

Science teachers' experience of the transition process from General Education and Training to Further Education and Training: A multiple case study

by
Edwina Michelle Mettler

*Mini-thesis presented in partial fulfilment of the requirements for
the degree of Master in Education in the Faculty of Education at
Stellenbosch University*



Supervisor: Dr Marie Louise Botha

April 2014

Declaration

I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Signature: _____

Edwina Michelle Mettler

April 2014

Á

Á

Á

Á

Á

Á

Á

Ô[] ^!ã @Á Á€FI ÁÙc||^} à[•&@M) ã^!•ã

0#Áã @ Á^•^!ç^ãÁ

ABSTRACT

This qualitative multiple case study explored the subjective experiences of four science teachers during the transition process from Natural Sciences in the General Education and Training (GET) band to Life Sciences in the Further Education and Training (FET) band. The study was guided by one main research question and four sub-questions.

Data were collected using simple observation, an open-ended questionnaire, semi-structured interviews and photographic evidence.

The study revealed that the experiences of the teachers are dependent upon their years of teaching experience, the quality of in-service training and workshops, available resources, the support the teacher receives from the school and the Department of Education and how each school is individually managed. The findings in this study further revealed that teachers feel alone and abandoned by the Department of Education, as there is very little to no support and communication between the teachers and the Department.

The teachers reported that there is a misalignment between the content and assessment requirements in Grade 9 and Grade 10, which causes learners to struggle to adapt in Grade 10. Teachers then resort to measures such as structuring the GET more like the FET and reorganising and modifying the content of Natural Sciences across grades 8 and 9 in an effort to better prepare learners for Grade 10 Life Sciences.

All the teachers who participated in the study revealed that they did not receive sufficient training to assist them with the transition process from GET to FET. Reasons offered included that in-service training and workshops focused more on administration instead of providing teachers with the necessary context-specific training required to implement the National Curriculum Statement.

It is therefore evident that highly skilled teachers are needed to ensure a smooth transition from GET to FET. Teachers need to participate in curriculum initiatives, as it is the teachers who are ultimately responsible for implementing new curriculum initiatives.

OPSOMMING

In hierdie kwalitatiewe veelvuldige gevallestudie is die subjektiewe ervarings van vier wetenskaponderwysers tydens die oorgangproses van Natuurwetenskappe in die Algemene Onderwys en Opleiding (AOO-)band na Lewenswetenskappe in die Verdere Onderwys en Opleiding (VOO-)band ondersoek. Die studie is deur een hoofnavorsingsvraag en vier subvrae gerig.

Data is deur eenvoudige waarneming, 'n oopende-vraelys, semigestruktureerde onderhoude en fotografiese bewyse ingesamel.

Die studie het aan die lig gebring dat die ervarings van onderwysers afhang van hul onderwyserervaring, die gehalte van indiensopleiding en werkswinkels, beskikbare hulpbronne, die ondersteuning wat die onderwyser van die skool en die Departement van Onderwys ontvang, en hoe elke skool individueel bestuur word. Die bevindinge van hierdie studie toon voorts dat onderwysers vervreem en afgesonder van die Departement van Onderwys voel, aangesien daar baie min of geen ondersteuning en kommunikasie tussen die onderwysers en die Departement is nie.

Die onderwysers voer aan dat daar nie ooreenstemming is tussen die inhoud en assesseringsvereistes in graad 9 en 10 nie, wat meebring dat leerders sukkel om in graad 10 aan te pas. Onderwysers wend hulle dan na maatreëls soos om die AOO meer soos die VOO te struktureer en die inhoud van Natuurwetenskappe in graad 8 en 9 te herorganiseer en te wysig in 'n poging om leerders beter vir Lewenswetenskappe in graad 10 voor te berei.

Al die onderwysers wat aan hierdie studie deelgeneem het, het aangedui dat hulle nie genoegsame opleiding ontvang het om hulle met die oorgangproses van AOO na VOO te help nie. Redes hiervoor het ingesluit dat indiensopleiding en werkswinkels meer op administrasie fokus as wat dit onderwysers van die nodige konteksspesifieke opleiding voorsien om die Nasionale Kurrikulumverklaring te implementeer.

Dit is duidelik dat hoogs opgeleide onderwysers nodig is om 'n suksesvolle oorgang van AOO na VOO te verseker. Onderwysers behoort toegelaat te word om insette tot kurrikuluminisiatiewe te lewer, aangesien dit uiteindelik die onderwysers is wat verantwoordelik is vir die implementering van nuwe kurrikuluminisiatiewe.

ACKNOWLEDGEMENTS

First and foremost I offer my sincerest gratitude to my supervisor, Dr. Marie Louise Botha, who has supported me throughout my study with her patience and knowledge whilst allowing me room to work in my own way. Her selfless time, care, and positive encouragement were sometimes all that kept me going.

I am extremely grateful to the four teachers who so graciously agreed to participate in this study. Without their participation, this study would not have been possible.

I would like to thank Laetitia Bedeker for doing the language editing. The advice and editing she offered were of exceptional quality.

Finally, I would like to thank my husband, Ryan for his personal support and great patience at all time. Thank you for not allowing me to throw in the towel – you are my eternal catalyst. To Brakkenjan and Dobby, our two pugs who kept me company during the late nights. Home is where the three of you are.

ACRONYMS AND ABBREVIATIONS

ANC	African National Congress
C2005	Curriculum 2005
CAPS	Curriculum and Assessment Policy Statement
CEM	Council of Education Ministers
CIE	Catholic Institute of Education
DoBE	Department of Basic Education
DoE	Department of Education
EFA	Education For All
EMIS	Education Management Information Systems
FET	Further Education and Training
GET	General Education and Training
GIS	Geography Information Systems
NCS	National Curriculum Statement
NQF	National Qualifications Framework
OBE	Outcomes-based Education
REQV	Relative Education Qualification Value
RNCS	Revised National Curriculum Statement
SADTU	South African Democratic Teachers Union

TABLE OF CONTENTS

Heading	Page
CHAPTER ONE: INTRODUCTION AND ORIENTATION OF STUDY	1
1.1 INTRODUCTION	1
1.2 RATIONALE FOR THE STUDY	1
1.3 BACKGROUND TO THE RESEARCH PROBLEM	2
1.4 EDUCATION IN SOUTH AFRICA	5
1.4.1 General Education and Training and Further Education and Training	6
1.4.2 Current problems with Science Education in South Africa	7
1.4.3. Concerns about the Curriculum and Assessment Policy Statement	9
1.4.3.1 Natural Sciences	9
1.4.3.2 Life Sciences	10
1.4.3.3 Concerns about the Life Sciences Curriculum	11
1.5 DESCRIPTION OF THE PROBLEM	12
1.6 PROBLEM STATEMENT	13
1.7 AIMS AND OBJECTIVES OF THE STUDY	13
1.8 RESEARCH QUESTIONS	14
1.9 RELEVANCE OF THE STUDY	14
1.10 SCOPE OF THE STUDY	15
1.11 LIMITATIONS OF THE STUDY	16
1.12 ORGANISATION OF THE STUDY	16
1.13 CHAPTER SUMMARY	16
CHAPTER TWO: LITERATURE REVIEW	18
2.1 INTRODUCTION	18
2.2 PHILOSOPHY OF THE TRANSITION PROCESS	18
2.3 SUPPLY AND DEMAND OF TEACHERS IN SOUTH AFRICA	19
2.4 THE PROFILE OF PRACTISING TEACHERS	20
2.5 TEACHER ATTRACTION, ATTRITION AND RETENTION IN SOUTH AFRICA	21
2.6 QUALIFICATION LEVELS OF PRACTISING TEACHERS	22
2.7 PREPAREDNESS FOR THE CURRICULUM	23
2.8 PHYSICAL WORKING CONDITIONS AND SALARIES OF TEACHERS	25
	vii

2.10 THE ATTITUDE REQUIRED IN TEACHING SCIENCE	29
2.11 HOW TO TEACH EFFECTIVELY	29
2.12 INTERNATIONAL STUDIES ON TRANSITION AND/OR TRANSFER	32
2.13 SOUTH AFRICAN STUDIES ON TRANSITION	38
2.14 THEORETICAL FRAMEWORK	40
2.15 CHAPTER SUMMARY	44
3.1 INTRODUCTION	45
3.2 RESEARCH PARADIGM	45
3.3 THE ROLE OF THE RESEARCHER	47
3.4 RESEARCH APPROACH AND METHOD	47
3.4.1 The qualitative research approach	48
3.4.2 The interpretive paradigm	49
3.5 THE RESEARCH DESIGN	50
3.5.1 The multiple case study	51
3.6 GENERALISATIONS FROM A CASE STUDY	52
3.7 THE STUDY POPULATION	53
3.8 SAMPLING APPROACH AND STRATEGY	53
3.8.1 Sampling criteria	54
3.9 ETHICAL CONSIDERATIONS	55
3.10 NEGOTIATING ACCESS TO THE SETTING	55
3.11 DATA-COLLECTION METHODS	56
3.11.1 Questionnaire (Addendum C)	56
3.11.1.1 The advantages of a questionnaire	57
3.11.1.2 Disadvantages of using a questionnaire	58
3.11.2 Simple observation (Addendum D)	58
3.11.2.1 Advantages of observation	59
3.11.2.2 Disadvantages of observation	60
3.11.3 Semi-structured interviews (Addendum E)	60
3.12 TRANSCRIBING	62
3.13 THE VALIDITY OF INTERVIEW DATA	62
3.14 PHOTOGRAPHIC EVIDENCE	63
3.15 DATA ANALYSIS	64
3.16 TRIANGULATION	64
3.17 TRUSTWORTHINESS OF THE STUDY	65

3.17.1 Credibility	65
3.17.2 Transferability	67
3.17.3 Dependability	67
3.17.4 Confirmability	68
3.18 CHAPTER SUMMARY	68
CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION	69
4.1 INTRODUCTION	69
4.2 SECTION A	69
4.2.1 Literature on Thematic Analysis	69
4.2.2 What constitutes a theme?	70
4.2.3 Choices	70
4.2.4 Performing thematic analysis	71
4.3 SECTION B	72
4.3.1 Introduction	72
4.3.2 PART 1: ANALYSIS OF QUESTIONNAIRES (ADDENDUM C)	73
4.3.2.1 Demographic data	73
4.3.3 PART 2: ANALYSIS OF OBSERVATIONS (ADDENDUM D)	77
4.3.4 PART 3: ANALYSIS OF SEMI-STRUCTURED INTERVIEWS (ADDENDUM E)	81
4.3.4.1 Data structure	81
4.4 CHAPTER SUMMARY	101
5.1 INTRODUCTION	102
5.2 RESEARCH FINDINGS	102
5.2.1 How do the teachers' experiences of the transition process affect their attitude towards science, FET and teaching in general?	102
5.2.2 How does the school context, learning resources and infrastructure play a role in the successful implementation of the curriculum?	103
5.2.3 How do the available teacher training and support systems assist with the transition from GET to FET? Is this assistance adequate to prepare teachers for their responsibilities to implement the curriculum?	103
5.2.4 What are the successes and failures while negotiating this transition process?	103
5.2.5 What are the subjective experiences of science teachers regarding the transition process from Natural Sciences (Grade 9) in the GET band to Life Sciences (Grade 10) in the FET band?	104
5.3 LIMITATIONS	104
5.4 EMERGING ISSUES AND DIRECTIONS FOR FURTHER RESEARCH	104
5.5 CHAPTER SUMMARY	105

LIST OF FIGURES

Figure 2.1: Provincial distribution of educators and learners, 2010 (%)	20
Figure 2.2: Highest qualification awarded in the field of Education [n=610 261] (Mda & Erasmus, 2008:69)	23
Figure 2.3: Aspects of a gap (adapted from Rollnick <i>et al.</i> , 1998)	42
Figure 2.4: Model of the relationship between factors contributing to a gap (adapted from Rollnick <i>et al.</i> , 1998)	43

LIST OF TABLES

Table 2.1: Satisfying and stressful aspects of being a teacher	28
Table 2.2: Attempts to make teachers and teaching more effective	31
Table 4.1: Demographic data	73
Table 4.2: Number of Grade 9 and 10 classes and average class size (retrieved from interviews)	74
Table 4.4: FET training received and its sufficiency	76
Table 4.5: Participant support from school and Department of Education	77

LIST OF ADDENDA

ADDENDUM A: APPROVAL LETTER TO CONDUCT RESEARCH FROM WESTERN CAPE EDUCATION DEPARTMENT	115
ADDENDUM B: ETHICAL CLEARANCE CERTIFICATE	116
ADDENDUM C: OPEN-ENDED QUESTIONNAIRE	117
ADDENDUM C: TEACHER A QUESTIONNAIRE	124
ADDENDUM D: LESSON OBSERVATION	131
ADDENDUM E: SEMI-STRUCTURED INTERVIEW GUIDE	133
ADDENDUM F: TEACHER A INTERVIEWS TRANSCRIPTIONS	134
ADDENDUM G: TEACHER B INTERVIEWS TRANSCRIPTIONS	147
ADDENDUM H: TEACHER C INTERVIEWS TRANSCRIPTIONS	162
ADDENDUM I: TEACHER D INTERVIEWS TRANSCRIPTIONS	175

CHAPTER ONE: INTRODUCTION AND ORIENTATION OF STUDY

1.1 INTRODUCTION

In this chapter, the orientation and rationale, which form the basis of understanding of this research study, are provided. The background statement of the problem and research questions are outlined together with the objective of this research study. The thesis focuses primarily on inquiry to elicit science teachers' experience of the transition process from General Education and Training (GET) to Further Education and Training (FET), but more particularly with the emphasis on Natural Sciences in Grade 9 to Life Sciences in Grade 10. This chapter offers a brief description of the current education system in South Africa, as this offers an overview of some of the frequent curriculum changes introduced which the teacher must ultimately implement. Thereafter, some of the challenges teachers may experience are discussed. The chapter concludes by indicating the scope and relevance of this study.

Before this chapter commences, however, the reasons for embarking on this research journey are motivated. The rationale for this study follows in Section 1.2.

1.2 RATIONALE FOR THE STUDY

The demand on teachers to teach effectively has become more complex in recent years. Teachers are now expected to teach effectively in different languages, to teach learners from diverse cultures and socio-economic backgrounds, to teach learners with behavioural challenges and through all of this, keep pace with the advancing technology and fields of knowledge. These demands are due to the many curriculum change processes since 1994, which include Curriculum 2005 (C2005), the Revised National Curriculum Statement (RNCS), transition phase training, Further Education and Training (FET), the National Curriculum process (Reddy, Dlamini & Ntshingila-Khosa, 2004:9) and, more recently, the Curriculum and Assessment Policy Statement (CAPS). One of the issues that emerge from the frequent curriculum changes is that teachers are often regarded as responsible for championing these initiatives. They are expected to understand, assimilate the transitions in their working lives and negotiate the implications of the initiatives, yet the consequences for themselves, the learner and the schools have yet to be fully understood.

It is the goal of this thesis to shed light on one such matter of uncertainty, namely how teachers are experiencing the transition process from Natural Sciences in the GET band to Life Sciences in the FET band. The decision to investigate this matter of teachers and their personal experience is deemed important as the researcher believes that quality education should address the needs and aspirations of teachers so that they in turn can confront potential challenges and become

empowered on a personal and professional level. A further issue, as explained by Mack (2010:5), is that more teachers are conducting research to not only inform their teaching in the classroom but also to bridge the gap between the external researcher dictating policy and the teacher negotiating that policy in terms of the practical demands of their classrooms. The researcher believes that teachers are one of the most significant resources in schools and are central to school improvement. Therefore, she argues that the efficiency and equity of schooling depend on ensuring that competent teachers want to work in a teaching profession and continue to work in this profession. It is also the researcher's argument that in order for efficiency and equity to be accomplished, one has to go to the source and enquire about teachers' professional experiences. With this argument in mind, the topic of discussion for this research study was teachers' experiences during the transition process from GET to FET, with the focus on Natural Sciences in Grade 9 to Life Sciences in Grade 10.

The research topic is further influenced by the researcher's personal experience while teaching Natural Sciences in the GET band and Life Sciences in the FET band at a historically under-privileged school. As a new teacher with limited experience, the practical realities of teaching was difficult and at times the researcher felt disheartened by the numerous additional educational responsibilities she had to fulfil. In addition, she had to negotiate the transition from GET to FET, which she found challenging, while at the same time being unsure of what was expected of her in the FET band on a professional level.

The researcher discovered, as did Peloagae (2009:2), that little literature exists on transitions from one phase of education to another. It therefore became imperative for the researcher to determine and investigate how other teachers are experiencing this transition process and to document these findings from a teacher vantage point. This study has also enhanced the researcher's allegiance to the teaching profession and through this teaching has taken on a new meaning for her.

It is within this context that the researcher aspired to explore the successes and failures of the Natural Sciences (GET band) to Life Sciences (FET band) transition process and where problems were experienced, to offer some ideas with which these challenges may be met within the unique context of the different schools.

1.3 BACKGROUND TO THE RESEARCH PROBLEM

In 1997 the Council of Education Ministers (CEM) made the decision to replace the old apartheid curriculum with a new Outcomes-based Education (OBE) curriculum in the GET and FET bands,

and this new curriculum, referred to as Curriculum 2005 (C2005), was introduced in the GET band in 1998.

The implementation of C2005 soon ran into difficulties and teachers complained of the lack of support, poor training, complex curriculum design and the pace of implementation (Peloagae, 2009:1). The process of developing a new curriculum for FET was then put on hold pending the outcome of the streamlining and strengthening of C2005 (DoE, 2003:3). Finally, the National Curriculum Statement (NCS) for grades R–9 (Schools) was approved as policy by Cabinet and schools introduced the curriculum for FET incrementally, starting with Grade 10 in 2006.

However, the phasing in of OBE in the FET band proved not to be a smooth and successful process. As early as 2003 this became evident, for it was reported that there was a higher than usual failure rate at the end of Grade 10 (Christie, Butler & Potterton, 2007:70; Reddy *et al.*, 2004:5). Data-collection methods for this report included a review of relevant documents obtained from the National Department of Education (DoE) and from the national provinces. Interviews were conducted with representatives at the National DoE and site visits to three provinces were conducted. Case studies of three provinces were conducted. The provincial site visits comprised of interviews with provincial officials; district officials, such as subject advisors; and teachers and principals in the schools.

It was documented in another report that learners from primary school arrived at high school not being able to read and write properly; that they lacked systematic knowledge; and that they found the transition to senior grades difficult (Christie *et al.*, 2007:68). The result was seen to be an added burden for teachers in grades 10 to 12, plus a failure and drop-out pattern as the end of grade 10. FET teachers had strong views that this failure rate occurred because of inadequate teaching and learning practices in the lower grades, the GET band (Christie *et al.*, 2007:68). Contrary to this, teachers in primary schools felt that they were not accountable for learner performance and therefore senior secondary schools had to shoulder the load (Christie *et al.*, 2007:88). Hence, one can assume that the FET teachers are left to deal with this poor performance and devote time and attention to address whatever shortcomings the learners may have. In addition, not only must the FET teacher teach the intended curriculum, engage with learners, teach effectively and contend with numerous administration duties peripheral to learning, but learners also grapple with the new demands of a new grade and educational band. Unquestionably, for some learners this change will not be easy, which was confirmed by Peloagae (2009), and it can be assumed that additional time and attention will be required from the FET teacher to help smooth the transition from GET to FET, which can also be translated as a transition from C2005 to the NCS, as confirmed by Peloagae (2009).

This transition from C2005 to the NCS represented potentially serious challenges for both educators and learners, because it was discontinuous and inconsistent with the curricula with

which educators and learners were familiar (Peloagae, 2009:1). In addition, Reddy *et al.* (2004:6) determined, among other findings (these findings will be discussed in more detail in Chapter Two), that the infusion of the principles of OBE into the FET band was unplanned and hastily prepared, which caused many problems in the system. This was one of the reasons why the 2003 cohort of learners had to move back to the NATED curriculum in Grade 10 after receiving Outcomes-based Education, through C2005, during the previous three years. According to the findings of this study, this shift caused many uncertainties, confusion and stress in the system, which indicated that a gap exists between the GET band and FET band. Peloagae (2009) went as far as to describe this transition process as hazardous. The task is then left to the teachers to facilitate this transition process. The researcher's goal was to document the personal experiences of these teachers while negotiating this process.

Carl (2007) undertook an investigation with regard to the Grade 10 to 12 teachers who have been exposed to the introduction of the National Senior Certificate curriculum since 2006. It was determined that 70.9% of teachers in the Western Cape were not positive about the intended curriculum. In the same study, 35.1% indicated that they were relatively prepared and 49.3% felt that they were not at all prepared for OBE to be implemented in the FET band. It was also determined that most learners felt that the transition from the GET band to the FET band was a difficult one (Peloagae, 2009:123).

The statistics of this study causes concern, because it appears that these teachers do not share a sense of destination. Furthermore, despite many external differences between the GET band and FET band, the primary mission of all teachers remains the same, which ultimately includes assisting the learner to pass the year and move on to the next grade or phase of schooling.

This diversity of opinions and perceptions causes concern, as it seems that there is a feeling of separation between teachers teaching in the GET band and those responsible for the FET band, especially because the very essence of the education and training system in South Africa is to establish a coherent and integrated approach (DoE, 1995). The researcher is of the opinion that this vision of a coherent and integrated education and training system will not be realised if people who are responsible for making this vision a reality are divided. It is with this opinion in mind that this study investigates how science teachers, with their feet in both the GET band and FET band, and teaching both Natural Sciences (Grade 9) and Life Sciences (Grade 10), are experiencing this transition process from GET to FET and what challenges they have experienced and must overcome.

