learners using Science outside of school?
Pedagogy: Selection—Macro Selection (Instructional Discourse)	Topic and material selected	• Interview Questions • Lesson Plans • CAPS documents	• **Interview questions:** How do you choose what Science material to teach? • **Lesson plans:** What content is detailed in the lesson plan? • **CAPS documents:** What does the CAPS document stipulate should be taught?	- What did the teachers say about how they chose what material to teach? - What content is covered in the lesson plan? - What content is covered in the CAPS document? - How does the lesson plan differ from the CAPS document?
Pedagogy: **Selection** – Micro Selection (Instructional Discourse)	Cognitive demand of lesson content with regards to individuals and groups	• Interview questions • Lesson observations • Lesson resources	• **Interview questions:** - What is your lesson preparation process? - How do you decide at what level to pitch a lesson? - How do you know what the learners' basic knowledge is? • **Lesson observations:** - Does the level of cognitive demand expected of learners appear to differ between learners? - How does the level of cognitive demand in the lesson differ to the level of cognitive demand expected from CAPS? • **Lesson resources:** - What is the level of cognitive demand of the work learners are expected to complete?	- What does the teacher say about how they prepare lessons? - What does the teacher say about how they decide at what level to pitch a lesson? - How does the teacher know what the learners' basic knowledge is? - Do all the learners receive the same work to complete? - Are all learners expected to complete the work at the same rate and standard? - How does the level of cognitive demand in the lesson compare to the level of cognitive demand suggested by CAPS? - What type of exercise is given to the learners as reinforcement of the concept? - Does this exercise reinforce the Scientific concept being taught? - Does the work consist of both basic and higher order thinking (repetition and location of facts versus explaining and application of new knowledge and concepts)?

	Differentiation of materials	• Lesson observations	• **Lesson observations:** - Does the material given to high expectation / achieving learners differ to that given to their counterparts?	- Is there evidence of a difference between material given to high expectation / achieving learners and low?
	Level of questioning	• Lesson observations	• **Lesson observations:** - Did the teacher ask cognitively demanding questions of the class? - Did the teacher appear to ask high expectation / achieving learners more cognitively demanding questions than their counterparts?	- What type of questions were asked of the class as a whole – whole class response, revision questions, thought provoking questions, questions that challenged learners knowledge and conceptions, application of knowledge questions? - Did the teacher tend to ask questions that required simple answers, or questions that required some thought to answer? - What were some of the cognitively demanding questions asked of the class? - Did the teacher appear to ask high expectation / achieving learners more cognitively demanding questions than their counterparts? - Did any of the learners ask cognitively demanding questions of the teacher?
Pedagogy: Sequencing **(Instructional Discourse)**	Sequencing of the Curriculum	• Interview questions • Lesson plan • CAPS document	• **Interview questions:** - How do you choose what Science material to teach? • **Lesson plan:** - Where does the lesson fit into the curriculum? • **CAPS document:** - Is the lesson I observed covering the material CAPS stipulates what should be covered at this time?	- What does the teacher say about how they chose the content and material to teach? - Examining both the lesson plan and the CAPS document, where does the lesson observed fit into the curriculum? - According to CAPS, is the lesson observed covering the correct content for the time frame? Why or why not?
Pedagogy: Sequencing **(Instructional Discourse)**	Sequencing of the lesson	• Lesson plan • Lesson observations • Interview questions	• **Interview questions:** - Did your lesson go according to plan? If not, why not? • **Lesson plan:** - Does the lesson plan have an introduction,	- Looking at the lesson plan, does it consist of an introduction, main and conclusion? - What is the basic outline / flow of the lesson? - Is there an activity included in the lesson that will serve to consolidate the concepts and

			main and conclusion? - Does the lesson plan include a consolidation activity? - What is the flow of the lesson? • **Lesson observation:** - Does the lesson have an introduction, main and conclusion? - What is the flow of the lesson? - In what ways does the lesson deviate from the lesson plan? - Did the sequencing of the lesson differ at all between learners?	knowledge taught in the lesson? - In what ways did the lesson delivery deviate from the lesson plan? - What did the teacher say were the reasons behind this deviation? - What was the evidence of sequencing differing between learners?
Pedagogy: Pacing **(Instructional Discourse)**	Pacing of the lesson: intended versus implemented	• Interview questions • Lesson plan • Lesson observations	• **Interview questions:** - How do you view the timetable and recommended time provided by the NS CAPS document? - What do you do if you've used up the time you allocated for covering a topic and there are still learners who don't understand the topic? • **Lesson plan:** - What was the allocated time period for the lesson? - Was time per section of the lesson specified on the lesson plan? - If time per section was specified on the lesson plan, what was the time per section specified? • **Lesson observations:** - What was the length of the lesson? - How long did each section of the lesson (introduction, main, activity and conclusion) last? - Was the pacing of the planned and implemented lesson the same? - Were time limits for activities provided and adhered to? - Did the pacing of the	- What did the teacher say about how (s)he views the timetable and recommended time provided by the CAPS document? - What does the teacher do if (s)he has used up the allocated time for covering a topic and there are still learners who don't understand the topic? - **What did the class timetable stipulate the length of the lesson should be?** - Was time per section (introduction, main, activity and conclusion) specified on the lesson plan? - If time per section was specified on the lesson plan, what time was specified? - What was the actual length of the lesson observed? - What was the actual length of each section of the lesson? - Did the timing of the lesson differ from that of the lesson plan? - When instructing learners to complete activities during the lesson, did the teacher give time limits? - If time limits were given for completion of activities, were they adhered to? - Were any learners given more or less time than others to

			lesson differ between high expectation and low expectation learners in any way?	complete work?
Pedagogy: Social Hierarchy **(Instructional and Regulative Discourse)**	Teacher learner interactions	• Interview questions • Lesson observations	• **Interview questions:** - How do you believe a teacher should interact with learners in a classroom context? - How do you respond to learners that continually asks questions? - How do you interact with challenging learners / learners that struggle to master Science concepts? - Does the class, as a whole, ask questions during lessons? Why do you think this is? - When it comes to responding to questions asked by learners, does your response differ depending on who asks the question? • **Lesson observations:** - What differences in behaviour does the teacher display when dealing with some learners in terms of: ▪ Eye contact ▪ Smiling ▪ Head nodding while learner is talking ▪ Proximity to learner ▪ Type of response given (quick abrupt answer versus long and involved answer) ▪ Type of learner response accepted by teacher ▪ Time spent talking to or helping - How do these differences relate to high achieving / expectation learners and low?	- How does the teacher believe (s)he should interact with learners in a classroom context? - According to the teacher, how does (s)he respond to learners that constantly ask questions? - According to the teacher, how does (s)he interact with challenging learners or learners that struggle to master concepts? - According to the teacher, does the class tend to ask many questions during the lesson? - According to the teacher, does his or her response differ depending on the learner that asks the question? - Does there appear to be a difference in the way the teacher treats high expectation and low expectation learners in terms of: Amount of eye contact made with the learners? Smiling at learners? Head nodding while learner is talking? Physical proximity to learner? Time spent talking to or helping the learners? Type of response given to learners? Type of response accepted from learners?
	Learner-	• Interview	• **Interview questions:**	- What does the teacher say

	learner interactions	questions • Lesson observations	- How does the rest of the class appear to interact with challenging learners / learners that struggle with mastering Science concepts? • **Lesson observations:** - How does the class respond to low expectation learners? - How does the class respond to high expectation learners? - To what extent do the learners of the class communicate with each other during lessons? - Are learners asked to collaborate during lessons?	about the class's interaction with challenging learners or those that struggle with mastering Science concepts? - How does the class interact with low expectation learners when they respond to or ask questions? - How does the class interact with high expectation learners when they respond to or ask questions? - How often do learners communicate with each other (with permission) during the lessons? - How often do learners communicate with each other (without permission) during lessons? - How often are learners asked to collaborate during lessons? - Does there appear to be a social divide between high expectation and low expectation learners in the class?
	Who was paid most attention	• Lesson observations • Mark sheets	• **Lesson observations:** - Which learners were asked the most questions during the lessons? - Were these learners high or low expectation / achieving learners?	- Did the teacher appear to ask high expectation / achieving learners more questions than their counterparts?
Pedagogy: Evaluative Criteria **(Instructional Discourse and Regulative)**	Answering of questions	- Interview questions - Lesson observations	• **Interview questions:** - How do you deal with learners that ask questions that go beyond the scope of the level that you're teaching the topic at? • **Lesson observations:** - When learners ask questions in class, does the teacher answer the question fully, irrespective of the learner asking? - When the teacher asks a question of the class, does (s)he keep asking until (s)he gets a satisfactory answer? - Once the teacher receives a satisfactory answer to a question,	- What is the teacher's method of handling learners that ask questions that go beyond the level of what (s)he is teaching? - Are questions posed by learners answered fully, irrespective of the learner asking? - Does the teacher continue to ask the same question in different ways to a learner until (s)he gives a satisfactory answer? - Does the teacher at time moves onto asking a second or third learner the question if the first cannot answer satisfactorily? - Are all learners given the same amount of time and prompting when answering a question; or is there a difference between time and prompting given to