Before a brief discussion of GET and FET follows, it is necessary to first provide an analysis of the education system in South Africa. This background information about the education system is necessary to relate the complexity that not only teachers but also learners have to experience and manage to ultimately succeed successfully regarding their education.

1.4 EDUCATION IN SOUTH AFRICA

In South Africa, the education system is organised in different phases, namely the Early Childhood Development Phase, the Foundation Phase (grades 1–3), the Intermediate Phase (grades 4–6), the Senior Phase (grades 7–9) and Further Education and Training (grades 10–12), with equivalent levels in FET colleges, previously called technical colleges. It is also in the Senior Phase at the end of Grade 9 that learners have the opportunity to choose their specialising subjects for grades 10 to 12 in the FET band.

Peloagae (2009:36) refers to this arrangement within the education system as 'transition within transition'. This becomes apparent especially in the GET band, as grades R to 7 form part of the primary school system and grades 8 and 9 are part of the secondary school system. This implies that the learners in the Senior Phase will experience an interruption in the continuity of their education in the GET band when they have to go to a secondary school. Therefore, the transition to secondary school could potentially cause problems, as primary and secondary schools are characterised by different cultures (Ward, 2000:365). Primary schools tend to be based on a child-centred learning environment that is characterised by a homeroom-based organisation in which subject integration is an obvious feature. In contrast, partly as a factor of their size, secondary schools tend to be organisation-driven and offer a learning environment that is largely subject-oriented and taught by subject specialists.

Schools account for 70% of all learners in the FET band (DoE, 1998). However, research about the FET band has been dominated by research regarding FET colleges, and this raises a number of concerns. Insufficient attention to schools and in particular resourced-constrained environments needs to be addressed, as this can have a negative impact on the implementation process and the vision of scientific literacy for all South Africans.

It was government's aim to transform and develop education that will provide equal access to education and training to citizens, which will ultimately lead to economic growth (ANC, 1994). To accomplish this, government developed numerous policy documents as aids to transform the education system. C2005 in 1997 and RNCS in 2002 are two major curriculum policy developments that were introduced. In 2006, the NCS was implemented in schools. These changes also had a significant impact on the science education provided in South Africa.

Recent and ongoing educational reforms have emphasised the importance of being scientifically literate (Rogan, 2003:1171; Taylor, 2001). Gray (1999:262) accuses South Africa of following developments in the First World without considering whether we have the resources to support the change. He also advises that developing countries need to have greater confidence in their ability to produce curricula and policies that are authentic, contextually relevant and affordable.

Despite the growing interest in the importance of being scientifically literate, the past few decades have seen a steady decline in the quality of science education in South Africa (Gray, 1999:261). This could prove to be detrimental to the future of African advancement and if current trends continue, we face a national crisis because science education is the foundation for many jobs in our economy (Science in Africa, 2005). Despite this situation, there is an impending shortage of teachers in the country, especially in scarce skills areas such as Mathematics, Science and Technology (DoE, 2006:11). This causes concerns, because scientific achievement has become the main driver for development in society.

As it was the researcher's intention to explore the experience of science teachers regarding the transition from GET to FET, a brief discussion of the GET band and FET band and the two learning areas, namely Natural Sciences and Life Sciences, follows.

1.4.1 General Education and Training and Further Education and Training

The curricula of both the GET and the FET bands are based on the concept of OBE. OBE focuses on what learners should know and be able to do, which moves education away from the previous rote mode of learning and teaching to an interactive and learner-centred initiative (DoE, 2006:4). GET comprises of three phases: the Foundation Phase, the Intermediate Phase and the Senior Phase (DoE, 1997:3). However, the objective of this study was to explore the transition process from GET to FET, and therefore only the Senior Phase of the GET band, with specific reference to Grade 9 Natural Sciences, is relevant. FET is categorised into four main sectors: secondary schools, publicly funded colleges, private off-the-job providers and work-based education and training (DoE, 1998:3).

Learners in the Senior Phase (grades 7–9) will receive the General Education and Training Certificate at the end of Grade 9. Some of the skills that learners could acquire at the end of this phase include engaging in open argument and being willing to accept multiple solutions to single problems. The learning content offered in this phase would therefore be less contextualised, more abstract and more area-specific than in the previous phases. It is also compulsory for learners to take all eight learning areas in the GET band, of which Natural Sciences is one.

According to the DoE (2002:5), the Natural Sciences Learning Area comprises a wide variety of fields of inquiry, ranging from the study of how stars form to how microscopically small animals live, and from the study of crystals to understanding how the climate of the earth is changing. The learning area Natural Sciences is therefore grouped into four content areas: Life and Living, Energy and Change, Planet Earth and Beyond, and Matter and Materials.

FET consists of all learning and training from the National Qualifications Framework (NQF) levels 2 to 4, or the equivalent of grades 10 to 12 in the school system. It also includes the National Certificate 1 to 3 in FET colleges. After the completion of the compulsory phase of education in Grade 9, learners enter the FET band, which is non-compulsory (DoE, 1998). At the end of Grade 12, learners write a public examination on a minimum of six subjects to obtain their National Senior Certificate. Various providers are involved in this band, of which secondary schools, specifically Grade 10 Life Sciences, are relevant to this study. Life Sciences, previously known as Biology, can be chosen by Grade 10 learners who want to pursue a career in biological sciences. Of the four content fields in Natural Sciences (GET), Life and Living is the only background knowledge to Life Sciences to which learners were introduced.

According to Stears and James (2004:166), the three learning outcomes for Life Sciences seek not only to develop competence in biological knowledge, but also to develop the ability to “think like scientists” and to develop an understanding of the “nature of science”. At the FET level, learners should be prepared for higher education, vocational education, careers and self-employment. The policy document for C2005 (DoE, 1997:6) did however caution that standards and curriculum in this band will have to be carefully coordinated to adhere to the NQF based on the principle of integration of education and training. Simply put, this means that there should be a smooth transition for teachers and learners from GET to FET. However, a study by Christie *et al.* (2007) indicated that there is a division between teachers teaching either GET or FET.

Before this transition process is explored, it is necessary to take into account that science education in South Africa has experienced some setbacks. A brief discussion of these challenges follows.

1.4.2 Current problems with Science Education in South Africa

The state of science education in South Africa is regarded by many as a cause for concern (Gray, 1999; Howie, Scherman & Venter, 2008; Kriek & Grayson, 2009:185). The reasons expressed by these various authors include limited content knowledge, ineffective teaching approaches and unprofessional attitudes of teachers (Kriek & Grayson, 2009). Reddy *et al.* (2004) provide additional reasons, including poverty, lack of resources, learning cultures, infrastructure of schools and low teacher qualifications.

Howie *et al.* (2008) determined that the performance of South African learners in science, and particularly that of learners in disadvantaged areas, is very low. In addition, teachers in poorer communities must cope with limited resources, which directly affect the achievement and attitudes of learners (Ferreira, 2004:105; Papanastasiou & Zembylas, 2002). Within the diverse context of South African schools, this can prove to be problematic, as the improvement of science education

is often regarded as a priority for developing countries in order to promote long-term economic development (Rogan, 2003:1171). It can also be assumed that the context of the school is a major contribution to learners' performance. According to Taylor (2001:7), the main problem in our schools is poverty. The majority of South African children come from illiterate or semiliterate homes that do not facilitate epistemological access, and many of our teachers are first-generation literates, who themselves possess rather scanty knowledge resources. According to Taylor (2001), the poor levels of learner performance in South African schools at this point are however probably not largely the fault of the new curriculum, as the implementation cycles of education are far too long for C2005 to have had a major effect on schooling during this limited period of implementation. However, Taylor (2001:7) cautioned that C2005 in particular were exacerbating the situation.

Gray (1999:262) accused South Africa of following developments in the First World without considering whether they have the resources to support the change and whether it is contextually relevant or not. Rogan (2003:1171) believes that the reason for the poor performances is that there is more emphasis on the development of science curricula, while the details of how the curricula will be implemented at school level are often neglected. Furthermore, it is believed that school poverty could negatively influence learner achievement, especially in areas such as science (Tamir, 1989:30).

According to Muwanga-Zake (2009), one of the major problems encountered in science include the decreasing enrolment numbers for the subject Biology (Life Sciences). This drop in enrolment is attributed to fewer learners opting for Biology (wrongly excluded from 'science'), which is such an important subject for understanding environmental and conservation issues; health aspects, especially in this era of HIV/Aids; genetic engineering; and environmental degradation. Another issue is the poor quality of teachers. Ogunniyi (1996:278) in Muwanga-Zake (2009) notes that no education system is greater than the level of teachers, and therefore standards in science classrooms may fall because of the shortage of properly trained science teachers. School environment can be included as another issue, as MacDonald and Rogan (1988) in Muwanga-Zake (2009) argue that some school environments demotivate learning. A further issue is the change to C2005. It is considered that science education was likely to suffer from changes in the curriculum and syllabi, which had changed almost every two years. The last issue to consider is that teaching science is unpopular. Ogunniyi (1996) also suggested that science teachers suffer from low morale due to being overworked.

Other issues discovered from the literature are that of the CAPS, which was developed for each subject to replace Subject Statements, Learning Programme Guidelines and Subject Assessment

Guidelines in grades R to 12 (DoBE, 2011), and the Life Sciences curriculum itself. A brief discussion of these concerns follows in the next section.

1.4.3. Concerns about the Curriculum and Assessment Policy Statement

The Catholic Institute of Education (CIE, 2010:3), after examining the CAPS document, described the document as “inconsistent and patchy”, considering that a key aim of producing the CAPS document was to provide more specific guidance for teachers. Some general concerns about the document listed are that teachers need to know what the level of difficulty is and how best to prepare learners for exams and that this is not stated in the CAPS document. CIE is furthermore of opinion that the guidance across subjects is varied and that the cognitive challenge dimension is only taken note of in some subject documents. A further issue is that the organising principles of the curriculum are not spelled out.

This CIE (2010) submission was prepared after consultation with schools around the country that offered their comments, as CIE (2010) has the opinion that practitioners are best able to give critical insight into the proposed changes.

The comments of the CIE (2010) regarding Natural Sciences and Life Sciences are discussed below:

1.4.3.1 Natural Sciences

- General comments included that there seems to be an overlap between Geography and Natural Sciences which might cause confusion for learners when dealing with either of the subjects. The four knowledge areas are clearly listed and CAPS is therefore considered a good guide for the teacher regarding knowledge of the expected aims.
- Sufficient time has been provided for teaching, assessment and projects and the content is brief and the teacher might need to be creative in expanding on the content to make sure that learners have a three-dimensional understanding of the content.
- The assessment guide provided is helpful for the teacher and the flexibility of the guide allows the teacher to be creative in teaching the content and the manageable time allows for individual learner attention in schools where learner numbers are small.
- The concerns listed include that the content in Grade 7 provides a good idea of the aspects that need to be covered; however, this is rather brief and some guidance with continuity will be

helpful. Furthermore, it seems that sections were thrown together, rather than developing a coherent, progressive curriculum.

- It is also recommended that the resources and textbooks will need updating to include all recommended content and teachers will have to be guided with regard to suitable material to be used. The concern arises whether the DoE will be able to supply new resource material and train teachers in time.

1.4.3.2 Life Sciences

- General comments included that the idea of having a single document covering curriculum and assessment issues is welcomed. The document also serves as a work schedule, as the weeks are indicated which is useful in helping teachers keep pace. The column indicating the required practical work serves to create awareness and encourage the use of practical work in teaching.
- The content has not been sufficiently defined to guide teachers in terms of scope and depth. There needs to be a common understanding of the scope and depth of content, especially when it comes to external assessment tasks.
- The delayed implementation for the Sciences curriculum is suggested. The motivation for this recommendation is that the original NCS curriculum for Life Sciences was implemented only three years before and after much time, energy and money were spent by both the national and provincial departments in the training thereof, there is now yet another change. The delayed implementation will allow enough time to debate, to discuss the curriculum and to iron out issues before full-scale training can begin to ensure the smooth implementation of the newly prescribed curriculum. A further reason offered for the delayed implementation of the science curriculum is that the implementation of the RNCS caused unnecessary pressure on all concerned. These revised Life Sciences should be allowed to run its course over five years in order not to lower the morale of both teachers and subject advisors, which is caused by frequent changing of the curriculum. This will also justify the large sums of money spent on textbooks, which most provincial departments have recently purchased.
- Some of the concerns mentioned include that the CAPS document proposes a two-paper system, one with the focus on content and the other on practical work (grades 10 and 11). This creates a dichotomy between content and practical work. It also impedes the principle of integrating the various specific aims within a single assessment task. In addition, even though

Paper 2 will be the practical paper, learners will still have to know all of the year's content, as this underpins all the practical work done which makes undue demands on the learners.

- Another concern is that a larger number of assessments are requested. The large number of written and practical tests used in the different terms is meant for development purposes, allowing learners to make mistakes and learn from their mistakes. It could be said however that is unfair to use these tasks as part of formal assessment. It is sufficient to use the controlled test/exam, which is balanced in terms of specific aims and cognitive levels, at the end of a term for formal assessment. The other term tests could be used as preparation for the end of term test/exam.
- It was the intention that the CAPS document should be comprehensive so that it does not necessitate any supporting documents. In this regard, the CAPS document does not clearly describe each type of assessment. Furthermore, a teacher may have all tests count a maximum of 10 marks, as opposed to another teacher using 50 as the maximum mark. The results of the learners of these two teachers are now not comparable and therefore compromise the issue of reliability, fairness and validity.
- The nature of the practical tasks required should also be specified to avoid teachers focusing on a narrow range of skills. The range of maximum marks proposed (10–30 marks) could result in varying quality and standards of the assessment tasks developed.. It is firmly suggested that the current formal assessment programme being used in schools be retained in terms of the number, nature and weightings of the various assessment tasks.

1.4.3.3 Concerns about the Life Sciences Curriculum

Stears and James (2004:165) expressed some concerns about the implementation of the Life Sciences curriculum in the FET band, as it is based on the assumption that teachers have the necessary resources and competencies to implement the curriculum. The introduction of new content areas and the lack of Life Sciences resources pose more challenges to teachers in keeping abreast with the changes. They further state that the learning outcomes require that teachers will need to teach learners how to do investigations, have a thorough knowledge of new fields in the Life Sciences (Biology), and master a particular methodology when teaching these topics.

Stears and James (2004) expressed their concerns and recommendations about the Life Sciences curriculum. Firstly, these included that with the introduction of the NCS, the teachers were likely to find that sections of their knowledge base are eroded, as some of the more traditional content had

been removed. The implementation of the NCS exacerbated the lack of confidence in many teachers, as it involved working outside the confines of the classroom, something that many teachers found threatening.

A methodology that requires an active learning environment with input from various learners is often unfamiliar to practising teachers. To avoid a reversion to a 'talk and chalk' model of teaching, the education of teachers in new approaches to teaching Life Sciences is an imperative. In addition, if teachers are to implement the Life Sciences curriculum using appropriate methodology, they must have improved access to resources. Teachers who enter the profession for the first time may be qualified to teach according to the new curriculum, but without access to Life Sciences materials in schools, they will find it very difficult to ensure that learners achieve the stipulated learning aims. In addition, these teachers will therefore need ongoing support if they are to transfer skills learnt during initial teacher education to the learners. The re-skilling of practising teachers is needed. These experienced teachers are important resources and the success of the implementation of the Life Sciences curriculum will depend largely on themselves and their willingness to embrace the changes. One or two workshops are not enough. This re-skilling will require intensive courses, both in methodology and content knowledge of the Life Sciences. Teachers need to be empowered to deliver the curriculum to learners in such a way that they become competent in the appropriate knowledge, skills, attitudes and values espoused by the new curriculum. The education sector must support teachers in the implementation of the new Life Sciences curriculum.

This current research study investigated the transition process from Natural Sciences to Life Sciences, specifically how these science teachers are experiencing and negotiating the transition process.

1.5 DESCRIPTION OF THE PROBLEM

Teachers work in extremely complex conditions, largely due to the pervasive legacies of apartheid, but also as a result of the new policies needed to bring about change in education. In January 2009, the DoE released the NCS Grades 10–12 (General) (DoE, 2009), which included yet more changes to the Life Sciences curriculum implemented in 2007. The CAPS documents for grades 10 to 12 were implemented between 2009 and 2011. Despite the intent that this new policy documents will provide clarity on the information provided in the new Life Sciences content, this is yet more policy changes for science teachers to consider and to internalise within a short period of time.

Galton and Morrison (2000:443) warn that if teachers and policy makers are to manage these transitions effectively, they need to listen more carefully than in the past to what learners have to

say on these matters. Furthermore, evidence suggests that current policy and practice are largely directed at ensuring that the process is administratively efficient and that the learners' personal and social concerns are reduced to the minimum.

1.6 PROBLEM STATEMENT

The focus of the study is to elicit science teachers' experiences of the transition process from Natural Sciences (Grade 9) in the GET band to Life Sciences (Grade 10) in the FET band, with specific emphasis on Grade 10. It was the aim of this study to investigate the similarities and differences in experiences of teachers in the different case studies. This research study further identifies and describes the teachers' attitude towards Life Sciences in Grade 10 and FET. The question was analysed whether the context of the school, learning resources and infrastructure have an effect on these experiences and the successful implementation of specifically the Life Sciences curriculum. The available teacher training and support systems were to assist with the transition from GET to FET were investigated, and it is debated whether this assistance was indeed adequate to prepare these teachers for their responsibilities to implement the NCS and the new CAPS. Lastly, the successes and failures experienced while negotiating this transition process are formulated and strategies are suggested for the successful negotiation of a transition process.

1.7 AIMS AND OBJECTIVES OF THE STUDY

The broader aim of this study was to produce a thick description (Denzin, 1989:83) of the personal experiences of science teachers regarding the transition process from GET to FET, with the focus on the learning areas of Natural Sciences in the GET band and Life Sciences in the FET band. Further aims of this study were to investigate the similarities and differences in the experiences of teachers in the different case studies. The study also investigated the way in which the transition process affects the attitude of teachers, especially towards Life Sciences in Grade 10, and reports on teachers' thoughts about receiving adequate training to assist them with the implementation of the NCS and at a later stage, CAPS, and to identify teacher training and support factors that hinder and/or promote the successful negotiation of the transition process from GET to FET.

In addition, it was the objective of this research to report the findings and recommend ways to contribute to the successful practices of these teachers in terms of the successes and failures experienced.

1.8 RESEARCH QUESTIONS

In order to achieve the abovementioned aims, the following research questions were answered.

The main research question was formulated as follows:

- What are the subjective experiences of science teachers regarding the transition process from Natural Sciences (Grade 9) in the GET band to Life Sciences (Grade 10) in the FET band?

In order to provide a 'thick description' of the findings of this report, the following sub-questions were formulated:

- How do the teachers' experiences of the transition process affect their attitude towards science, FET and teaching in general?
- How does the school context, learning resources and infrastructure play a role in the successful implementation of the curriculum?
- How do the available teacher training and support systems assist with the transition from GET to FET? Is this assistance adequate to prepare teachers for their responsibilities to implement the curriculum?
- What are the successes and failures while negotiating this transition process?

1.9 RELEVANCE OF THE STUDY

This study is a follow-up to Peloagae's (2009) study on learners' experience of the transition process, or 'phase', as described in this study, from Natural Sciences in the GET band to Physical Sciences in the FET band. The current study, however, focuses on Life Sciences in the FET band instead of Physical Sciences. Some findings revealed by Peloagae (2009) included that the transition was characterised by misalignment of not only content knowledge but also assessment practices. Content was not prescribed in the C2005, but was reintroduced in the NCS curriculum. The learners, new to the FET band, thus lacked scientific content knowledge. It was further determined that the exit level examination of the GET band failed to assess knowledge of basic science concepts required as a foundation for the FET band. In addition, it was reported that the emphasis on continuous assessment during GET did not prepare the learners for the challenges of studying for tests and examinations. Hence, the learners experienced the transition as difficult.

As Peloagae (2009:iv) offered evidence that learners experienced the transition from Natural Sciences in the GET band to Physical Sciences in the FET band as difficult, it was the aim of this research study to determine what the teachers' experiences are during the transition from GET to FET, but with the emphasis on Life Sciences in Grade 10. This research study therefore offers insight into effective strategies for negotiating this transition from GET to FET and the

implementation of the NCS. The findings of this study concluded that two of the four participants experienced difficulty during the transition process from GET to FET, while the other two experienced a smooth transition. It was determined that factors such as available resources and teacher support, from the school as well as the Department of Education greatly affects how teachers experiences the transition process.

1.10 SCOPE OF THE STUDY

The aim of this study was to explore the very relevant and current issue negotiating the transition process from GET to FET and the status of science education in South Africa. More specifically, through this multiple case study, the experiences of teachers regarding the transition process from Natural Sciences in the GET band to Life Sciences in the FET band with specific emphasis on Grade 10 Life Sciences were documented. This study was therefore limited to four case studies in the Western Cape, all with different contexts and including teachers from different age groups and years of experiences. Their teaching experience ranges from between 6 and 26 years, and it can be assumed that they are specialists in their subjects.