			does (s)he repeat the answer giving a little more detail? - When a learner answers a question incorrectly, does the teacher correct their answer, irrespective of the learner? - When the learner demonstrates incomplete or incorrect knowledge through answering or asking a question, does the teacher attempt to correct them?	high versus low expectation learners? - Once a satisfactory answer is given, does the teacher repeat the answer with correct terminology and some added clarity? - Does the above differ from high to low expectation learners? - When a learner answers a question incorrectly, does the teacher correct their answer, irrespective of the learner? - When the learner demonstrates incomplete or incorrect knowledge through answering or asking a question, does the teacher attempt to correct them?
	Clarity of instructions	• Lesson observations	• **Lesson observations:** - When the teacher gives instructions, are they clear and understood by the class? - If the instructions are not clear to any member of the class, what does the teacher do?	- Do the learners appear to understand the instructions given or do they have to ask for clarity? - If any of the class ask for clarity in the instructions given, how does the teacher respond?
	Marking of books	• Interview questions • Observations and Book samples	• **Interview questions:** - How often do you mark the learners work books? - What method do you use to mark the workbooks (cross, tick, fill in missing answer)? - What is your reason for marking the way in which you do? • **Observation** - Did all of the learners have their workbooks at school with them? - If learners did not have their workbooks at school, how did the teacher respond?	- How often, according to the teacher, are the workbooks marked? - According to the teacher, what method is used to mark the workbooks? - According to the teacher, what is his / her reason for marking in this way? - Did all of the learners have their workbooks at school? - How did the teacher respond if any learners did not have their books at school? - Are the books marked up to date? - Consulting the marked workbooks, what style of marking does the teacher utilize – cross, tick, fill in missing information?
	Assessments	• Interview questions • Lesson observation	• **Interview questions:** - What is your procedure for preparing learners for upcoming assessments? - What is your procedure after the assessment has been written and marked	- What did the teacher say was the procedure for preparing learners for upcoming assessments? - What is the teacher's procedure once the assessment has been written and marked? - What does the teacher do if a learner does not pass an assessment?

			(give back, go through)? - What happens if a learner does not pass an assessment? • **Lesson observation:** - How did the teacher prepare the learners for future assessments during the lessons? - How does the teacher conduct assessments (formal and informal)?	- How, during the lessons, did the teacher prepare learners for future assessments on the topic? - Did the teacher conduct any informal assessment during the lesson? If so, how?
	Behavioural rules	• Interview questions • Lesson observations	• **Interview questions:** - What are some of the class rules? - What are the consequences for not adhering to the rules? - Are your class rules school policy, or your own rules? - What do you do when a learner is disruptive in class? - What type of discipline measures do you tend to use? • **Lesson observations:** - What were the visible class rules? - What did the teacher do when learners broke the rules or misbehaved? - Did the learners appear familiar with the rules and consequences? - Did the learners appear to respect the rules and consequences? - Was the teacher consistent in applying the rules and consequences throughout the lesson?	- What, according to the teacher, are the class rules? - What are the consequences the learners face for not adhering to the rules? - Does the school have school-wide rules, or can teachers make their own rules? - What does the teacher do when a learner is disruptive in class? - What type of discipline measures does the teacher tend to use? - What rules were visible during the observations? - How did the teacher react when a learner broke a rule? - Did the learners seem shocked by the consequence, or did it seem that they were familiar with the rules and consequences? - What evidence was there that learners respected the rules and consequences? - What instances occurred where the teacher was not consistent in applying the rules and consequences?