Within the limited range of this research study, this report attempts to present a snapshot of the experiences of sciences teachers' negotiation of the transition process from GET to FET. The study population of science teachers were limited to those teachers who are responsible for teaching both Natural Sciences (Grade 9) in the GET band and Life Sciences (Grade 10) in the FET band. Because the aim was primarily to focus on Grade 10 Life Sciences, the researcher only observed Grade 10 classes in an effort not to disrupt the participants' day / classroom schedule entirely. The researcher did however make adequate allowance during the interview and questionnaire to elicit the teachers' experiences of Grade 9.

To the researcher's knowledge, no empirical study had been conducted in South Africa that attempts to characterise the experiences of science teachers' with respect to the transition process from GET to FET. It was decided to determine how science teachers, who must facilitate the learners through this transition phase, are experiencing the transition process, from GET to FET, with specific reference to Grade 10 Life Sciences. A further aim was to determine how, if indeed, the context of the school has an effect on the individual experiences of these teachers. As mentioned in Section 1.4.2, teachers in poorer communities must cope with limited resources, which directly affect the achievement and attitudes of learners (Ferreira, 2004:105; Papanastasiou & Zembylas, 2002). It is with regard to this latter statement that it is regarded as imperative to determine whether the same is indeed applicable to teachers and whether context influences teachers' attitude towards teaching during a process of transition.

1.11 LIMITATIONS OF THE STUDY

This study was limited to science teachers teaching both Grade 9 Natural Sciences and Grade 10 Life Sciences in the GET band and FET band respectively. The results of this descriptive study cannot be generalised beyond the population because the data are idiosyncratic to the participants in this research study. The sample includes four teachers from four schools as a representative sample of different contexts. The fact that the teachers knew they were being observed may also have affected their responses and thus influenced the outcomes.

1.12 ORGANISATION OF THE STUDY

This research report is organised into five chapters.

Chapter One serves to introduce the orientation, motivation, and aims and objectives of the study. The background, problem statement and main research questions were also outlined.

Chapter Two is a review of the literature under topics such as the philosophy of the transition process; the supply and demand of teachers; teacher attraction, attrition and retention to the teaching profession in South Africa; teacher morale; and South African and international studies on transition.

Chapter Three describes the research design and methodology and processes pertaining to the study. The choices made with regard to methods of data collection are also explained.

Chapter Four explains and justifies the data analysis and interpretation used in the study. The results and findings are also conveyed in this chapter.

Chapter Five concludes the research study. In this chapter the aims, objectives, data and reviewed literature are linked. The main conclusions of the study are drawn and recommendations are made. Issues for further research are also raised.

1.13 CHAPTER SUMMARY

Chapter One serves as an introductory chapter and provides the background and problem statement, relevance and scope of the study. The main research questions and sub-questions were also revealed. This chapter also briefly highlighted some of the tensions of teachers teaching either within the GET band or the FET band and the researcher contended that teachers, as the primary implementers of the curriculum, have a responsibility to work together towards a common goal of transformation. The current and very relevant issue of the CAPS document was also briefly

discussed. The CIE's (2010) analysis of the CAPS document was presented, and it is summarised that CAPS failed in their opinion in its objective to provide more specific guidance to teachers.

It was also stated that this study intends to shed light on the experiences of teachers during the transition process from GET to FET, but that this topic requires further investigation to contribute, on a larger scale, to the academic literature and contributions to policy concerning CAPS specifically.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

It is essential that every research project begins with a review of the existing literature and available body of knowledge relating to the research topic. This is important because existing literature supports the research problem and provides additional support to the research findings and recommendations. Concerns about 'transfer' and 'transition' problems have been manifesting in a number of research studies conducted in recent years (Anderson, Jacobs, Schramm & Splittgerber, 2000; Braund & Hames, 2005; Demetriou, Goalen, Rudduck, 2000; Kagan & Newman, 1998; Kvalsund, 2000; Peloagae, 2009; Pietarinen, 2000; Rollnick, Manyatsi, Lubben & Bradley, 1998; Ward, 2000). The focus of activity in the past has been on the 'exit and entrance years', but Demetriou *et al.* (2000:439) suggest that in future, attention should be directed across the whole of the middle years of each phase of schooling as learners move from one year to another. The suggestion of Demetriou *et al.* (2000:439) informed this research study and further motivated the researcher to explore the research problem within the South African context.

This chapter starts with a discussion of the philosophy of the transition process and specific information relating to teachers and the teaching of science. It concludes with a summary of the literature discussed in this chapter.

2.2 PHILOSOPHY OF THE TRANSITION PROCESS

Demetriou *et al.* (2000:425) define 'transition' as the move from one year to another within the same school, compared to 'transfer', which refers to the move from one stage of schooling and from one school to another. According to Demetriou *et al.*, (2000:425), 'transfer' has received more attention in research than 'transition', and this indicates that the issue of transition is yet not fully understood and requires further investigation.

According to Galton and Morrison (2000:443), if teachers and policy makers are to manage these transitions effectively, they need to listen more carefully than in the past to what learners have to say on these matters. Peloagae (2009) already concluded that learners have difficulty moving from the GET band to the FET band. Therefore, it is due time to determine how teachers are negotiating this transition phase and whether in fact they can negotiate this transition successfully.

Peloagae (2009:3) quotes Patton and Dunn (1998), who regard comprehensive planning as one of the key elements to successful transition. According to Peloagae (2009:3), the more the GET educator knows about the receiving environment (for example primary school or previous grade), the better the chances for creating opportunities for effective transition to the new setting. He

argues strongly that there should be continuity in philosophies, curricula and ethos of Natural Sciences in the GET band and Physical Sciences in the FET band. Within the context of this study, the philosophies, curricula and ethos of Physical Sciences are substituted by that of Life Sciences in the FET band.

2.3 SUPPLY AND DEMAND OF TEACHERS IN SOUTH AFRICA

The South African teacher supply and demand scenario is in a state of equilibrium (DoE 2005:35). This implies that the decline or increase in numbers of learners is matched by a concomitant decline or increase in educators. It will therefore be reasonable to assert that there will be no shortages of teachers in South Africa, either in the short term or at any stage of the targeted period for the achievement of Education for All (EFA) in 2015.

In 2010 (see Figure 2.1), this equilibrium of learner and teacher numbers is still evident. Figure 2.1 suggests that there is a surplus of educators in the Western Cape, North West, Limpopo, KwaZulu-Natal, Free State and Eastern Cape provinces (Mda & Erasmus (2008:12). Provincial or regional disparities exist in learner numbers and changes in teacher supply and this (Erasmus & Mda) report warns that this lag in 'deployment flux' could distort the demand and supply picture and South Africa may very well experience a shortage of educators in the not too distant future (DoE, 2005:35). Apart from the decreasing number of teachers overall, the skill that is seen as most scarce is that of teachers of specific subjects, especially Mathematics and Science (Mda & Erasmus, 2008:9).

Mda and Erasmus (2008:11) however state that there is an oversupply of educators in South Africa. The national target of the DoE is one educator for every 40 learners in ordinary primary schools and one educator per 35 learners in ordinary secondary schools (DoE, 2005:35). There are however fewer educators in some provinces than in others, but this does not suggest a shortage of educators in South Africa (Mda & Erasmus, 2008).

Within the context of this study, three out of the four participant's classes observed were in the confines of the educator/learner target ratio.

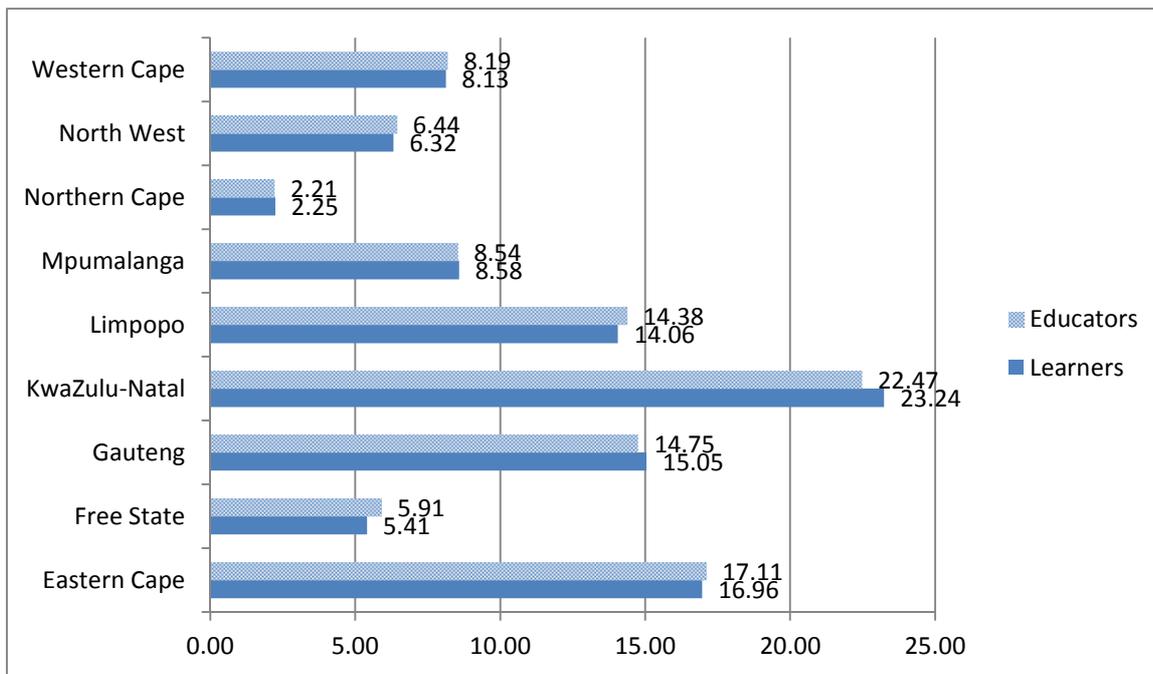


Figure 2.1: Provincial distribution of educators and learners, 2010 (%) Source: adapted from Mda and Erasmus (2008:13)

2.4 THE PROFILE OF PRACTISING TEACHERS

In July 2004, there were 369 575 teachers in the public system, with more than half this number aged below 35 years and a third having less than five years' experience (DoE, 2005:40). It was revealed in a study commissioned by the DoE (2005) that the most significant and consistent provincial decline was in the Western Cape, where the average number of teachers decreased by over 15% in this period, followed by Limpopo and the Free State. North West was the only province to register any noticeable increase in educator numbers. This decline of teachers during the period of 1999–2003 is believed to be due to a reduction in the number of temporary educators and an extensive rationalisation process, resulting in the granting of voluntary severance packages by provincial education departments in the mid-to-late 1990s.

With respect to numbers, women dominate the teaching profession (Mda & Erasmus, 2008). In the Western Province, female educators accounted for 67.5% [n=21 894] of the total number of educators (32 447). Men only came to 32.5% (10 553)]. Despite this, men still occupy most of the management positions, especially in the secondary schools (Mda & Erasmus, 2008:17), while women mostly manage pre-primary and primary schools (DoE, 2005:43).

Twenty-one per cent of all South African teachers are under the age of 40, 36% are between the ages of 40 and 50 and 12% are aged 50 to 60. The share of older teachers has increased over the past 30 years, concentrated in the 45–55 age group (DoE, 2005:45). Older teachers may be highly experienced and confident in their teaching role, however, there is also a need for updated curriculum knowledge and pedagogical as offered by younger teachers (DoE, 2005:46).

Within this study all participants were female.

2.5 TEACHER ATTRACTION, ATTRITION AND RETENTION IN SOUTH AFRICA

The teacher attrition rate is currently estimated at between 5 and 5.5% nationally. In relative terms, this is not out of line with international trends, but this translates to between 17 000 and 20 000 teachers lost to the system each year (Mda & Erasmus, 2008:21). It was reported that 54% of educators had considered leaving the education profession. Two-thirds of the educators stating their intentions to quit fell in the technology, natural sciences, economics and management fields (DoE, 2005:54). These predictors for leaving the teaching profession were categorised into high, medium and low predictors (DoE, 2005:54). High predictors for leaving the teaching profession included low job satisfaction (in particular lack of career advancement and recognition, teaching conditions in terms of working hours/load/policies, and lack of discipline and respect); a changed career choice after three years of teaching; high job stress (in particular problems with teaching methods and administration and problems with the educational system); being white, coloured or Indian/Asian; five to 19 years' teaching experience; and the urban location of the school.

Medium predictors were being male, low morale at the school and high violence experienced at the school in the past 12 months. Low predictors were low educator support and high educational qualification, and high annual income.

Despite the slowing growth of the school age population forecast over the next 10 years, it is evident from projected figures that South Africa may face a serious problem with the supply of qualified teachers (DoE, 2005:54–55). In addition, the DoE 2005 study revealed that the proportion of educators who considered leaving their profession was higher in the urban provinces, namely in the Western Cape and Gauteng at 73% and 68% respectively (DoE, 2005:55).

It also appears that young teachers are already leaving the profession in large numbers, raising concerns about the quality of education in the future and the impact this will have on teacher supply in the period of 2005–2015. Educators with five to 19 years of teaching experience were more likely to consider other job opportunities (DoE, 2005:55).

A survey of teachers conducted as part of the study identified some factors that influence attrition (DoE, 2005:12). These included a disintegration of discipline, causing unfavourable working conditions; lack of facilities for teaching, especially subjects such as Science and Technology; severe overcrowding of schools and classrooms in spite of a generally acceptable national average learner–teacher ratio; lack of adequate incentives; poor parental participation at all levels, school governance and the disciplining of children; and policy overload, leading to dissatisfaction

with time allocation, making working conditions unbearable through the increase in administrative work and role conflict. Teachers claim they have to adapt and adopt a multitude of roles depending on circumstances presented at school. These roles include attention to counselling, teaching, acting as *locus-in-parentis*, doubling as security personnel and sometimes even performing as midwives. Other factors that could influence attrition are the lack of safety at schools, low teacher job satisfaction and morale, inadequate remuneration and other material incentives (DoE, 2005:12).

In summary, the findings imply that South Africa may experience shortages at two levels. Firstly, there is likely to be increased shortages of teachers in rural schools due to problems with recruiting educators willing to work in rural contexts. Secondly, there is likely to be a shortage in urban schools with urban teachers leaving to explore other career opportunities (DoE, 2005:12).

2.6 QUALIFICATION LEVELS OF PRACTISING TEACHERS

The DoE (2005:46) regards qualified teachers among the nation's most valuable resources, as they contribute towards ensuring quality education. In light of this fact, it is ironic that less than half 47.9 % [n=171 976] of the total educators [n=359 260] had a relative education qualification value (REQV) 14 in 2004. In 2005, 77% of teachers had a three-year qualification (a diploma in Education) (DoE, 2005:47). Educators on REQV 13 will continue to be regarded as adequately qualified for employment, but all new educators joining the teaching profession will be required to obtain the minimum of an REQV 14 qualification.

However, in 2008, based on a research study commissioned by the Department of Labour, the figures changed slightly, as illustrated in Figure 2.2. The minimum qualification requirement for all new teachers was raised from a three-year post-school level (REQV 13) to a four-year professional degree level (REQV 14) (DoE, 2005:47). From Figure 2.2, which presents the most recent figures, it is clear that regarding professional qualifications, the majority of South African teachers are 'adequately qualified' with 59.2% of teachers having an REQV 13 qualification. If one takes into consideration that the minimum criteria for new teachers is an REQV 14 qualification, only 34.3% of teachers can be considered fully qualified. This implies that a lot still needs to be done in the upgrading initiatives of teachers' professional qualifications.

Teacher qualifications per se is however but one input factor for quality education. Teacher competence is regarded as a combination of academic knowledge and methodology, and broader teaching competence is also necessary (DoE, 2005:46).

It is important to note that all four teachers/participants in this study had an REQV 14 qualification and are considered fully qualified to teach in South African schools.

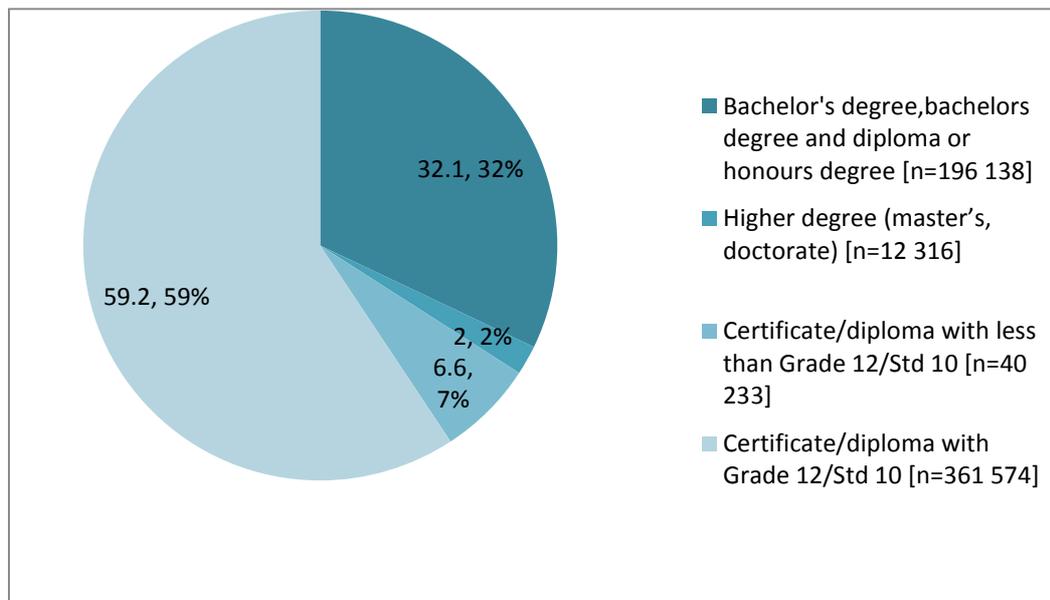


Figure 2.2: Highest qualification awarded in the field of Education [n=610 261] (Mda & Erasmus, 2008:69)

2.7 PREPAREDNESS FOR THE CURRICULUM

According to statistics presented by Mda and Erasmus (2008:20), the mean age for practising educators was 41. Only 5.4% [n=19 783] of all practicing educators were under the age of 30 in 2005. It can therefore be assumed that only the latter had been prepared during their teacher education programmes for C2005 and its later revisions. The implication is that the majority of educators was not prepared for the new curriculum, and in many cases did not have the skills needed to interpret and implement a new curriculum. Training is offered to established teachers to enable them to implement the curriculum in the classrooms. According to Reddy *et al.* (2004), this type of training is limited to the cascade model of training. In the cascade model of training, a first generation of teachers is trained on a particular topic, aspect of teaching or subject matter and once proficient, these teachers become the educators of the second generation (Griffin, 1999 in Dichaba and Matseliso, 2012:249).

During the investigation into the high failure rate at the end of Grade 10 in 2003, the DoE used this model to implement the decisions for the transition phase in Grade 10 (Reddy *et al.*, 2004:8). An analysis of the reports indicated that this model did not work well. This raised issues about the communication in the chain of responsibility and the viability of the cascade model in implementing curriculum change. The training of educators was not always of high quality and did not offer strategies for dealing with the classroom activities. There was no evidence of the DoE consulting with provinces in terms of the logistical requirements of and the capacity required to coordinate and monitor the process. There was also very little communication to capacitate the senior management teams for the cascade process. The training of educators consisted of a high amount of generic rather than specific training and therefore did not give guidance on how educators could

cope in the classrooms. It appears that there was a single package of training designed for different situations. For example, in KwaZulu-Natal, the rural dynamics require a different approach to training, which should be different from that used in urban areas. Educators therefore ended up with eight hours of training instead of 16 hours. There does not seem to be the same energy involved in seeing implementation through.

A further issue that is very relevant to this study and the discussion of preparedness of teachers for the implementation of the curriculum is CAPS. CAPS is the new policy from the DoE which replaces the current subject and learning area statements, Learning programme guidelines and subject assessment guidelines. CAPS was implemented in the Foundation Phase and Grade 10 in 2012. CAPS for the Intermediate Phase (grades 4 to 6) and Grade 11 was introduced in all schools in 2013. However, according to a report by the *Mail & Guardian* on 17 August 2012 (Nkosi, 2012), teachers will not be able to implement CAPS in two provinces due to lack of training. Questions were also raised about the quality of the training provided by the provincial departments (Nkosi, 2012).

Other issues raised in this article included that Allan Thompson, executive director of the National Teachers' Union, was worried that there will not be sufficient time to do proper training. Unions ran their own programmes because training received from the provincial education departments was deemed inadequate. The article further stated that Walter Hlase, secretary of the South African Democratic Teachers' Union (Sadtu) in Mpumalanga, believed that the department's training of only four days was not enough to prepare teachers for the new curriculum implementation. Furthermore, Department of Basic Education Minister Angie Motshekga told Parliament in June 2012 that teachers in seven provinces did not receive CAPS training the previous year, despite its implementation in 2012. In January, the Department of Basic Education Portfolio Committee visited the Eastern Cape and found training-related problems at several schools. It can be concluded from the preceding discussion above that even the best policies succeed or fail because of the level of quality attention given to the implementation strategies (Mda & Erasmus (2008:8).

Another issue that could influence implementation strategies is the physical working conditions and salaries of teachers. A discussion of this issue follows.

2.8 PHYSICAL WORKING CONDITIONS AND SALARIES OF TEACHERS

Dehaloo (2011:147) regards teachers as the most important group of professionals for our nation's future and finds it disturbing that many of today's teachers are dissatisfied with their jobs. He identified three main issues that influence job satisfaction, of which one relates to the socio-economic status of the school. Urban schools (the so-called Quintile 5 schools) are generally more advantaged when compared with their rural and township counterparts (or Quintile 1 schools) and these not only influence teachers' job satisfaction, but ultimately also the achievement of the learners (Christie *et al.*, 2007:4; Dehaloo, 2011:56).

Christie *et al.* (2007) were tasked with carrying out a pilot study on a sample of schools in middle quintiles that succeeded in achieving good Senior Certificate results, while others in similar circumstances did not. The report suggests that there is benefit in recognising that the majority of schools (the mainstream) are black schools in relatively poor socio-economic circumstances. The language of teaching and learning in most of these schools is English, which is not the home language of most of their teachers or learners. Schools are often under-resourced in terms of laboratories, computers, sports fields and opportunities for extra-curricular activities. At one edge of this mainstream are schools in extremely poor communities, classified as quintiles 1 and 2. At the other edge are the privileged schools of Quintile 5, including the majority of former white schools. Schools in middle quintiles are the 'norm' in South Africa. (Christie *et al.*, 2007:3–4).

Dehaloo (2011:56) lists some of the challenges prevalent in rural and township schools, which include the following:

- The lack of physical resources, such as clean water, proper sanitation and basic infrastructure
- Overcrowding in classrooms and the lack of teacher support and personnel
- Learners' ill-discipline and unwillingness to accept instructions and to abide by the school's code of conduct
- The apparent lack of parental involvement and supervision of learners' work at home
- Violence, threats of intimidation and heinous assaults on teachers who are perceived to be exerting 'undue pressure' on learners by demanding that work be done
- Inequalities that exist between the poorly resourced schools, and the continuous comparisons of learner results between poorly and well-resourced school types

Affluent schools, by contrast, are well resourced. They have smaller class units, smaller teacher–learner ratios, more teacher aides and computer and media centres, and offer a range of sports

facilities. In addition, they have supplementary staff such as tutors and coaches, and maintenance and security personnel (Dehaloo, 2011:57).

In addition to the challenges, as discussed above, that the majority of our teachers have to overcome, teachers are among the lowest paid professionals. This is regarded as one of the main reasons for the teachers' strike in 2007, which almost crippled the schooling system (Mda & Erasmus, 2008:20). Furthermore, there is a wide gap between the salaries of teachers and education managers, even within schools, and therefore it is more financially beneficial to transfer to management from classroom teaching.

In August 2010, disgruntled teachers participated in a public sector strike in an effort to make their protests known. According to SADTU (2010:1, cited in Dehaloo, 2011:58), the three main demands of teachers during the public sector strike of August 2010 were an across-the-board salary increase of 8.6%, an increase of housing allowances from the existing R500 to R1 000 and an equalisation of medical aid contributions and benefits.

According to Dehaloo (2011:60-77), anomalies in the remuneration policy of teachers that may influence their job satisfaction are also prevalent in other areas. A synopsis of his findings is given below:

There is non-differentiation in salary packages between primary and secondary school teachers, while job demands, needs and requirements are vastly different in these two phases of schooling. It is widely acclaimed and documented that teaching in the secondary school is classified as "one of the ten tough jobs" as compared to the more "rudimentary competencies in reading, writing and arithmetic" provided by primary school teachers (Fleisch, 2008:68). However, no differentiation exists in the remuneration packages of the teachers in these types of schools. Subordinates can earn higher salaries than their superiors. The introduction of career-pathing in the DoE's Occupation-specific Dispensation (implemented in 2008) has made it possible for Level 1 senior and master teachers to earn higher salary packages than Level 2 teachers (departmental heads) and in some cases Level 3 teachers (deputy principals). Since 2000 the DoE rewards excellence for best practice through incentives schemes by awarding cash bonuses for long service (20 and 30 years service awards), improvement of educational qualifications and laptop subsidies for the purchasing of computer laptops.

2.9 TEACHER JOB SATISFACTION AND MORALE

Evans (1998:40) suggests that there is a direct link between job satisfaction in the work place and morale. Morale is link to job satisfaction, being determined by the anticipation of job satisfaction. Therefore, teachers' contentment with their job affects not only their morale, but also has a significant effect on other areas of their life, including their relationships with learners and colleagues. An issue that contributes to negative teacher morale is the uncertainty of their place in society. Teachers in South Africa do not have the status of professionals, but are referred to as 'underlings' and 'passive servants of society' in the literature. De Vos, Strydom, Fouché and Delport (2007:9) refer to teaching as a *semi-profession*, together with nursing and social work. They define *semi-profession* as "that profession which is located somewhere along the middle of the continuum of professionalism i.e. between the full-fledged professions and those occupations which are professions in name only but do not, in fact, possess any of the attributes characterizing the professions". According to De Vos *et al.* (200:8), established professions include law, medicine and the church; new professions are those based on their own fundamental studies such as engineering, chemistry, accounting and the natural and social sciences; semi-professions are those that replace theoretical study by acquisition of technical skills, e.g nursing, pharmacy, optometry and social work; the would-be professions are those requiring a familiarity with modern practices in business, administration practices and current conventions, e.g hospital managers, sales managers and works managers.

Hall, Altman, Nkomo, Peltzer and Zuma (2005:25), as cited in Horn (2006:121), concluded in a study that a relatively large number of teachers experienced the teaching profession negatively, have low morale and experience little job satisfaction, with the result that they seriously consider leaving the profession. The main causes of teacher dissatisfaction and low morale include remuneration, poor relation with the education department, a lack of respect for the profession shown by the community, as well as teachers being affected by the HIV virus or being indirectly affected because of colleagues, learners and family members living with HIV/Aids. Therefore, perhaps the most serious issue that needs to be addressed is the present state of teachers' morale.

A report issued by the National Professional Teachers' Organisation of South Africa (2002) highlighted aspects regarding teacher morale (Louw & Badenhorst, 2008:138). These aspects included that one in every four educators has a sense of low morale in terms of the profession. There was an indication that 33.7% of colleagues had an indifferent level of morale in terms of the profession and 38.2% had a negative morale in terms of job satisfaction. Factors highlighted in this report that had a negative effect on teacher morale included poor leadership style of the provincial departments (65.5%), lack of quality support received from departmental officers (63.2%),

continuous change in educational methodology and policy (60.0%), poor salary package (58.1%), poor quality of communication by the Department with its schools (53.4%), lack of promotion prospects (50.8%), amount of paperwork (49.3%), lack of educational resources in the classroom (43.7%), amount of authority given by the Department of Education to take own initiative (41.1%), low educator–learner ratio (37.4%) and teaching learners who have a low morale (37.4%).

As Fullan (1991) suggests, it is wrong to conclude that the majority of teachers dislike being teachers, as for most teachers it is a continuous mixture of satisfaction in the teaching profession versus stressful experiences. A list of these satisfying and stressful aspects of being a teacher (ranked in order of most frequent mention) is given below in Table 2.1 (Fullan, 1991:124)

Table 2.1: Satisfying and stressful aspects of being a teacher

Satisfaction with the teaching profession (passion)	Stressful experiences
<ul style="list-style-type: none"> • Working with young people, rapport/relationship • Times when the ‘light goes on’ and a learner suddenly understands, learner enjoyment, immediate feedback • Learner success, achievement • Interaction with / support from colleagues • Influencing the growth, character and attitudes of learners • Involvement with extracurricular activities, coaching, drama • Subject matter taught, developing curriculum • Teaching, a lesson taught well • Helping learners individually with personal academic problems • Feedback from learners at the end of the year and after graduation 	<ul style="list-style-type: none"> • Time demands, too much marking, lesson preparation, “administrivia”, deadlines • Discipline/attendance problems, learner confrontations • Learners’ lack of motivation, apathy, negative attitudes • Lack of administrative support, poor administration • Colleagues’ negative attitudes, incompetent/poor teachers • Working conditions, lack of equipment/texts, low budget • Lack of security, redundancy, declining enrolments • Large class size • Ministry directive, changing curriculum/course content • Lack of public/parental support, negative attitude toward education

One final indicator of the seriousness of the problem is whether teachers see teaching as their career of choice (Fullan, 1991). This is especially applicable to the South African context. According to Jessop and Penny (1998:396), the choice of teaching is often a tangled web of idealism, ambition, desperation, the desire for social mobility, a love of children and the perception

that teaching is an easy option. They state, however, that in South Africa, only about a quarter of the teachers in their study reported teaching as their first choice of career.

From the preceding discussion, it is clear that teachers still have a long road ahead regarding the process of change and effectively initiating change. However, if teachers *own the educational initiative*, as Jessop and Penny (1998:401) suggests, change will be persistent.

However, the introduction of the FET band poses a range of challenges to teachers with regard to its underlying assumptions, goals, learning area content, teaching methods and assessment methods. This means that teacher roles, knowledge and competences need to be updated to teach effectively.

2.10 THE ATTITUDE REQUIRED IN TEACHING SCIENCE

The legacy of apartheid has left South Africa with an education system that is characterised by inequity in provision, a demise of a culture of teaching and learning in many schools and a resistance to changing the way things have been done in the past (Steyn, 2004:217). The concept of 'culture of teaching and learning' is widely used in the South African education context. It refers to the attitude of educators and learners towards learning and teaching, as well as their spirit of dedication and commitment to the schools (Lethoko, 1999:12, as cited in Steyn, 2004:217). Therefore, a positive attitude towards science is central to any successful implementation. If, for example, a teacher does not view science as a key to success, he/she will not make the effort to acquire the relevant knowledge, skills and attitude that are essential for science teaching (Tamir, 1992:216).

2.11 HOW TO TEACH EFFECTIVELY

Studies have indicated that there is a correlation between school performance and teacher performance (Christie *et al.*, 2007; Saunders, 2000). Research also indicates that teacher performance in South Africa is low and this significantly contributes to poor learner performance (De Clercq, 2008:7; Taylor & Vinjevold, 1999:156). It could therefore be assumed that the context of the school will directly influence the teachers' and learners' ability to teach and learn effectively.

Christie *et al.* (2007:10) conducted a study on "Schools that work" and reflected on the ways in which the schools in their study conducted themselves. The following four dynamics are emphasised:

- All the schools were *focused on their central tasks* of teaching, learning and management with a sense of purpose, responsibility and commitment; they had strong organisational

capacity, including leadership (in various forms) and management; and professionalism was valued.

- All the schools carried out their tasks with *competence* and *confidence*.
- All had *organisational cultures* or *mindsets* that supported hard work, expected achievement and acknowledged success.
- All had *strong internal accountability systems* in place, which enabled them to meet the demands of external accountability, particularly in terms of Senior Certificate achievement.

From the preceding information, it is clear that the 'effective teaching' is difficult to define, as it is complex and context-based, and schools differ in terms of their dynamics, organisation and learner populations. It is, however, accepted that teachers need different competences such as subject, pedagogical and societal knowledge, where the latter enables them to understand their learners, learning and the learning environment as well as the appropriate nature of curriculum and resource materials (De Clercq, 2008:8).

A study conducted by Reeves and Long (cited in Taylor & Vinjevold, 1999:155) confirmed that classrooms are subject to many external influences and contextual variables. The study concluded that it is the quality of learner's engagement with Natural Sciences knowledge and the teacher's skills in promoting this engagement that are the most important factors in learner attainment. Reynolds and Muijs (cited in Saunders, 2000:10) suggested that teachers could adopt certain behaviours to enhance this engagement with learning, which include providing material that on average produces a moderate to high success rate in learners' results, using learners' ideas and experiences to help them internalise the meaning of instructional materials and structuring the lesson by verbal markers and/or activities of progressive cognitive difficulty.

Trowbridge, Sund and Bybee (1981:20) focus on the individual teacher and state three factors that will assist in increasing effectiveness of teaching and learning, namely time, experience and preparation. According to Trowbridge *et al.* (1981), becoming an effective science teacher and being comfortable in the role takes time. The corollary to time is experience and experience will help you detect strengths and weaknesses in yourself as a teacher. The researcher adds to this that experience will also grant one the insight to detect strengths and weaknesses in one's learners. As Trowbridge *et al.* (1981:3) state, some of the best science teachers make a conscious effort to regard each learner positively and to understand him/her as a human being. An interpersonal relation between the teacher and the learner is therefore also important. Craig, Kraft and Du Plessis(1998), cited in Saunders, 2000:10) believe that effective teachers at a mature stage of development tend to know their subject matter, use pedagogy appropriately for the content, use an appropriate language of instruction and have mastery of that language. They state that these teachers create and sustain an effective learning environment, find out about and

respond to the needs and interests of their learners and communities, reflect on their teaching and learners' responses and make changes to the learning environment as necessary, have a strong sense of ethics, are committed to teaching and care about their learners (Craig et al., 1998, cited in Saunders, 2000:10).

Features relating to the environment and the classrooms also contribute to effective teaching, which can be summarised as follows: a capable teaching force, adequate support, positive teacher attitude, time and efficiency, classroom management, high expectations, learner–teacher interactions, organised curriculum, clear and focused lessons, frequent monitoring and assessment, variety in teaching strategies, and reward and incentive systems for learners (Craig et al., 1998, as cited in Saunders, 2000).

As a major part of the drive to improve schools, there has also been a greater concern than before with improving the effectiveness of teachers and teaching. Attempts to make teachers and teaching more effective can be either statutory or non-statutory, which can be understood as either *regulatory* or *enabling*. A list of these attempts is included in Table 2.1 (adapted from Saunders, 2000:7):

Table 2.2: Attempts to make teachers and teaching more effective

<i>Statutory (regulatory)</i>	<i>Non-statutory (enabling):</i>
<ul style="list-style-type: none"> • Establishing systems to ensure effective deployment of teachers via education management information systems (EMIS) and geographic information systems (GIS) • Raising the profile and value of teaching as a profession via publicity campaigns, incentives packages, the creation and development of professional associations, etc. • Requiring teachers to be qualified, i.e. trained to minimum standards (in some countries, making teaching a graduate or even postgraduate profession) • Ensuring that initial teacher training is done by accredited institutions and includes substantial school-based placement 	<ul style="list-style-type: none"> • Basing programmes of high-quality continuing professional development on the common theme of 'effectiveness and improvement' • Involving teachers in task groups and working parties in the curriculum, etc. • Involving teacher unions in the development and dissemination of good practice • Respecting teachers as agents and giving them a stronger sense of autonomy about, and responsibility for, the learning of all their learners • Encouraging teachers to participate in professional partnership activities, such as clustering, peer observation and/or

<ul style="list-style-type: none"> • Ensuring that all teachers have access to further professional training and development throughout their careers • Providing professional support and advisory services at a local level • Using external inspectors to assess the performance of individual teachers against national norms • Using standardised learner outcome data to assess the quality of instruction • Establishing in-school appraisal systems • Providing paid time for team work and development • Enhancing remuneration and promotion prospects for 'leading' or 'advanced skills' teachers – instituting performance-related pay for all teachers 	<ul style="list-style-type: none"> mentoring • Promoting a culture of self-evaluation and the use of research to support practice
--	---

Saunders (2000:11) notes, however, that research has not yet been able to show how ineffective teachers can be made more effective. The theoretical front also does not appear to give enough weight to constructivist theories of learning, in other words the argument that learning is not so much a transfer of knowledge from the teacher to the learner, but rather an interactive process in which knowledge must be actively constructed by the learner (Wertsch, 1985, as cited in Saunders, 2000:11).

However, teachers as individuals interact with learners directly. The researcher therefore strongly contends that effective teaching provides that much-needed vigour to assist learners to perform to their utmost best.

2.12 INTERNATIONAL STUDIES ON TRANSITION AND/OR TRANSFER

Anderson *et al.* (2000:325), distinguish two types of transitions. Transitions are either developmental, resulting from the aging process and marked by considerable individual physical, intellectual and emotional change (for example puberty), or systemic, resulting from the systemically built structure of public school systems. Learners experience numerous transitions as they move through the educational system and to complicate matters further, developmental and systemic transitions are often closely related (Anderson *et al.*, 2000:326).

Primary and secondary schools are characterised by different cultures and serve different functions for their clients. The former tends to be based on a child-centred learning environment that is characterised by a homeroom-based organisation in which subject integration is an obvious feature. In contrast, partly as a factor of their size, secondary schools tend to be organisation-driven and offer a learning environment that is largely subject-oriented and taught by subject specialists (Ward, 2000:365).

With regard to who has the greatest difficulty with transitions, Anderson *et al.* (2000:327) note that gender is one of the most important factors in making a successful systemic transition. A discussion of these four factors listed by Anderson *et al.* (2000:327) follows below:

Systemic transition has a negative impact on self-esteem and tends to have a greater impact for girls than for boys, as girls may find it more difficult to adjust to the disruption of friendship networks that occurs upon entry of the next phase of the transition. A second factor related to successful systemic transitions is prior problem behaviour. Learners with behavioural problems in one phase tend to have more difficulty making the transition to the next phase. Low academic achievement is a third factor. Learners who have the greatest difficulty with making systemic transitions are those who are simply not academically prepared for the next school level. One indicator of an unsuccessful systemic transition is a substantial decrease in grade point average, which could ultimately double the likelihood of dropping out to school. A fourth factor is some combination of socio-economic status and race, which are highly related in countries such as the USA and South Africa, as learners from a lower socio-economic status homes often lack the parental support structures that enable them to make successful systemic transitions.

On the other hand, for learners to make successful systemic transitions, they must be prepared for them. Anderson *et al.* (2000:331) discuss the key dimensions of preparedness:

- *Academic preparedness:* Learners must possess the knowledge and skills they need to succeed at the next level. Learners entering with lower grades tend to experience more post-transition adjustment problems.
- *Independence and industriousness:* Learners who are able to work by themselves and stay on task without direct teacher intervention or supervision are more likely to be successful at the next school level.
- *Conformity to adult standards:* Learners who conform to adult standards of behaviour and effort adjust better to the next school level and are less likely to be perceived as 'problem learners' by their teachers.
- *Coping mechanisms:* Coping mechanisms enable learners to deal with problems and difficulties they are likely to encounter upon transition to the next school level. They include how to get required information, how to keep track of multiple assignments and how to

resolve conflicts. Learners who have effective coping mechanisms they are skilled at using tend to be more successful in making systemic transitions.

According to Anderson *et al.* (2000:331–332), all types of support and all support providers (parents, peers, teachers) are important in facilitating successful systemic transitions. For example:

- Learners from more supportive home environments tend to experience less academic difficulty as they progress through the transition. Conversely, learners who experience relatively earlier independence from parental chaperonage and supervision were found to have greater difficulty with systemic transitions.
- Teachers at the next phase of transition who are more accessible to learners facilitate successful systemic transition. However, of the three potential support providers (parents, peers, teachers), teachers were found to provide the least amount of support.
- Learners benefit from work with a transition team that helps them understand the academic rigor and co-curricular options at the next level. These transition teams typically include counsellors, teachers and learners.
- Having friends who help learners cope with transition-related problems is an important predictor of social adjustment during the transition to the next phase.
- Simply providing learners with information about the transition can help them through it. This is probably one of the reasons why the number of siblings has been found to be positively related to successful systemic transitions, as older siblings are able to provide useful transition-related information.

According to Pelloagae (2009:14), it is important that, even though learners may move school or educational bands, they do not experience discontinuity in the curriculum. Issues related to transfer and/or transition is experienced throughout the world, and is important to consider when searching for solutions to remedy transfer and/or transition issue. A discussion of studies conducted on transfer and/or transition issues around the world is discussed in the following paragraphs.

Norway

Research on the transfer of learners from primary to secondary schools in Norway hardly exists. Kvalsund (2000) asks the question whether transition can be understood from primary to secondary school solely in terms of the advantages (or disadvantages) of the individual choices that learners must make. Within this life course perspective, learners are offered a cultural 'free hand' divorced from their close relationships to others, and they make calculations about their personal gains and independent choices regardless of tradition and collective patterns in the

institution. It was further investigated how and to what degree schools with different contexts affect the formation of social relations between the learners in different areas of the school and local community. This leads to further questions relating to how identified changes in patterns of relationships can be explained and understood. Specifically, these questions concern the effect on these relational patterns of transition to lower secondary school and the consequences for learners' behaviour as a result of the experiences of different school contexts.

The findings from this comparative case study can be summarised as follows (Kvalsund, 2000:420–422):

It was found that the comprehensive secondary level is to a small degree a transition to a more demanding learning situation. Learners actively adapt to each individual teacher's pedagogical regime; however, this transition to the secondary level takes time and represents a lengthy period of uncertainty and risky experimentation. Some of the learners adopted a passive attitude to the changes taking place as a result of observing other learners more or less doing as they are told.

The main pattern of relationships among learners is a strong and comprehensive division according to age and gender. Even though the secondary school learners are aware of alternative patterns of interaction and could choose them, they do not do so.

The fact that this mechanism is dominant can only be understood because of certain contextual factors, such as the size of the school, the organisation of the learners, and the socio-material arrangement of the physical environment both indoors and outdoors at the comprehensive school.

These contextual circumstances and related processes reveal themselves as a collective, informal cultural heritage. A collective main pattern of differences in status, power and hegemony relationships is observed between the various groups of learners in which *age group* plays a decisive role.

Learners from the fully levelled primary school pass through school in segregated cohorts. Learners from the two-levelled schools, on the other hand, must also find their place in the age-divided and gender-divided cohorts on their way to adapting to adulthood. This represents a deep and comprehensive basis for socialisation in which later choices of education or careers are most likely anchored.