APPENDIX B: Interview Questions

1. Please would you give a general background of yourself as a teacher – when you started teaching, why you chose teaching, how long you've been teaching in this school, whether you would want to continue teaching indefinitely?
2. Could you give me a general background of this school?
3. What is the typical learner that you would find at this school?
4. What are some of the challenges teaching at this school?
5. What are some the highlights you've experienced this year with your class?
6. How involved are the parents in the learners' education?
7. What do you see as a good average for your class science tests for this group of learners?
8. How does this differ from last years' class?
9. In your opinion, what is the point of teaching Science to primary school learners? Why is it included in the curriculum?
10. Do you think your learners are capable of understanding a complex science process such as photosynthesis?
11. Is your class able to understand and use scientific terminology as part of their dialogue in Science lessons?
12. Can you briefly explain the process of photosynthesis to me? (Could be any scientific process)
13. Does this explanation above differ to how you would explain it to your class? If so, how would you explain it to your class?
14. Do you believe your learners will use NS further in life, beyond school? Motivate
15. Do you think your learners are interested in NS? Motivate
16. How do you choose what Science material to teach?
17. Do you ever teach beyond what CAPS stipulates in NS? Please give some examples.
18. Do you believe the work that CAPS stipulates for NS is sufficient for your learners education? Motivate
19. Do learners ever ask questions that go beyond the scope of the level you're teaching the topic at? What do you do when this happens?

20. How do you view the timetable and recommended time provided by the NS CAPS document? Elaborate
21. Please explain your preparation process for the lessons I observed.
22. What do you do if you've used up the time you allocated for covering a topic and there are still learners who don't understand the topic?
23. How would you describe your relationship with your class & with the individuals in your class? What type of relationship do you have with the top learners, middle learners and bottom learners?
24. What are some of the class rules?
25. What are the consequences for not adhering to the rules?
26. Is this a school based policy or your own?
27. What do you do when a learner is disruptive in class?
28. What type of discipline measures do you tend to use in your class?
29. How do you choose who sits where in the classroom?
30. Do the learners ever change seating positions?
31. How do you believe a teacher should interact with learners in a classroom context?
32. How would you respond to a learner that continually asks questions?
33. How do you interact with challenging learners / learners that struggle with Science concepts?
34. How does the rest of the class appear to interact with challenging learners / learners that struggle with Science concepts?
35. Does the class, as a whole, ask questions during lessons? Why do you think this is?
36. Do you / the school have a general accepted practice when It comes to classroom displays?
37. How often do you mark the learners Science work books?
38. What method do you use to mark learners work books? (Do you use cross / tick or provide the correct answers or indicate missing information…)
39. What is your reason for marking the way in which you do?
40. Do learners ask questions in class?
41. Can you give me an example of a type of question a learner might ask?
42. How would you respond to that question above and would your response differ depending on the learner that asked it?

43. There are a lot of assessments stipulated in CAPS - would you comment on that?
44. In your opinion, in an ideal world, what is the reason for assessing?
45. Do you think, in current times, it's possible to assess for those reasons, or has the assessment ideal been lost?
46. What is your procedure for preparing learners for upcoming assessments?
47. What is your procedure after the assessment has been written – mark / give back / explain?
48. Do you believe that Science should be taught making use of science specific terminology? Please elaborate your answer.
49. How precise do you expect your learners to be when communicating about Science concepts in a Science lesson? Do you correct them or ask for clarification when they are not precise?
50. Do you expect your learners to make use of scientific terminology when communicating Science concepts? Why / why not?
51. In your opinion, do learners understand the scientific terminology that they use in Science lessons fully; and do they use the same terms when discussing the concept in another subject – for instance, precipitation in NS, but rain in Geography?
52. How do you decide at what level to pitch a topic / lesson?
53. How do you know what the learner's basic knowledge is?
54. I've read somewhere that it's important to take a learners' everyday understanding of concepts and change them through providing scientific explanations and procedures. What are your thoughts on that?