The reality of the situation for learners is therefore not simply a question of the individual – it has essential collective aspects. For the learners from the fully levelled schools, the transition is a continuation of the segregated, intimate conversations from the primary school level. For the learners from the two-levelled schools, the transition is a complementary expansion of their adaptation repertoire – from integrated and collective-oriented play to segregated forms of interaction that promote intimacy and individualisation.

Finland

Pietarinen (2000) investigated Finnish comprehensive school learners' transfer to secondary school and the ways in which learners' experience of schooling can contribute to the development and planning of an undivided comprehensive school system. Traditionally, Finnish discourse on the flexibility of the transfer has concentrated on the teacher's role as the central transformative force in bridging the gap between primary and secondary school. The tendency has been to regard the voice of the learners, who experience the changes, as of minor importance. In order to obtain a fuller understanding of the transfer experience, it is important not only to include the learners' perspective, but to examine first the school community and the factors promoting and/or preventing its functioning and, second, the learning environment of the adolescent (Pietarinen, 2000:383).

Based on the results of this study, it is the learner who plays the crucial role when seeking to create the undivided school system, and therefore learners can be utilised as a resource for developing the school. Pietarinen (2000:396) suggests that it is essential from the perspective of coping with the transfer to advance the learners' possibilities to learn and to support their own personal growth. The core of this development is the micro level of the school's physical, social and pedagogical environment. Teachers, however, also play a crucial role in integrating the primary and secondary school, as learners undergoing transfer place great trust in their teachers' ability to support the change to the new school environment (either when moving between schools or grades). At the macro levels of the physical, social and pedagogical environment of the school community, cooperation among teachers is needed to make the further construction of the cooperative culture of the administratively undivided primary and secondary schools possible. A prerequisite for achieving this culture of cooperation is that the teachers understand the processes involved in 'bridging' the primary and secondary school and display a willingness to support learners' attempts to adapt as aims that are worth developing in their own school (Huusko & Pietarinen, 1998, cited in Pietarinen, 2000:397).

New Zealand

In New Zealand, the traditional transition school for most learners is the intermediate school, which caters for 11- and 12-year-olds (years 7 and 8). Years 9 and 10 are traditionally part of the secondary school sector; however, in an effort to bridge the gap between intermediate and secondary school, some intermediate schools have become four-year middle schools as an alternative route to secondary school. Ward (2000) in his study tracked the movement of a class of learners who chose to stay on at a middle school for years 9 and 10 rather than transferring to secondary school at the end of Year 8. Some of these learners had chosen to stay at the middle school because they doubted their ability to cope with the rigours of secondary schooling in Year

The research suggests that the greater the difference between the two schools' cultures, the greater the need for support for those transferring to the next phase. When asked in post-transition interviews whether their decision to delay entry to secondary school had been worthwhile, all said that it had been. Were they to have the opportunity again, all were confident that they would again choose the opportunity for later transition (Ward, 2000:372).

England

According to Braund and Hames (2005:781), progression and continuity are cornerstones of the curriculum. They noted that one of the most significant changes in the curriculum in England since 1989, as far as science education is concerned, had been the rapid development of science in the primary school. However, 20 years later and after 15 years of a National Curriculum in England, this goal has not been achieved because as many as two-fifths of learners fail to make the progress in early secondary school (Key Stage Three, age 11–14) that their performance at the end of primary school predicted they should.

The secondary school represents a new, larger and more challenging environment, new friendship groupings, more teachers and new rules – all make demands on incoming learners. The experience of many teachers in England, however, seems to be that, with good pastoral care and efficient management of the transfer process, the social impact of these changes can quickly be ameliorated. Surveys confirm that this is where most effort on transition and transfers has been made in the past ten years (Galton, Gray & Rudduck, 1999; Schagen & Kerr, 1999, cited in Braund & Hames, 2005:782). The 'shock of the new' for learners after transfer, in terms of changes in pedagogy and curriculum, may however have a more significant and longer-term impact on learners' learning in science and on their attitudes to the subject (Braund & Hames, 2005:782).

According to Braund & Hames (2005:782), primary–secondary transfer suggests the following four factors that are of particular importance in relation to post-transfer regression and early decline in learners' attitudes to school science.

- Learners may repeat work done at primary school, often without sufficient increase in challenge, sometimes in the same context and using identical procedures.
- Teaching environments, teaching styles and teachers' language are often very different in secondary schools compared to primary schools. These factors represent a change in learning culture to which learners have difficulty adjusting.
- Teachers in secondary schools often fail to make use of, or refer to, learners' previous science learning experiences. Information supplied by primary schools on their learners' previous attainments is rarely used effectively to plan curriculum experiences in the secondary school.

- Teachers in secondary schools distrust the assessed levels of performance gained by learners in national tests in science, taken by all learners in England and Wales, at the end of primary school. Teachers in secondary schools often claim that these levels have been artificially inflated by intensive revision for these tests

Studies elsewhere have identified similar problems. Braund and Hames (2005) conducted a study in England among 59 learners in Year 6 (at the end of primary school) and 48 learners in Year 7 (at the start of secondary school) to ascertain their aspirations and fears concerning secondary science, their reactions to bridging work and their memories of investigations. Twenty-six of this sample was the same learners.

The findings in this study suggest that the teaching of bridging work has been successful in motivating and interesting learners at both sides of the transfer. Bridging work did not represent to learners the sort of repetition noted by other research studies. Year 6 learners were positive about studying science at secondary school and remained so post-transfer. The lack of progression in learners' communication about the variables and findings from investigations suggests that the planned progression of work was not recognised by some teachers.

The findings of this study suggests that bridging work alone may not guarantee improved progression and continuity in science, but that it has merit if it forms part of a carefully planned and structured programme of collaboration. Bridging work refers to the strategies used by schools to address curricular and pedagogical discontinuities (Peloagae, 2009:26). These include co-observation of teaching, improving teachers' knowledge of content taught on each side of the transfer, shared assessment of learners' work and jointly planned teaching (Braund and Hames, 2005 in Peloagae, 2009:26). It was concluded that bridging work in science was most successful in schools where teachers visited each other's schools. Therefore, if teachers collaborate and reflect together on experiences of teaching and learning, it will reduce the likelihood that primary science is blindly repeated within the secondary school.

2.13 SOUTH AFRICAN STUDIES ON TRANSITION

On 15 April 2002, the CEM approved the implementation of the NCS curriculum into grades 10, 11 and 12 in 2004, 2005 and 2006 respectively. This departed from the original plan to implement a new FET curriculum in 2003. The DoE (2002) questioned this decision because of their concern about how this decision will disadvantage Grade 10 learners in 2003.

It should be noted that the 2003 cohort of Grade 10 learners was different from other cohorts because they had experienced an OBE curriculum for three years prior to Grade 10. As a result, the 2003 cohort of learners had to move back to the NATED curriculum (old syllabus based on

previous education departments) in Grade 10 (Reddy *et al.*, 2004:5). Early in 2004, it was reported in the media that there had been a higher than usual failure rate at the end of Grade 10 in 2003.

A task team was set up to determine why this happened and to present the findings and recommendations in a way that would inform future curriculum reform processes (such as the implementation of the FET NCS).

In view of the discussions and analysis presented in their final report, the research team made the following recommendations for improvement (Reddy *et al.*, 2004:9):

- Constant changes should be avoided, as this leads to uncertainty and confusion; when decisions are made, they should be followed through.
- The system should be allowed to settle in the next few years.
- The GET Phase had been through the OBE curriculum reform process and it is important to tap into that resource. This must be encouraged from the structures within the provinces to teachers in the different phases in schools.
- Provinces must monitor the health of the transition phase over time. It is recommended that a database system of enrolments, pass rates and disaggregated data be established.
- There must be an alignment between the Grade 9 and Grade 10 assessment systems so as to not disadvantage the learners.
- Educators in the FET Phase should concentrate more on filling knowledge gaps, which will help them with infusing the principles of OBE in the curriculum.
- The training packages need to be re-evaluated in order to meet the different contextual realities. These training packages or programmes for the future FET curriculum should consist more of what would be relevant to teachers in the classroom than broad, generic principles.
- There needs to be a clear directive about the format of Grade 12 examinations in 2005.

With regard to the philosophy of the transition phase, Reddy *et al.* (2004:6) concluded that the 'transition' phase was unplanned and hastily prepared, which resulted in the many glitches in the system. It was recommended to keep to one aim, namely to fill the knowledge gaps. They postulated that the two objectives of the transition phase, namely to infuse the principles of OBE into the FET band and to assist teachers to fill knowledge gaps as a result of moving from an OBE system to a NATED curriculum, were over-ambitious. It was reported that there was tension between the national and provincial responsibilities regarding the tight deadline for the transition and provinces felt there was not enough support. In addition, the provinces felt that the implementation of OBE in Grade 10 was yet another responsibility added to their other functions. It was further noted that after a few curriculum reform processes in the last few years, there is yet no strong theory in the educational system of how to manage curriculum reform, especially regarding how the process works and how to plan for the process.

After the analysis of provincial reports, the task team decided to extend the investigation to the impact of the cascade model of training. This method of training is still the dominant model used in South Africa (Dichaba & Mokhele, 2012:253) and therefore very relevant pertaining to teachers and their experiences, be it personal or professional.

Reddy *et al.* (2004:9) concluded that a cascade model was used to implement the decisions for the transition phase in Grade 10. An analysis of the reports indicated that this model did not work well, which raised issues about the communication among the chain of responsibility and the viability of the cascade model in implementing curriculum change. Dichaba and Mokhele (2012:253) came to the same conclusion regarding the efficiency of this method. In their analysis of teachers' experiences of the efficiency of this method for teacher training, it appears to have failed to significantly improve the performance of educators, even though this model of training has come to be accepted as the way of disseminating information in most in-service training programmes (Dichaba & Mokhele, 2012:253).

2.14 THEORETICAL FRAMEWORK

A study conducted by Rollnick *et al.* (1998) provided the framework for the current research study. The aim of this study was to develop a model to provide a holistic analysis of educational gaps that would contribute to an understanding of the nature of these educational gaps by first describing them and then moving towards a possible explanation of the existence of the phenomenon (Rollnick *et al.*, 1998:454).

The available empirical research on the issue of educational gaps or transitions is based on various perspectives, ranging from the view of the learners (Demetriou *et al.*, 2000; Reyes, Gillock, Kobus & Sanchez, 2000; Speering & Rennie, 1996) and the teachers' point of view (Dawson & Shipstone, 1991; Overton & Reis, 1990) to a curriculum perspective (Weston, Lazonby & Tomlins, 1994). Studies on transition also include research to support the process of transition (Rous, Teelers Myers & Buras Stricklin, 2007), reasons for successes and failures of the process and recommendations to navigate the process successfully (Anderson *et al.*, 2000; Kagan & Neuman, 1998). However, it remains unclear from the existing literature how teachers personally experience the transition process and under what conditions teachers have to navigate a gap. In essence, do they still enjoy teaching? How does their attitude contribute to their experience of a gap? What support systems and strategies assist towards a positive experience and what key factors promote a successful negotiation of a transition process? At this point, the answers to these questions are not clear. Within the context of this research and framework, the criteria to determine what steps are necessary in order to answer the research questions are provided.

The current study used the concept gap as conceptualised in the theory model by Rollnick *et al.* (1998) and Peloagae (2009). This identification of a gap was one of the main indications that this framework would be the best fit to guide the research, as the researcher's intent with the study was not to investigate whether a gap already exists, but to compile a thick description of the participants' subjective experiences navigating the transition process from Natural Sciences in the GET band to Life Sciences in the FET band. Following the guidance of the theory, an educational gap was perceived during the duration of the inquiry.

Rollnick *et al.* (1998:455) list some examples of transitions present in various stages of education. These include pre-school to primary school, primary school to junior secondary school, junior secondary school to senior secondary school and senior secondary school to tertiary education. The current research falls within the category of junior secondary to senior secondary school and within the South African education system, this category is referred to as Junior Secondary, grades 7–9 and Further Education and Training, grades 10–12. The researcher decided to focus on this transition type, as there are two types of educational bands, namely GET and FET, present in this transitional process. As transition occurs within the same school and subject, selection takes place at the end of Grade 9 for subject specialisation in Grade 10. It should also be mentioned that sometimes the same teacher teaches both Grade 9 and Grade 10 and therefore in both educational bands, but this is not always the case. The researcher decided to make use of a case study research design in which one teacher teaches both educational bands to illuminate the potential variables that might influence the findings if different teachers were responsible for teaching the subject matter of Natural Sciences and Life Sciences respectively.

This framework was chosen as the best fit for the research, as it investigates gaps in an educational background and also focuses on science. Here, however, there is a subtle mismatch between the current study and the framework, as the study focused on the educational gap between Natural Sciences in Grade 9 and Life Sciences in Grade 10, but more specifically the experiences of science teachers during this process of transition. In the framework provided by Rollnick *et al.* (1998), the focus is on the gap between junior secondary and senior secondary school Chemistry.

Applying the definition of a gap provided by Rollnick *et al.* (1998:454) to this research study, a gap can be characterised by what happens at the interface between two levels of education, for example between the end of one stage (GET) and the beginning of the next stage (FET). Therefore, here the focus falls on the *articulation* between the end of GET and the beginning of FET. A gap may further be characterised by what happens within the latter education stage (FET), in other words between the beginning and the end of this education band, which is therefore an interest in the *progression* or the lack thereof during this time span. The two aspects of articulation and progression combined are referred to as the *overall gap*. Using educational planning

terminology and applying it to this study, a gap may be defined by the extent to which output GET is aligned with the required input FET, and then by the nature of the throughput during the FET stage. These aspects of a gap are shown in Figure 2.3.

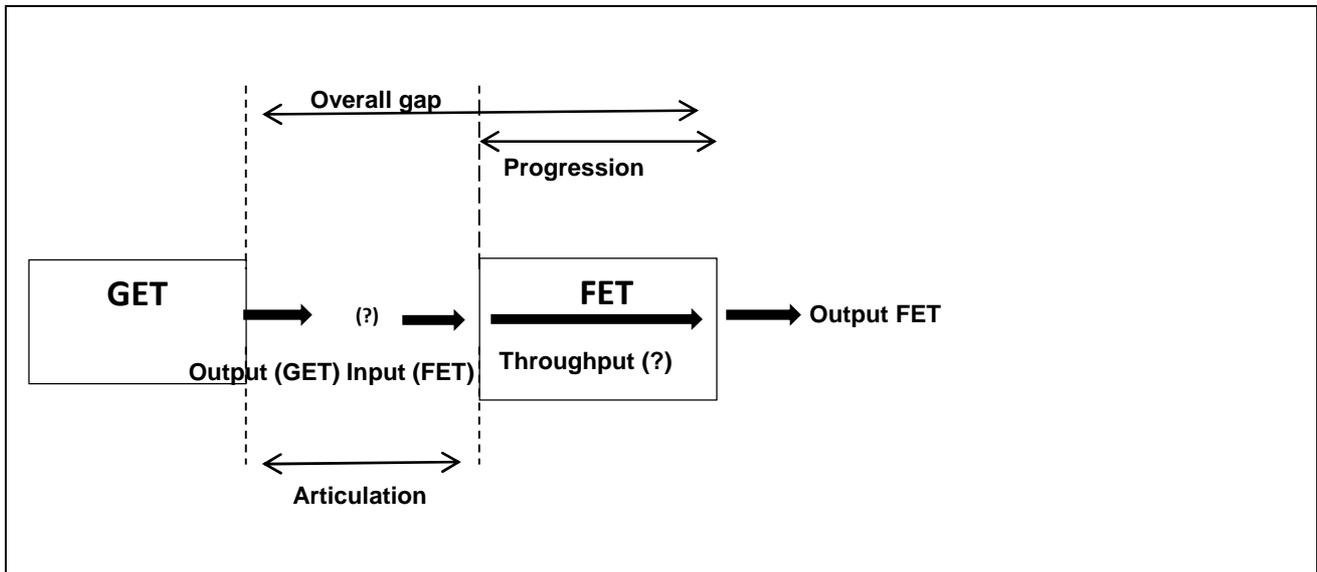


Figure 2.3: Aspects of a gap (adapted from Rollnick *et al.*, 1998)

A Swaziland case study by Manyatsi (1996, cited in Rollnick *et al.*, 1998) on a perceived gap between the junior secondary and senior secondary chemistry was used by the authors to illustrate the use of this model. It was found that to obtain a holistic understanding of a gap, investigations would have to be carried out at both the micro and macro level (Rollnick *et al.*, 1998:454).

The existence of an overall gap was presumed and proving the existence of a gap was not applicable to the research. The theory provided a structure to explore the characteristics of the transition at the *articulation* and *progression* aspects and how this influences teachers' experience throughout the progression of the gap.

The practitioners or teachers reach their perception of a gap through the interaction they have with the learners in the class, in other words at the micro level. The current study focused primarily on issues arising in the micro level, namely the experiences of teachers navigating the transition process with a look at how the context (macro level) influence the experiences of the teachers. Here, there is a slight mismatch between the theory and the current research regarding the concept of 'context'. In the framework, *context* refers to factors pertaining to public and policy administrators' perception of learners' performance in public examinations and thus specifics pertaining to syllabi. The context referred to in this thesis focuses more on the infrastructure of the school and more specifically the characteristics of the Life Sciences classroom of the each participant. The infrastructure further refers to the basic physical and organisational structures within the school as well as the science classroom.

The issue of learners' performances in exams and syllabi do feature and play an important role in this research, but not when referring to the concept of *context*. There is a correlation between the theory and this research regarding factors in the micro level. Here the focus is on the teachers' perception of a gap through the interaction they have with the learners in class and more specifically on the teaching strategies used and content covered in class. The learning strategies do not feature in this research because the primary focus was on the practitioner, and therefore the science teacher.

Again, here there is a slight mismatch between the theory and this research, because the *macro level* in this study is represented by the school context, and more specifically, the Grade 10 Life Sciences classroom, where the observations of Life Sciences lessons took place. This model is represented in Figure 2.4.

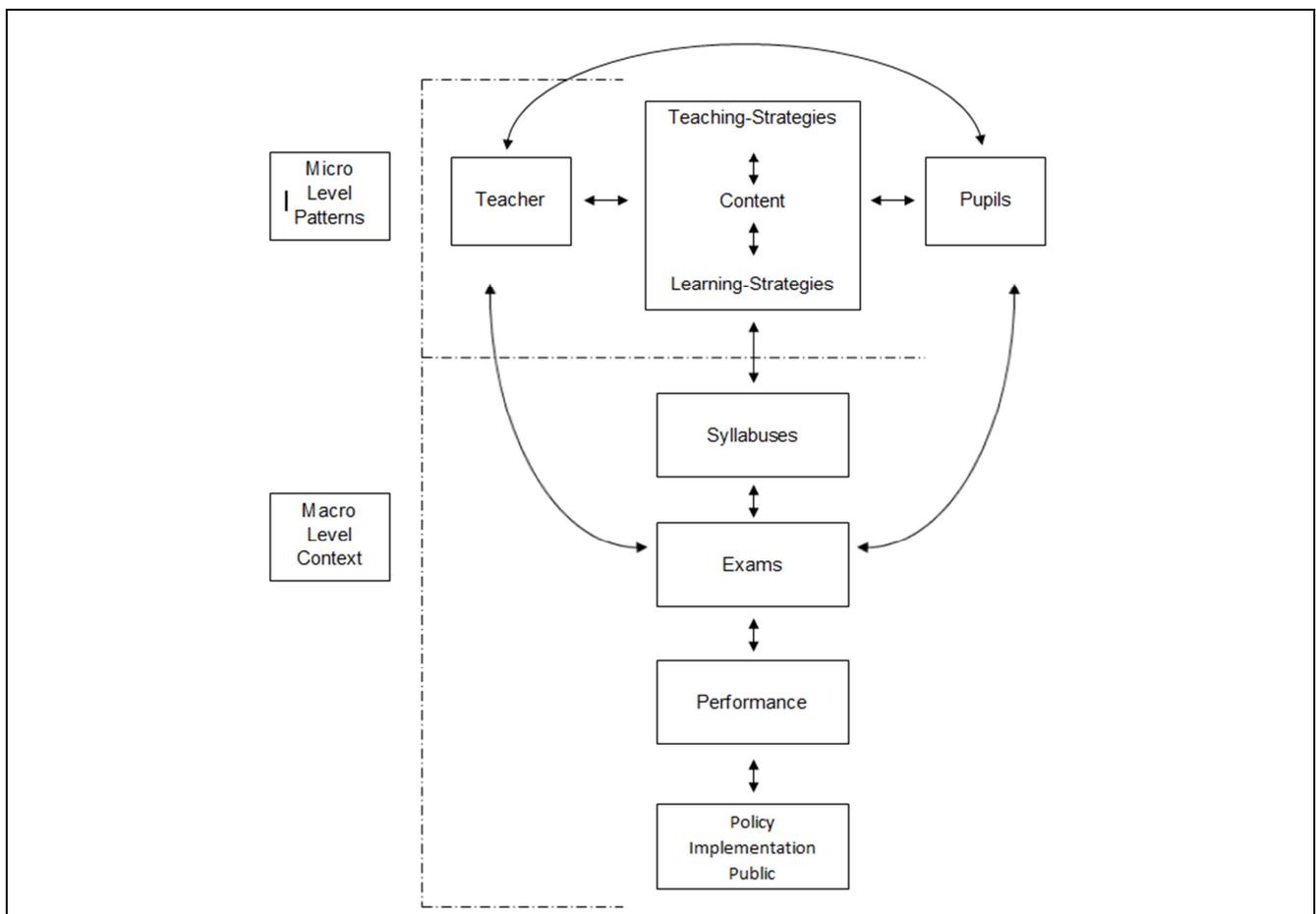


Figure 2.4: Model of the relationship between factors contributing to a gap (adapted from Rollnick *et al.*, 1998)

The model proved useful in identifying aspects of a gap needing bridging, for example progression in teaching and assessing for higher levels, and dispelling myths about disparities that did not exist, such as lack of articulation in the content of the syllabus between two stages.

According to the theory, gaps cannot be understood with one study but a series of studies may enhance understanding and offer alternative suggestions for embarking on investigations regarding gaps. It is the researcher's aspiration that this research will contribute to this knowledge base of gaps or, as referred to in the current study, the knowledge base of transition, and establish competencies critical to a positive personal experience and to the learners' success and achievement at the end of the process. The concept of 'transition' is deemed more positive and would involve unique strategies to enable teachers, and indirectly learners, to achieve maximum possible independence in teaching and participating in the *throughput* and therefore a successful '*output*' at the end of Grade 10 in the FET band.

With this study the researcher argues that where teachers are concerned, the context of their experiences is invaluable in making sound decisions. This *context* refers to their classroom infrastructure at the school and not the public and educational administrators' perception of a gap, as in the theory.

In an effort to understand their experiences, it was important to understand their perception and experience their teaching environment to discover what aspects contributed to their personal experience.

2.15 CHAPTER SUMMARY

This chapter started with a discussion of the philosophy of the transition process and specific information relating to biographical aspects of teachers and the teaching of science. The physical working conditions and salaries of teachers in South Africa were also briefly discussed, followed by a discussion of the literature on teacher job satisfaction and morale. The findings of a South African study regarding transition were also summarised. The chapter ends with a brief discussion of the theoretical framework and it is discussed why this framework was chosen as the best fit to guide the current research.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 INTRODUCTION

Research problems and research questions provide an important guideline for the researcher in selecting the appropriate research methodology or methods design (Devetak, Glaser & Vogrinc, 2010:77). The main research question for this study was: *What are the subjective experiences of science teachers regarding the transition process from Natural Sciences (Grade 9) in the GET band to Life Sciences (Grade 10) in the FET band?* On the basic level, this implies that the researcher should spend time with the participants she wants to research and should strive to understand specifics about the context or actual site where the participants work. As the researcher was interested in describing the participants' subjective experience in their natural setting, the research design selected for this study was a descriptive and interpretive multiple case study that was thematically analysed.

In the following sections, the researcher justifies the methodology and describes how it operates and interoperates in the research study. The chapter concludes with a description of the methods employed to enhance the trustworthiness of this study.

3.2 RESEARCH PARADIGM

Guba and Lincoln (1994) have pointed out the importance of identifying the paradigm with which research is conceived and carried out. Four paradigms have until recently competed for acceptance as the paradigm of choice in informing and guiding inquiry, especially qualitative inquiry, namely positivism, postpositivism, critical theory and related ideological positions, and constructivism, also called naturalistic inquiry (Guba & Lincoln, 1994:105).

A paradigm may be viewed as a set of basic beliefs (or metaphysics) that deals with ultimates or first principles. It represents a *worldview* that defines for its holder the nature of the 'world', the individual's place in it, and the range of possible relationships to that world and its parts (Guba & Lincoln, 1994). According to Guba and Lincoln (1994:108), paradigms can be characterised through their *ontology* (what is the form and nature of reality and, therefore, what is there that can be known about it?), *epistemology* (what is the nature of the relationship between the knower or would-be knower and what can be known?) and *methodology* (how can the inquirer (would-be knower) go about finding out whatever he or she believes can be known?).

As a teacher, the researcher has had the opportunity to observe other teachers and to reflect not only on their practice, but also on her own practice. This has allowed her to share the conclusion

that teaching is a personal activity and that the practice of teaching means understanding specific cases and unique situations (Tirri, Husu & Kansamen, 1999:911–912). Tirri *et al.* (1999:911) go as far as to claim that teachers' store of practical knowing is accumulated through personal experience. This implies that the practice of teaching and therefore individual experience of teaching is idiosyncratic and if the goal is to elicit personal experience, this cannot be done utilising an objectivist stance. Therefore, the researcher has committed to following constructivism as an epistemological stance, as her aim was to understand multiple realities constructed by participants in their natural setting.

As explained, constructivism rejects the view that there is an objective truth waiting to be discovered. Rather, truth and meaning are constructed out of the engagement of our minds with the world. According to Crotty (1998:7, cited in Feast & Melles, 2010), the constructionist stance maintains that different people may construct meaning in different ways, even in relation to the same phenomenon, such as between those in different eras or cultures. The constructivist paradigm assumes a relativist ontology (there are multiple realities), a subjectivist epistemology (knower and respondent co-create understandings) and a naturalistic (in the natural world) set of methodological procedures (Denzin & Lincoln, 2011:13).

A set of assumptions underpins constructivist inquiry. Lincoln and Guba (1985) in Glaser (2004) list these assumptions:

- *Natural setting*: Research is conducted in a natural setting and realities cannot be understood in isolation from their context. This also implies that the conclusions of the study is context-based, therefore the results of the study is highly contextualised with no claim of generalisability.
- *Human instrument*: The researcher is the primary data-gathering instrument.
- *Tacit knowledge*: This implies that you as the researcher come with a body of knowledge about the research problem and this is embraced, however primarily in a qualitative research approach.
- *Qualitative methods*: Uses qualitative over quantitative methods, as they are more adaptable to dealing with multiple realities.
- *Purposeful sampling*: This will ensure a sample of participants that will provide the researcher with useful information to answer the research questions.

To summarise why a constructivist stance is more appropriate for this research study, the researcher borrows from Devetak *et al.* (2010:78), who cite Bryman (2004):

It is a matter of the inductive, constructivist and interpretative exploratory approach with the following main stresses: to view the world with the eyes of the examinees, to describe and

take into account the context, to emphasize the process and not only the final results, to be flexible and develop the concepts and theories as outcomes of the research process.

3.3 THE ROLE OF THE RESEARCHER

As the researcher is the instrument for data collection (Mertens, 1998:175), it is necessary to focus on the role of the researcher, and what values, assumptions, beliefs or biases she may potentially bring to the research process. Mertens (1998:178) believes there are different roles that a researcher can portray. These roles include and are not limited to the responsibility of a supervisor, teacher or friend. For the purpose of this study, however, the researcher attempted to establish the role of a teacher and colleague in the same situation as the participants, with the goal to explore and describe the research problem. The researcher believes that this role is less sanctioning and requires that the researcher and participants treat one another with respect and empathy for their specific and unique experiences.

As described in the previous section, the constructivist stance maintains that tacit knowledge is legitimate and should be embraced. Glaser (2004) refers to Lincoln and Guba (1985), who describe tacit knowledge as subjective (nuances, intuition and feelings), because tacit knowledge mirrors interaction, multiple realities and value patterns of the researcher. The researcher therefore decided to share her rationale for conducting the research with the research participants at their first meeting. She was careful not to influence their experiences and emphasised that she was there to document their personal and unique experiences in order to understand their unique situation. Even though every effort was made to ensure objectivity, biases do remain, which shape the perceptions of the researcher. However, these biases were the driving force behind this research study and had a more positive effect on the study than a negative one.

The researcher has chosen a qualitative research design because she believed that this was the best design to achieve the aims and objectives of the study outlined in Chapter One. The rationale for employing a qualitative research approach follows.

3.4 RESEARCH APPROACH AND METHOD

A qualitative interpretive design was used to investigate the experiences of teachers. Brief classifications of these methodological concepts are discussed in the following paragraphs.

3.4.1 The qualitative research approach

As a relativist, the researcher's approach to this research study was subjective, and she believes that knowledge is a social reality that is value-laden and only comes to light through individual reflection and the interpretation of reality. This means that we construct knowledge through our lived experiences and through our interactions with other members of society. As such, as researchers, we must participate in the research process with our subjects to ensure that we are producing knowledge that is reflective of their reality (Lincoln *et al.* 2011:103).

According to Hiles (1999), human behaviour and experience is complex and respond not to events, but to the meaning of events. He further states that the explanation of human behaviour requires more than simple causal, deterministic mechanisms, and that a qualitative approach to research can accomplish this, as it involves a more open-minded and exploratory strategy of inquiry.

Qualitative research is carried out in line with the principles of the interpretive paradigm, in other words the focus is on examining the subjective experiences of an individual and on recognising the importance that the individual attaches to specific events, whereby not even the subjective views of the researcher of the studied situation are neglected (Devetak *et al.*, 2010:79). As Devetak *et al.* (2010:79) describe wishes, expectations, interests, needs and personal opinions of the people included into the research should help the researcher to better comprehend the examined phenomena. Moreover, in this context, researchers should be aware of the fact that with their participation – and with the researched situation itself – they are influencing the events they are observing, and the discursive reality, as their research objective.

Although an exhaustive discussion of how qualitative research differs from quantitative research is beyond the scope of this research study, it is however useful to outline the salient aspects of why the researcher decided to adopt a qualitative research style. A brief discussion of Denzin and Lincoln's (2011:8–10) observations follow:

Accepting postmodern sensibilities:

Many members of the critical theory, constructivist, poststructural, and postmodern schools of thought reject positivist and postpositivist criteria when evaluating their own work. They see these criteria as irrelevant to their work and contend that positivist and postpositivist research produces only a certain kind of science, a science that silences too many voices. These researchers seek alternative methods for evaluating their work, including verisimilitude, emotionality, personal responsibility, an ethic of caring, political praxis, multivoiced texts, dialogues with subjects, and so forth.

Capturing the individual's point of view:

Both qualitative and quantitative researchers are concerned with the individual's point of view. However, qualitative investigators think they can get closer to the actor's perspective through detailed interviewing and observation. They argue that quantitative researchers are seldom able to capture the subjects' perspectives because they have to rely on more remote, inferential empirical methods and materials.

Examining the constraints of everyday life:

Qualitative researchers are more likely to confront and come up against the constraints of the everyday social world. They are committed to an emic, ideographic, case-based position, which directs their attention to the specifics of particular cases.

Securing rich descriptions:

Qualitative researchers believe that rich descriptions of the social world are valuable, whereas quantitative researchers, with their etic, nomothetic commitments, are less concerned with such detail, because such detail interrupts the process of developing generalisations.

Considering the discussion above, this study attempted to explicitly adopt a qualitative approach to research methodology, as this enabled the researcher to provide detailed descriptions of the participants' accounts of their subjective experiences.

3.4.2 The interpretive paradigm

The interpretive paradigm, also referred to as the phenomenological tradition, emphasises that all human beings are engaged in the process of making sense of their (life) worlds. We continuously interpret, create, give meaning to, define, justify and rationalise our actions (Babbie & Mouton, 2006:28). The aim of the social sciences is primarily directed towards understanding: understanding of individuals in terms of their own interpretations of reality and understanding of society in terms of the meanings that people ascribe to the social practices in that society (Babbie & Mouton, 2006:33).

With regard to the methodology, phenomenology (interpretivism) has traditionally been associated with the qualitative approach (Babbie & Mouton, 2006:33) and is therefore more applicable to this study. The researcher therefore focused on gaining an interpretive understanding of the meanings and self-descriptions of the individuals, striving to abide by a methodology that emphasises unstructured observation and open interviewing, idiographic descriptions, qualitative data analysis and objectivity understood as the intersubjective attitude of the insider (Babbie & Mouton, 2006:28).

In interpretive research, education is considered a process and the school as a lived experience (Merriam, 1998:4). The primary goal of this research study was to describe and understand the meaning of teachers' experiences within a process of an inductive mode of inquiry. Braun and Clarke (2006:83), inductive analysis is a process of coding data without trying to fit them into a pre-existing coding frame, or the researcher's analytic preconceptions. However, they do note that researchers cannot free themselves from their theoretical and epistemological commitments, and therefore data are not coded in an epistemological vacuum.

The research design employed during this study is discussed in the following section.

3.5 THE RESEARCH DESIGN

According to Babbie and Mouton (2006:79), the purpose of research has different implications for various aspects of research designs. Three of the most common and useful purposes are *exploration*, *description* and *explanation*, although a given study can have more than one of these purposes (Babbie & Mouton, 2006:79). Given the researcher's interest in the experiences of teachers of the transition phase, teaching both Natural Sciences in the GET band and Life Sciences in the FET band, and the need to explore a phenomenon in school that has not been explored in great detail, the research design employed in this study is a combination of both exploration and description.

As the purpose of this study was to explore and describe, it was not necessary to *explain* why the participants might have certain needs or why they experience a phenomenon in a certain way (Merriam, 1991:7). A description of exploratory and descriptive studies follows:

An **exploratory** study may be undertaken when a researcher examines a new interest or when the study itself is relatively new. Such a study usually leads to insight and comprehension, rather than the collection of detailed, accurate and replicable data. It also frequently involves the use of in-depth interviews, the analysis of case studies and the use of informants. However, according to Babbie and Mouton (2006:79–80), this type of study seldom provides satisfactory answers to research questions.

Within a **descriptive** study, the researcher observes and then describes what was observed. According to Merriam (1991:7), descriptive research is undertaken when description and explanation (rather than prediction based on cause and effect) is sought; when it is not possible or feasible to manipulate the potential causes of behaviour, or when variables are not easily identified or too embedded in the phenomenon to be extracted for study purposes. A descriptive case study is usually considered less demanding than an explanatory one, where little theory is said to be needed, causal links do not have to be made and analysis is minimal (Yin, 1984:97). According to

Yin (1984:97), the descriptive case study investigator is simply supposed to be free to “tell it like it is”.

With references to this study, the researcher explored and described the experiences of the participants in their specific context. As such, the researcher intended to describe the participants’ meaning and understanding regarding the transition process from GET to FET and the effect the contextual conditions have on the subjective experience of a teacher. The researcher accomplished this by using a multiple case study design.

3.5.1 The multiple case study

As this research study consists of more than one case, a multiple case study was required. More specifically, an exploratory and descriptive multiple case study was selected as the research design for this research study. Merriam (1991:16) describes the qualitative case study as an intensive, holistic description and analysis of a single entity, phenomenon or social unit. Yin (1984:20) and Merriam (1991) advocate the use a case study research approach, as its unique strength is its ability to deal with a full variety of evidence. This implies that the researcher can explore and describe the cases through detailed, in-depth data-collection methods via interviews, observations, questionnaires and photographic evidence (De Vos *et al.*, 2007:272). Therefore, the end product of this multiple case study was a rich and thick description of the phenomenon under study (Merriam, 1991:11).

Yin (1984:48) recommends selecting each case carefully so that it either (a) predicts similar results (a literal replication) or (b) produces contrary results, but for predictable reasons. The four cases were included firstly as the participants were willing to participate in this study and secondly because each school had a predictably different socio-culturally context. This prediction is grounded in the fact that the researcher attended school at one of the schools, two schools are neighbour schools of this school and one school is located two kilometres from the school where she taught.

There are both advantages and disadvantages to using a case study research strategy (for more detail, see Denscombe, 2007:45 and Yin, 1984:21). A typical criticism of case study research is its lack of rigor and the biased views of the researcher (Yin, 1984:21). The researcher bias was however kept to a minimum through the triangulation process of the data. A further advantage of employing a multiple case study strategy is that the researcher is able to study the same phenomenon, but under different conditions (Yin, 1984:21). This allows the researcher not only to describe but also to interpret and understand the data.

3.6 GENERALISATIONS FROM A CASE STUDY

The purpose of this research study was not to produce generalisable findings, but rather to understand the individual circumstances and perspectives of each of the research participants' experiences. The researcher had no illusions about the unique nature of every school visited during data collection, therefore the main purpose of this study was to document and understand the experiences of the participants in this study. Yin (1984:48) however considers four to six participants as adequate to pursue literal replication if similar results are obtained from all the cases. The evidence from these cases can also be considered more compelling and the overall study therefore more robust (Robson, 2002:473).

According to Denscombe (2007:35), the starting point and arguably the defining characteristic of the case study approach is its focus on just one instance of the object that is to be investigated. The value of a case study approach is that it has the potential to deal with the subtleties and intricacies of complex social situations (Denscombe, 2007:42). The potential comes from the strategic decision to restrict the study to just a few cases. Therefore, it would be difficult to generalise the findings of this study to the whole teaching fraternity.

Denscombe (2007:43) advises that researchers opting for a case study approach pre-empt possible criticism by addressing the issue head on. The following three arguments can be used as defence for not being able to generalise from case study findings.

1. ***Although each case is in some respects unique, it is also a single example of a broader class of things.*** In this study, four cases formed part of the research, but they represented schools where teachers teach both Natural Sciences (GET) and Life Sciences (FET). The researcher contacted close to 40 schools and found only six schools with this combination of learning areas. The researcher therefore concluded that this combination of learning areas is not found in all schools. Therefore, the findings of this study are applicable to the cases that formed part of the research.
2. ***The extent to which findings from the case study can be generalised to other examples in the class depends on how far the case study example is similar to others of this type.*** As mentioned before, this study strived to shed light on the realities faced by teachers with the transition from GET to FET and the practical implementation of the NCS. It further focused on differences between schools in different contexts rather than on differences between 'poor' and 'affluent' schools. The sample used identified significant features on which comparison with others in the class could be made and showed how this case study compares with others in the class in terms of these significant features. The researcher also made the argument that teachers with experience in both GET and FET would give a more informed account of their experiences compared to others teaching in GET or FET only.

- 3. Reports based on the case study include sufficient detail about how the case compares with others in the class for the reader to make an informed judgement about the extent to which the findings have relevance to other instances.** The reader is given all the necessary information to assess how far the findings have implications across the board for all others of the type or how far they are restricted to just the case study example.

Furthermore, the findings can only be generalised when one assumes that what has been observed in the sample would be observed in any other group of subjects from the population (De Vos *et al.*, 2007:193). This cannot be done in this study, as the sample includes teachers who teach both Natural Sciences (GET) and Life Sciences (FET), and this is not representative of the whole teaching fraternity, as experienced by the researcher in the initial search for participants. Guba and Lincoln (1989, as cited in Mertens, 1998:266) reject the notion that it is possible to reach a 'generalisable' conclusion because of a particular sampling strategy. They argue that research and evaluation results are limited by context and time and that "one cannot determine that this curriculum will fit into and work in a given setting without trying it in that setting".

3.7 THE STUDY POPULATION

Babbie and Mouton (2006:174) define 'study population' as "that aggregation of elements from which the sample is actually selected". This means that the unit of analysis will be chosen from the study population. It is therefore necessary to clearly define what the study population for this study entailed.

Mouton (2006:51) defines unit of analysis as the 'what' of the study: what object, phenomenon, entity, process or event the researcher is investigating. The unit of analysis for this study included only the science teachers teaching both Natural Sciences (Grade 9) and Life Sciences (Grade 10). The selected study population for this study included teachers responsible for teaching both Natural Sciences in the GET band and Life Sciences in the FET band. As such, those teachers only teaching Natural Sciences (Grade 9) or Life Sciences (Grade 10) were omitted from the study population and the findings cannot be generalised to the all Grade 10 science teachers. Therefore, the unit of analysis represents the study population and findings can be generalised to this group.

3.8 SAMPLING APPROACH AND STRATEGY

De Vos *et al.* (2007:203) describe sampling as "taking a portion of a population and considering it representative of that population". Mertens (1998:253) refers to sampling as the method used to select a given number of people (or things) from a population. In qualitative studies, non-probability sampling methods are utilised (De Vos *et al.*, 2007:328). As the purpose of this study was to

explore and describe the nature of participants' experiences, the study focused on purposive sampling (Babbie & Mouton, 2006:166).

Six teachers responded that they were interested in taking part in this study, however only four of these six teachers ultimately participated in the study. Mertens (1998:253) states that the strategy for selecting a sample influences the quality of data and the inferences that the researcher makes from it. The researcher, working within the interpretive paradigm, selected the samples with the goal of identifying information-rich cases that will allow her to study a case in depth, as recommended by Mertens (1998:261). The researcher must, however, emphasise that the goal was not to generalise the sample to the population, and therefore a detailed description of the sampling strategy is necessary, as based on Mertens (1998:261).

In interpretive research, different sampling strategies can be employed. The researcher decided to use the convenient sampling strategy, because the participants and therefore the schools were readily available to participate in this study, following Mertens (1998:265). There are also some limitations to using this strategy and the researcher should not attempt to generalise the results beyond the given population pool, as recommended by Mertens (1998).

3.8.1 Sampling criteria

De Vos *et al.* (2007:329) recommend that with purposive sampling, the researcher must think critically about the parameters of the population and then choose the sample accordingly. The only criterion for inclusion in this study is that participants have to have taught both Natural Sciences (Grade 9) and Life Sciences (Grade 10) for at least one year. After the criteria for the participants were specified, the researcher started the process of finding teacher participants. The sample size of the participants initially included six teachers, of which four continued to the end of the study. The other two teachers were kind enough to proofread and test the questionnaire and corrections were made accordingly.

Patton (2002:244) in De Vos *et al.* (2007:328) states that there are no rules for sample size in a qualitative inquiry. Sample size depends on what the researcher wants to know, therefore discretion is necessary. According to Babbie and Mouton (2006:166), it is sometimes appropriate to select the sample on the basis of the researcher's own judgment and purpose of the study. In order to provide the researcher with a description of the phenomena under study, she chose research participants from whom she could receive personal accounts of their subjective experiences.

Four participants and therefore four cases formed part of this empirical study and were deemed enough by the research to generalise the findings to the study population.

3.9 ETHICAL CONSIDERATIONS

All proposed research should seek permission and ethical clearance at both the application and implementation stages. It was required that the researcher sought permission and ethical clearance from all participating institutions, which included Stellenbosch University, the Western Cape Education Department (WCED), the six schools and the individual teachers who eventually participated in the study, including the two teachers who pilot-tested the questionnaire.

Informed consent was sought from all participants who were requested to participate in the study. Because this was a qualitative study, individuals did not volunteer to participate in the study, but were requested to participate. After the researcher informed them of the purpose of the research and assured them of the confidentiality of their accounts and the schools, the participants agreed to assist the researcher with her study. The participants knew what was expected of them and understood any risks involved. They were also assured that their identities as well as that of the schools would be protected.

As mentioned previously, the researcher first identified the schools where the combination of subjects was taught by one teacher alone. Formal letters were then addressed to the identified principals requesting permission to include the schools in the study. These letters included the assurance that the teachers and the institutions would not be identified in the study. As this study included photographic evidence (see Addendum E), care was taken not to include learners or any evidence that would identify the schools in the photos. After their approval was granted, the researcher followed the necessary procedures to apply for ethical clearance from the university (see Addendum A). The application to conduct research in the selected institutions was also approved by the WCED, which granted a certificate as proof of application (see Addendum B).

3.10 NEGOTIATING ACCESS TO THE SETTING

Contacting the different schools entailed a long and tedious process. As mentioned earlier, the researcher contacted close to 40 schools and found only six who had one teacher teaching both Natural Sciences and Life Sciences. The researcher chose these teachers according to criteria discussed in Section 3.7.1, as she argued that these teachers teaching both Natural Sciences (GET band) and Life Sciences (FET band) would give a more practical account of their experiences of the transition process.

The researcher decided to first contact the principals to request permission to conduct the research at their schools, as they had to accommodate the researcher at the schools. After establishing contact telephonically, formal letters were sent out to the school principals requesting formal consent to include the schools in the research study. The letters also contained specific

information about the research, research questions and reasons for including these particular schools. The persons, either the principal or the participants, elected to respond telephonically and granted the researcher permission to visit the school. At this stage, the researcher made arrangements telephonically to interview the participants and confirmed their agreement to participate in the study. The researcher again sent out formal letters with details of what is expected of the participants. These letters also included tentative dates for the visits to the schools. This was difficult to determine, as only one participant telephoned to confirm the date. However, within a month the researcher was able to finalise the dates to visit the schools.

3.11 DATA-COLLECTION METHODS

Denscombe (2007:133) argues that there are four main research methods that can be used: questionnaires, interviews, observation and documents. Mertens (1998:174) is of the opinion that participant observation, interviews and documented and recorded reviews are the main methods for collecting data. There are some sound theoretical reasons that explain strategies to be linked to particular methods. Denscombe (2007:133), however, suggests that the researcher still has some scope to choose among different methods. To this end, the researcher decided to combine simple observation (Babbie & Mouton, 2006:293), interviews, questionnaires, document study and photographic evidence for the collection of empirical data.

Denscombe (2007:134) refers to this as a mixed-method approach or *triangulation*, with the intention to compensate for weaknesses in one method with strengths in others and to enhance the validity and reliability of the findings. This also allows the researcher to examine the topic from a variety of perspectives.

The first and most obvious requirement of any research instrument is that it must fit the purpose of the research: it must elicit the information required to illuminate the research question (Taylor & Vinjevold, 1999:91).

3.11.1 Questionnaire (Addendum C)

A questionnaire was developed and administered to the participants. Responses needed to be probed and elaborated on, while space was provided to explain the various responses.

According to Denscombe (2007:153), there are many types of questionnaires. The researcher considered the following rules during compilation of the questionnaire (Denscombe, 2007:162):

- Only ask those questions that are absolute vital to the research.
- Be rigorous in weeding out any duplication of questions.

- Make the task of responding to the questionnaire as straightforward and speedy as possible.
- Pilot the questionnaire to see how long it takes to answer.

Questions can be formulated in a questionnaire as open- or closed-ended questions. *Open-ended questions* are those that leave the respondent to decide the wording of the answer, the length of the answer and the kinds of matters to be raised in the answer (Denscombe, 2007:165). The advantage of open-ended questions is that the information gathered is more likely to reflect the full richness and complexity of the views held by respondent. *Closed-ended questions* structure the answers by allowing only answers that fit into categories that have been established in advance by the researcher. The advantage is that the structure imposed on the answers provides the researcher with information that is of uniform length and in a form that lends itself to being quantified and compared. There are however two disadvantages: firstly, it allows for less subtlety in the answers and secondly, the respondents might get frustrated by not being allowed to express their views fully.

For the purpose of this study, the researcher considered a combination of open- and closed-ended questions. To eliminate the disadvantages, the researcher provided the participants with additional space to motivate their answers to the closed-ended questions.

It is important to conduct a pilot study in order to determine whether relevant data can be obtained from the respondents (De Vos *et al.*, 2007:331). The researcher asked two teachers with the same credentials as the sample to pilot the questionnaire; they did not form part of the sample. This was done to establish whether teachers understood what was expected of them and to determine whether the questions posed in the questionnaire would answer the research questions.

After receiving the piloted questionnaires, the researcher made some changes to the questions posed and added additional questions. The updated version of the questionnaire was handed to the participants to complete. The researcher gave the questionnaire to the participants at the first meeting and the participants completed the questionnaire before the end of the visiting period of one week. All four participants completed the questionnaire in their own time.

3.11.1.1 The advantages of a questionnaire

Denscombe (2007:169–170) provides some advantages of using questionnaires:

- Questionnaires are economical. They can supply a considerable amount of research data for a relatively low cost in terms of material, money and time.
- It is easier to arrange than personal interviews, for example, as they may be simply sent unannounced to the respondent. However, the response rate can be improved by contacting the respondents before they are sent the questionnaire.

- Questionnaires supply standardised answers, to the extent that all respondents are posed with exactly the same questions.
- Questionnaires can provide pre-coded answers. Instead of thinking how to express their ideas, respondents can merely pick an answer that is spelt out for them.

3.11.1.2 Disadvantages of using a questionnaire

Denscombe (2007:170–171) mentions the following disadvantages of questionnaires

- Pre-coded questions can be frustrating for respondents and therefore deter them from answering. While the respondents may find it less demanding merely to tick appropriate boxes, they might, equally, find this restricting and frustrating.
- Pre-coded questions can bias the findings towards the researcher's opinions, rather than the respondent's way of seeing things. There is always the danger that the options open to the respondent when answering the questions will channel responses away from the respondent's perception.
- Questionnaires offer little opportunity to check the truthfulness of the answers given by the respondent. As the answers are given 'at a distance', the researcher will have to accept the answers as true.

In this study, only science teachers were requested to answer the questionnaire. Only questions related to the research were asked. The purpose of the questionnaire was to obtain additional answers to the personal interview.

3.11.2 Simple observation (Addendum D)

According to Babbie and Mouton (2006:293), two types of observation are found in qualitative research, namely *simple observation*, where the researcher remains the outside observer, and *participant observation*, where the researcher is simultaneously a member of the group she/he is studying. In this study, simple observation, or as Denscombe (2007:206) refers to it, systemic observation, was used, as it is particularly used in settings such as school classrooms.

According to Taylor and Vinjevold (1999:91), classroom observations can provide an enormously rich source of data about general conditions in schools, teaching methods, the quality of learning taking place, the use of equipment and materials, and the relationship between the forms of teaching and learning behaviours and their outcomes.

The purpose of the researcher's observation scheme was to determine what resources were visibly available to the participant and learners, whether teachers still taught in the traditional way and how effectively they used the teaching aids. The researcher also wanted to observe and eliminate significant contradictions that might arise between what individual teachers said about how they thought learners learn and the classroom practice of those same teachers, as recommended by Taylor and Vinjevold (1999:142). The further goal with the observation scheme was to determine whether there is a link between classroom and school conditions and teachers' attitude towards teaching and their experience.

The researcher observed that all four participants' classrooms were a laboratorium with a minimum of eight stations for practical work. Wiring and electricity were available to all the participants. Apart from Teacher B, all the participants had enough space for learners to move around freely within the classroom and all participants had access to textbooks for every learner. With the exception of Teacher B, all participants had enough tables and chairs for the learners. Teacher A and Teacher D used a combination of both teacher-centred and learner-centred approaches whereas Teacher B and Teacher C mostly used a teacher-centred approach to their presentation of their lessons.

Observations were done only in the Life Sciences classroom. The researcher remained neutral and quiet and did not interfere with any activities in the classroom. The researcher used the same lesson observation schedule for all participants. The participants were assured that the researcher was not there to assess them, but merely to observe the classroom, teaching techniques, resources and relationship between the participant and learners.

3.11.2.1 Advantages of observation

Babbie and Mouton (2006:295) cite Kelleher (1993:126) regarding the following advantages of observation: it forces the researcher to familiarise him-/herself with the subject, and it allows previously unnoticed or ignored aspects to be

Denscombe (2007:214) provides additional advantages to observation:

- *Direct data collection.* It directly records what people do, as distinct from what they say or do.
- *Systemic and rigorous.* The use of an observation schedule provides an answer to the problems associated with the selective perception of observers, and it appears to produce objective observations. The schedule effectively eliminates any bias from the current emotions or personal background of the observer.
- *Efficient.* It provides the means for collecting substantial amounts of data in a relatively short time span.

- *Pre-coded data*. It produces quantitative data that are pre-coded and ready for analysis.
- *Reliability*. When properly established, it should achieve high levels of inter-observer reliability in the sense that two or more observers using a schedule should record very similar data.

3.11.2.2 Disadvantages of observation

Denscombe (2007:214) regards the following as disadvantages of observation:

- *Behaviour, not intentions*. Its focus on overt behaviour describes what happens, but not *why* it happens. It does not deal with intentions that motivated the behaviour.
- *Oversimplifies*. It assumes that overt behaviour can be measured in terms of categories that are fairly straightforward and unproblematic. This is premised on the idea that the observer and the observed share an understanding of the overt behaviour, and that the behaviour has no double meaning, hidden meaning or confusion associated with it. As such, systematic observation has the built-in potential to oversimplify, ignore or distort the subtleties of the situation.
- *Contextual information*. Observational schedules, by themselves, tend to miss contextual information that has bearing on the behaviour recorded. It is not a holistic approach.
- *Naturalness of the setting*. Despite the confidence arising from experience, there remains a question mark on the observer's ability to fade into the background.

3.11.3 Semi-structured interviews (Addendum E)

According to Kvale (1996:5), the purpose of a qualitative interview is to obtain a description of the life world of the interviewee with respect to interpreting the meaning of the described phenomena. For De Vos *et al.* (2007:287), interviewing is the predominant mode of data or information collection in qualitative research.

In this study, the researcher used a semi-structured interview approach in order to gain a detailed picture of the participants' perceptions of their experience. This method provided more flexibility, as it is a personal account of their experiences, and therefore a semi-structured interview was deemed more appropriate for this study, as recommended by De Vos *et al.* (2007:296).

An interview schedule (De Vos *et al.*, 2007:296) (see Addendum E) was used to guide the interviews, as a schedule forces the researcher to think of difficulties that might be encountered. However, this procedure requires time and thought.

The interview with the participants set out to establish:

- their attitude towards the transition from Natural Sciences in the GET band to Life Sciences in the FET band;
- the support they have with teaching science;
- their thoughts on whether FET will succeed in their school;
- their thoughts on whether their classrooms and resources were adequate to teach science; and
- successes and challenges experience while teaching Natural Sciences (GET) and Life Sciences (FET).

Denscombe (2007:202) lists some advantages of interviews:

- *Depth of information.* Interviews produce data that are in-depth and detailed.
- *Insights.* Valuable insights can be gained based on the depth of the information gathered.
- *Equipment.* Only simple equipment and conversation skills are needed.
- *Informants' priorities.* Data based on informants' priorities, opinions and ideas are produced.
- *Flexibility.* Interviewing allows for a developing line of enquiry.
- *High response rate.* Interviews are generally prearranged and scheduled and allow for a relatively high response rate.
- *Validity.* Direct contact during the interview means that data can be checked for accuracy and relevance as they are collected.
- *Therapeutic.* The personal element of this method allows respondents to enjoy the chance to talk about their ideas with a person whose purpose is to listen without being critical.

The interview as a method of data collection also has some disadvantages. Denscombe (2007:203) considers this to be the following:

- *Time-consuming.* The analysis of data can be difficult and time-consuming.
- *Data analysis.* Non-standard responses are produced.
- *Reliability.* Consistency and objectivity are hard to achieve. The data collected are unique owing to the context and the individuals, which can have an adverse effect on the reliability thereof.
- *Interviewer effect.* Data are based on what people say rather than what they do; the two may not tally.
- *Inhibitions.* Interviewing is an artificial situation that can be daunting for certain people.
- *Invasion of privacy.* Tactless interviewing can be an invasion of privacy and/or upsetting for the informant.
- *Resources.* Face-to-face interviews can be costly in terms of the interviewer's time and travel costs, especially if the informants are geographically dispersed.

3.12 TRANSCRIBING

Denscombe (2007:134) describes transcribing as a labour-intensive process; however, it is a very valuable part of the research because it brings the researcher 'close to the data'.

Denscombe (2007:197–198) lists some of the problems associated with transcription:

- *The recorded talk is not always easy to hear.* Outside noises or poor audio quality makes transcribing the words very difficult. The researcher must exercise discretion about what should be transcribed.
- *People do not always speak in nice finite sentences.* The researcher needs to add punctuation and sentence structure to the talk, so that it makes sense in the written form.
- *Intonation, emphasis and accents used in speech are hard to depict in a transcript.*

The researcher transcribed the interviews as soon as possible and experienced all the problems stated above. This was done in order to make it easier to remember the context in which statements was made, especially regarding body language. To ensure that the transcripts represented the written text, the interviews were recorded on a computer and transcribed verbatim.

3.13 THE VALIDITY OF INTERVIEW DATA

According to Denscombe (2007:200), interviews concern matters such as emotions, feelings and experiences of the interviewee, and it is therefore necessary to perform some checks to gauge the credibility of what has been told. Although there is no watertight method to detect false statements given during the interview, one can make some effort to ensure the validity of the data. Denscombe (2007:201) provides the following methods to ensure the validity of interview data.

- *Check the data with other sources.* Triangulation should be used. Other methods of data collection can provide some backup for the content of the interview. In this study, other sources of data collection were used to complement the data obtained
- *Check the transcripts with the informant.* The researcher should go back to the interviewee with the transcript to check with that person that it is an accurate statement. The researcher conducted a second interview with the participants to validate the answers and clear up any uncertainties of the first interview.
- *Check the plausibility of the data.* The researcher should ask whether it is reasonable to suppose that a person would be in a position to comment authoritatively on the topic. In this study, interviews were conducted with science teachers only. As the purpose was to elicit experiences, emotions and feelings, it can be assumed that the data were plausible.

- *Look for themes in the transcripts.* Avoid basing findings on one interview – look for themes emerging from a number of interviews. As this was a multiple case study, the researcher conducted four interviews with the participants and four additional interviews with each participant to check the plausibility of the data.

3.14 PHOTOGRAPHIC EVIDENCE

The use of photographs in interpretive research and case study research in particular remains largely unexplored (Le Grange, 2000:173). Complex settings, such as schools and classrooms, are particularly appropriate as sites for photographic research. The diversity of schools in South Africa and the challenges of educational change they are faced with in light of global forces and post-apartheid imperatives make them particularly relevant sites for photographic case studies of a praxiological nature (Le Grange, 2000:173).

According to Schulze (2007), photographs have no intrinsic meaning, but serve as symbols for meaning that participants explain during interviews.

Le Grange (2000:169) is convinced that photographs hold the promise of contributing towards the democratisation of the research processes. He states that even though language is central to interpretive research, it has certain shortcomings and remains the only way of representing social life. Photographs can be effective for various purposes (Le Grange, 2000:170), but in this research, it served as a basis to visually illustrate the workspace of the participant and potential educational problems.

Le Grange (2000:173) provides some steps to follow when using photographs in case study research:

- Photograph aspects of the setting in which the research is to take place..
- Take photographs of the programme (intervention), for example a new curriculum that is being introduced in classrooms.
- Give the photographs to the research subjects for their critical comments.
- Select key photographs for the development of a photographic case record. Additional photographs may need to be taken to fill 'gaps' in the pictorial record.
- Add captions to each of the photographs.
- Write a commentary/narrative of the case based on the pictorial records.

3.15 DATA ANALYSIS

The fact that a study is a case study does not, in itself, call for a particular approach to the analysis of the data that it produces (Robson, 2002:473). For this reason, the researcher elected to use a hybrid approach of thematic analysis to analyse the data as a qualitative analytic method for identifying, analysing and reporting patterns (themes) within data, based on Braun and Clarke (2006:79) and Boyatzis (1998:4). Although thematic analysis is described in the literature and is widely used, there is no clear agreement about what thematic analysis is and the pragmatic process of how one goes about doing it (Aronson, 1994; Braun & Clarke, 2006). It is also important to note that given the absence of clear and concise guidelines on thematic analysis, the 'anything goes' critique of qualitative research may apply in some instances. With their study, Braun and Clarke (2006) sought to celebrate the flexibility of this method and provided vocabulary and a 'recipe' for researchers to undertake thematic analysis in a way that is theoretically and methodological sound.

As one of the benefits of thematic analysis is its flexibility, this method is essentially independent of theory and epistemology, and can be applied across a range of theoretical and epistemological approaches. Therefore, thematic analysis is compatible with both essentialist and constructionist research paradigms. Through this theoretical freedom, thematic analysis is a useful tool that can potentially provide a rich and detailed yet complex account of data. As one of the objectives of this study was to provide a rich description of the data, this tool was considered the best to accomplish this objective. The literature on thematic analysis and a detailed account of the actual steps taken during analysis of the data are discussed in more detail in Chapter Four.

3.16 TRIANGULATION

Devetak *et al.* (2010:78) describe triangulation as the pluralism of data-collection techniques and their mutual combination for linking the findings of individual phenomena or aspects into a meaningful integrity. Creswell and Miller (2000:126, as cited in Golafshani (2003:604) advocates the use of triangulation as "a validity procedure where researchers search for convergence among multiple and different sources of information to form themes or categories in a study".

Methodological triangulation (between-methods), which is the most common form of triangulation, was utilised in this study based on the work of Denscombe (2007:135) and Patton (2009:157). This is in contrast to data triangulation, which typically has two or more types of participants (such as employees and supervisors) from which to collect data (Patton, 2009:157). Methodological triangulation allows the findings from different methods to be confirmed in order to corroborate the findings and complement information from other sources of collection. There are also some disadvantages when using triangulation. Data analysis also becomes more complex, as there is

the need to compare, contrast and integrate the findings in a way that is more demanding. Lastly, the use of triangulation can be risky because the data from one perspective may not necessarily corroborate data from other perspectives.

The researcher used a combination of data-collection approaches in order to triangulate the data. Data from all these approaches were supplemented to ensure that a balanced account of the teachers' experiences was sought. The interviews were intended to determine how they experienced the transition and how they coped with this transition process. The aim was also to get the teachers' accounts in their own words about their attitude, teacher–learner relationship, teaching strategies and learner-centredness. The questionnaire mainly provided the biographical information of the participants. The classroom observations were carried out to explore the teaching practices of Grade 10 teachers and to observe the daily interactions between learners and teachers. The researcher also observed the classroom layout, the teachers' attitude, teaching strategies and what resources teachers used during lessons. In turn, the photographs were meant to provide a visual representation of the participants' natural setting.

3.17 TRUSTWORTHINESS OF THE STUDY

Four tests may be considered relevant in judging the quality of any research design: construct validity, external validity, internal validity and reliability (Yin, 1984:41). However, naturalistic investigators prefer to use different terms such as 'credibility' (in preference to internal validity), 'transferability' (in preference to external validity/generalisability), 'dependability' (in preference to reliability), and 'confirmability' (in preference to objectivity) to distance themselves from the positivist paradigm (Guba & Lincoln, 2011:13; Patton, 2009:157; Shenton, 2004:63). Following below is a description of the strategies taken to enhance the trustworthiness of the research study:

3.17.1 Credibility

To address credibility, investigators must attempt to demonstrate that a true picture of the phenomenon under scrutiny is being presented (Shenton, 2004:63). Shenton (2004:64) lists 14 provisions that researcher can employ to promote confidence that they have accurately recorded the research phenomenon. Following below is a description of some of these provisions used by the researcher to enhance the credibility of this study:

- *The development of an early familiarity with the culture of participating organisations* before the first data collection takes place (Shenton, 2004:65). As previously stated, the researcher had some previous experience and exposure to the four schools where the research was conducted. The researcher attended high school at one of the schools and this immediately

established a trusting relationship between herself and the participant. Two schools are neighbour schools of this particular school and the researcher and participants reminisced about, among other, past athletics competitions. The last school is located two kilometres from the school where she herself taught, and these two schools had a good networking/professional relationship.

Shenton (2004) also recommend “prolonged engagement” between the researcher and the participants in order to gain an adequate understanding of an organisation and to establish a relationship of trust between the researcher and participants. As the researcher also taught Natural Sciences (Grade 9) and Life Sciences (Grade 10), she could portray the role of learner, friend and, most important, colleague, to the participants. The researcher spent a week doing observations in the classrooms of the participants and went back the following month to conduct the follow-up interviews. She also had the opportunity to evaluate students’ practice teaching at two of the schools and had time to converse with the two participants.

- *Triangulation*

A variety of data-collection approaches was used to triangulate the data. The approaches included simple observation, semi-structured interviews, an open-ended questionnaire and photographs of the participants’ classrooms. For more information on the triangulation process, see Section 3.16.

- *Tactics to help ensure honesty in informants when contributing data*

The researcher only included participants that were willing to participate in the research. As stated before, the researcher initially identified six teachers that met the requirements of inclusion in the study; however, only four were willing to participate in the study. It was made clear to the participants that they could withdraw from the study at any point and they were also assured of their anonymity. Special care was taken not to include any information in the photographs and final report that would identify either the school or the participants.

- *The researcher’s ‘reflective commentary’*

It is worth mentioning that the ‘tacit’ knowledge that the researcher brings to the research process is one of the assumptions that underpins the constructivist paradigm. According to Lincoln and Guba (1985, as cited in Glaser, 2004), this body of knowledge of the researcher is legitimate and should be embraced in order for the researcher and participants to co-create understanding and reality.

- *Background, qualifications and experience of the investigator*

The researcher in a sense formed part of the research phenomenon, as she also taught both Natural Sciences and Life Sciences. She spent time reflecting on her personal feelings and experience of the transition process from GET to FET with the goal of laying aside these personal perceptions. This was done in order to approach the participants with an open mind

and unbiased view. The conclusions drawn from the data are therefore a result of the collaboration between the researcher and the participants.

- *Member checks*

Initial interpretations and conclusions were discussed with the participants' and these participants were able to provide feedback and recommendations. This process allowed the participants to reflect on the initial emerging themes and categories identified from the data

- *Thick description of the phenomenon under scrutiny*

The researcher provided detailed descriptions of both the participants and their surrounding context, such that the participants' perceptions and the actual situations that have been investigated could become meaningful to the reader. Without this insight into the research, it would be difficult for the reader to assess the applicability to his/her situation.

- *Examination of previous research findings* to assess the degree to which the results are congruent with those of past studies. As mentioned in Chapter One, this study is in a way a follow-up to Peloagae's (2009) study on learners' experience of the transition process from GET to FET. The literature study also discusses the relevant literature on transition, issues related to teachers and teaching, and the theoretical framework for this study.

3.17.2 Transferability

To allow transferability, the researcher must provide sufficient detail of the context of the fieldwork for a reader to be able to decide whether the prevailing environment is similar to another situation with which he/she is familiar and whether the findings can justifiably be applied to the other setting (Shenton, 2004:63). In a sense, only the reader can determine whether the findings of this study can be translated to other settings. To accomplish this, the researcher provided a thick description of the participants and their contexts in order for the reader to determine whether the findings can be applied to his/her situation.

3.17.3 Dependability

A demonstration of credibility goes some distance in ensuring the dependability test of a research study (Lincoln & Guba, 1985, as cited in Shenton, 2004:71). The researcher provided the steps taken to ensure that the research study is credible, thereby also ensuring the dependability of this research study. Shenton (2004:63) does however argue that it is difficult to meet the demands of dependability criteria in qualitative work, although researchers should at least strive to enable a future investigator to repeat the study. This can be accomplished by reporting the research processes within the study in detail, thereby enabling a future investigator to repeat the study

(Shenton, 2004:71). Within this study, the supervisor and external examiners were responsible for examination of the findings, interpretations and conclusions of this study.

3.17.4 Confirmability

Confirmability occurs in the presence of credibility, transferability and dependability (Shenton, 2004:72). To achieve confirmability, researchers must take steps to demonstrate that findings emerge from the data and not their own predispositions (Shenton, 2004:63). In this study, the researcher ensured that the findings of the study were supported by the analysed data by providing extracts of the participants' own descriptions of their experiences. This process is also supported by the triangulation of the data, which in turn reduced researcher bias.

3.18 CHAPTER SUMMARY

This chapter presented a detailed account of the research paradigm, research strategy and research methodology according to which the study was conducted. Simple observation, semi-structured interviews, an open-ended questionnaire and photographic evidence were used as data-collection methods and the rationale for including each of these methods was discussed. This research study is placed in the interpretivist camp, utilising a multiple case study approach. The chapter concluded with a description of the strategies taken to enhance the trustworthiness of this research study.

Chapter Four focuses on the data-analysis process and the interpretation of the collected data.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

This chapter is organised into two sections. Section A discusses the literature on thematic analysis and a brief description of the steps taken during the analysis of the data. Section B concludes with an interpretation and discussion of the findings. Section B is divided into three parts. Part 1 is based on the results of the questionnaire, Part 2 is based on the observational data, and Part 3 is based on the results of the semi-structured interviews. The photographic evidence is used as visual support of the findings from the questionnaires, interviews and observation.

In order to achieve the objectives of this study (see Chapter One), the collected data were analysed using thematic analysis. A detailed discussion of this method follows.

4.2 SECTION A

4.2.1 Literature on Thematic Analysis

According to Braun and Clarke (2006:77), thematic analysis is a poorly demarcated, rarely acknowledged, yet widely used qualitative analytic method. These authors argue that a considerable amount of analysis is essentially thematic, as any theoretical framework carries with it a number of assumptions about the nature of the data and what they represent in terms of the ontological and epistemological position taken, and a sound thematic analysis will make this position transparent. They state that thematic analysis minimally organises and describes data sets in (rich) detail and interprets various aspects of the research topic. It is for this reason that thematic analysis was used, as one of the objectives of this study was to provide a thick description of the participants' experiences.

One of the benefits of thematic analysis is its flexibility (Braun & Clarke, 2006:78). The authors argue that a 'named' and 'claimed' thematic analysis means researchers need not subscribe to the implicit theoretical commitments of other methods of analysis (Braun & Clarke, 2006:81). As thematic analysis does not require the detailed theoretical and technological knowledge of approaches, such as grounded theory, it can offer a more accessible form of analysis, particularly for those early in a qualitative research career. Another benefit of thematic analysis included by Braun and Clarke (2006:81) is that this method is not wedded to any pre-existing theoretical framework, and therefore it can be used within different theoretical frameworks. A common critique of conducting thematic analysis is that the absence of clear and concise guidelines on thematic analysis means that the 'anything goes' critique of qualitative research may well apply (Braun &

Clarke, 2006:78). Nevertheless, the researcher argues that by following the guidelines discussed by Braun and Clarke (2006), it is possible to present a thematic analysis that is theoretically and methodologically sound.

4.2.2 What constitutes a theme?

A theme captures something important about the data in relation to the research question, and represents some level of *patterned* response or meaning within the data set (Braun & Clarke, 2006:82). An important question to address in terms of coding is: What counts as a pattern/theme or what 'size' does a theme need to be? (Braun & Clarke, 2006:82). In a qualitative analysis, there is no hard-and-fast answer to the question of what portion of one's data set needs to display evidence of the theme for it to be considered a theme (Braun & Clarke, 2006:82). Researcher judgment is therefore necessary to determine what a theme is.

Braun and Clarke's (2006:82) initial guidance on thematic analysis is that the researcher needs to retain some flexibility, as rigid rules do not work. Furthermore, the 'keyness' of a theme is not necessarily dependent on quantifiable measures – but rather on whether it captures something important in relation to the overall research question. What this implies is that the themes are not necessarily the most prevalent themes across the data set.

Another issue that needs to be considered before and during analysis involves a number of choices that have to be considered and discussed explicitly (Braun & Clarke, 2006:82–86). A brief description of these choices follows.

4.2.3 Choices

Braun and Clarke (2006:83–86) advise that these questions or choices should be considered before analysis (and sometimes even collection) of the data begins. These choices or questions include:

- *A rich description of the data set, or a detailed account of one particular aspect*

As one of the objectives of this study was to provide a 'thick' or a 'rich description, the themes identified, coded and analysed had to be a reflection of the content of the entire data set. As this study was a short dissertation, some depth and complexity are necessarily lost; however, a rich overall description was maintained.

- *Inductive versus theoretical thematic analysis*

An inductive approach was chosen, as this approach means the themes identified are strongly linked to the data. It is, however, important to note that researchers cannot free themselves from

their theoretical and epistemological commitments, and data are not coded in an epistemological vacuum.

- *Semantic or latent themes*

Another decision involves the 'level' at which themes are identified. As the researcher is interested to interpret the data and to identify or examine *underlying* ideas and assumptions, a thematic analysis at latent level was more appropriate for this research study. In addition, analysis within the latent tradition tends to come from a constructionist paradigm.

- *Epistemology: Essentialist/realist versus constructivism thematic analysis*

It is suggested that the theoretical position is made clear, as this will determine the assumptions about the nature of the data, what they represent in the 'world' and in the 'reality'. The research epistemology guides what can be said about the data, and informs how the researcher theorises meaning. As previously stated, a constructivism perspective was considered appropriate for this research, as experience is socially produced and reproduced, rather than inherent within individuals. Therefore, within a constructivism framework, thematic analysis seeks to theorise the socio-cultural contexts and structural conditions that enable the individual accounts that are provided. Braun and Clarke (2006:85) further state that latent themes tend to be more constructivism; however, not all 'latent' thematic analysis is constructivism.

- *The many questions of qualitative research*

It is worth noting that qualitative research involves a series of questions, and there is a need to be clear about the relationship between these different questions. Firstly, there are the main research question and sub-questions (see Chapter One for more detail). Secondly, there are the questions that participants have responded to in the questionnaire and during the interview process, and lastly there are the questions that guide the coding and analysis.

4.2.4 Performing thematic analysis

Braun and Clarke (2006:87–94) suggest a six-phase guide for a thorough thematic analysis. These phases include: Phase 1: Becoming familiar with the data; Phase 2: Generating initial codes; Phase 3: Searching for themes; Phase 4: Reviewing the themes; Phase 5: Defining and naming the themes and Phase 6: Producing the report.

The researcher was sensitive not to be influenced by the findings of existing literature during her thematic analysis of the data, and therefore did not engage with the literature in the early phases of the thematic analysis process, as recommended by Braun and Clarke (2006).

Braun and Clarke (2006) further state that analysis is a recursive process and recommend movement between these phases. They also recommend that writing should begin in Phase 1 by writing down ideas and potential coding schemes and continue through the entire coding/analysis process (Braun & Clarke, 2006:86). However, before one starts with Phase 1, verbal data need to be transcribed. According to Braun and Clarke (2006:88), thematic analysis, even constructionist thematic analysis, does not require the same level of detail in the transcript as conversation, discourse or even narrative analysis. However, it does require a rigorous and thorough 'orthographic' transcript – a 'verbatim' account of all verbal (and sometimes nonverbal, for example coughs) utterances. For more detail on the transcription process, see Section 3.12 in Chapter 3.

4.3 SECTION B

4.3.1 Introduction

The research questions provided the guidelines for the identification of the thematic categories in this chapter. The main research question focuses on the subjective experiences of science teachers' during the transition process from Natural Sciences in Grade 9 (GET band) to Life Sciences in Grade 10 (FET band). In order to provide a thick description of the main question, four sub-questions were explored in order to adequately answer the main question. Sub-question 1 explored the issue of the participants' attitude towards science, specifically FET and teaching in general. Sub-question 2 focused on the role of the school context, learning resources and infrastructure in the successful implementation of the curriculum. Sub-question 3 addressed the training and support systems in place to support these participants, and whether this was satisfactory to prepare these participatory teachers to implement the curriculum. Sub-question 4 addressed the successes and failures while negotiating this transition process.

The analysis process took place as soon as the data were collected. The questionnaires provided the demographic and background information of the participants and additional factors that influenced their experiences. The classroom observations were done mainly to observe the teaching styles of the participants, classroom sizes, available resources and overall condition of the classrooms. The photographic evidence was used as visual support for the data from the questionnaires, interviews and simple observation conducted in each participant's classroom. The final themes were identified from all the data collected.

During the analysis, the researcher listened to the audio tapes of the interviews and started reading through all the interview transcriptions (see section 3.12) to get an overview of the data. The researcher read each interview transcript very carefully. In the second reading, each sentence of the interview was ascribed a code to describe the main essence of the sentence. In the guidelines for conducting thematic analysis by Braun and Clarke (2006), all data are coded.

4.3.2 PART 1: ANALYSIS OF QUESTIONNAIRES (ADDENDUM C)

All four participants completed the questionnaires and these were used to interpret the results.

4.3.2.1 Demographic data

The demographic data collected included age, number of schools taught throughout their teaching career, total years of teaching experience, number of years at current school and qualifications. Table 4.1 shows that all the participants had an REQV 14 qualification and are considered fully qualified to teach in South African schools (DoE, 2005:47). All the participants were female and three of the four participants can be regarded as highly experienced and thus confident in their teaching role (DoE, 2005:10). Three of the participants have taught at least two schools in their teaching career, with the exception of one participant, who has done supplied teaching in London before starting her teaching career at her current school.

Table 4.1: Demographic data

Participants	Age	Number of schools taught throughout teaching career	Total years of teaching experience	Teaching at current school (in years)	Qualification(s)
Teacher A	Did not respond to question	2	29	26	Bachelor of Science (BSc) Higher Diploma in Education (HDE)
Teacher B	44	6 or 7	21	17/18	Higher Diploma in Education (HDE) Bachelor of Arts (BA) (Psychology) Bachelor of Arts (BA) Psychology (Honours)
Teacher C	33	South Africa	8	6	Consumer Studies

		(1) London (Supplied Teaching)			Postgraduate Certificate in Education (PGCE)
Teacher D	49	4	26	15	Bachelor of Science (Education) (BSc.Ed) Bachelor of Education (B.Ed)

All four participants confirmed that Natural Sciences and Life Sciences are the only learning areas they are teaching, although Teacher D has previously also taught Physical Sciences (grades 10–12) and Technology (grades 8–9). With the exception of Teacher C, who studied Consumer Studies, all the participants consider themselves specialists in Life Sciences and regard themselves qualified to teach Natural Sciences and Life Sciences within their particular schools.

Table 4.2 displays the number of Grade 9 and 10 classes and average class size each participant is responsible for teaching. In spite of a generally acceptable national learner–teacher ratio, some of the classrooms can be considered over-crowded, especially within the Grade 9 group (DoE, 2005:12). The Grade 10 average class size is fairly small, except for Teacher D's Grade 10 class with 37 learners.

Table 4.2: Number of Grade 9 and 10 classes and average class size (retrieved from interviews)

Participants	Grade 9 (Number of classes)	Grade 9 Class size (average)	Grade 10 (Number of classes)	Grade 10 Class size(average)
Teacher A	4 (English and Afrikaans)	37	1	33
Teacher B	3 (English)	45	1	25

Teacher C	4 (English and Afrikaans)	30	1	25
Teacher D	1 (English)	35	1	37

As indicated in Table 4.3, the majority of the participants spend on average more time preparing for Life Sciences than for Natural Sciences. Teacher A indicated that she spends between two and three hours a day on administrative duties alone in addition to the time she spends on preparing for both Natural Sciences and Life Sciences. Both Teacher B and Teacher D spend two hours a day on both administrative duties and preparation for Life Sciences in addition to the one hour each spend on preparing for Natural Sciences. All four participants also indicated that they are involved with extramural activities at their respective schools.

Table 4.3: Amount of time spent on preparation for lessons and administration duties

Participants	Amount of time spent on preparation for lessons (hours per day)		Amount of time spent on administration duties (hours per day)
	Natural Sciences	Life Sciences	
Teacher A	½ hour – 1 hour	½ hour – 1 hour	2–3 hours
Teacher B	1 hour	2 hours	2 hours
Teacher C	1 hour	1 hour	1 hour
Teacher D	1 hour	2 hours	2 hours

As indicated in Table 4.4, participants were asked to motivate their response regarding the sufficiency of training received. With the exception of Teacher C, all participants had received training for FET. When asked whether this training was sufficient, all the participants indicated that the training was not sufficient to implement Life Sciences successfully at their schools. They substantiated their answers with the following reasons:

Teacher A: "Could not answer our questions and could not provide us with material/examples. Had to work with other teachers to prepare material and make sense of all the terminology they used. Textbooks did not cover all the information required in the syllabus."

Teacher B: “Our schools need to be equipped properly, especially the labs in order to implement Life Sciences properly. The type of training was elementary; too much admin and very little hands-on training with no regard for overcrowded classes and other day-to-day problems that a Life Sciences teacher faces.”

Teacher C: “... have not received any training in any specific learning area.”

Teacher D: “I did not really benefit in terms of content and training focused on admin rather than content. Many trainers themselves [are] not sufficiently qualified. At our school Life Sciences has always been very successful and we have made it work. We’re an excellent team.”

From teacher comments in Table 4.4, it is apparent that teachers require training that would expand their knowledge and improve their daily practice. Teachers’ training is, however, limited to the cascade model of training, and it has been reported that this form of training does not work well (Reddy *et al.*, 2004).

Table 4.4: FET training received and its sufficiency

Participants	Training received (FET)	In your opinion, was the training received adequate to prepare you to implement Life Sciences successfully at your school?
Teacher A	Yes	No
Teacher B	Yes	No
Teacher C	No	No
Teacher D	Yes	No

Table 4.5 depicts the participant’s observations regarding the support received from either the school or the Department of Education. From their observations it is apparent that the participants were divided when it came to the question of their support from the school and the Department of Education. All the participants, except Teacher B, felt that they are supported by their school. Teacher B does however agree with Teacher C and Teacher D that the Department of Education is relatively uninvolved.

Table 4.5: Participant support from school and Department of Education

Participants	Do you feel that you receive enough support from either the school or the Department of Education to assist you to implement Life Sciences successfully?
Teacher A	“The schools try to get us all the help we need. [They] allow us to attend workshops, obtain extra material, etc.”
Teacher B	“No, it is an ongoing struggle. At school, the Head of Department for Life Sciences has no qualification in the subject and cannot give support. One would expect the Department of Education to spend more money on support systems for teachers and learners at our schools and less on trivial things.”
Teacher C	“[I] get a lot of support at school. Colleagues will regularly assist and [the] school gives money to buy equipment. [The] Department [is] exceedingly uninvolved – no help.”
Teacher D	“Within the school we have a dream team. But as a successful Life Sciences department, we are left alone, in my opinion, neglected and all energies and skills focused on the problem schools in the province.”

4.3.3 PART 2: ANALYSIS OF OBSERVATIONS (ADDENDUM D)

The purpose of the lesson observation was to observe the conditions of the classrooms, classroom size, teaching strategy and teacher–learner relationship and interaction. An average of two lessons per teacher was observed at a time for a full week, which was followed by the follow-up interviews. Only Life Sciences lessons were observed.

Lesson observation of Teacher A

The learners were comfortably seated in two columns of desks grouped in two with individual chairs with sufficient space to move around. The teacher had a full view of the laboratory from the front and could access all the learners, even during practical experiments. There are nine stations for practical experiments, each station fitted with a sink and tap. There are two additional tables at the back of the classroom, which can seat six learners each. The laboratory has electricity and is fitted with wiring for use of the overhead projector. The teacher has a working computer in the laboratory; however, she has no access to the internet. The laboratory walls are decorated with science posters and have floating cabinets that house all her preserved samples of animals and insects. There is a textbook for each learner; however, she develops her own module notes, which are used instead.

During the presentation of her lessons, Teacher A made use of both teacher-centred and learner-centred approaches. A good example of a learner-centred lesson was when she allowed the learners to work in groups and complete an activity in a module she developed. The groups then had to report the findings to the rest of the class. Discipline was fairly good; however, there were learners who constantly spoke throughout the lesson. Mostly she never attempted to discipline these learners. She did, however, at one stage ask one learner to move to the front of the classroom. There was a positive teacher–learner relationship and it was clear that there was mutual respect between the teacher and the learners. Below are photographs of Teachers A's laboratory.



Lesson observation of Teacher B

This Life Sciences classroom is a laboratory with eight stations for practical experiments. Each station is fitted with a sink and tap. With sometimes up to 45 learners in her classroom, she is however forced to have learners sit on the stations, as there are not enough chairs and tables in the classroom to cater for this number of learners. It would therefore be difficult to conduct practical experiments, as there is just not enough space. The walls are decorated with science posters and wiring and electricity are available. The teacher, however, does not have any other resources, except for the two blackboards, which are broken. She can therefore only use the one board, as the second one cannot be shifted to the bottom. She did mention during one of the interviews that all the posters in her classroom was brought in by herself and that it does have the atmosphere of a Life Sciences classroom. There were textbooks for all the learners, however, the teacher complained that the textbook was not aligned with the requirements of the science curriculum.

The teaching strategy used was mostly teacher-centred, with some opportunities for the learners to answer her questions. She did not provide enough time for the learners to critically think about the answers. The learners were mostly passive throughout the lesson and were given an exercise from the textbook to complete for homework. It did not appear as if she enjoyed her lesson and the researcher got the sense that her primary objective was to finish the content for the day. It is,

however, clear that she cares for her learners and she always addressed them with the utmost respect. Below are photographs of Teacher B's classroom.



Lesson observation of Teacher C

The learners were seated comfortably in double chairs and tables. The laboratory is large enough for all the learners and both teacher and learners can move around comfortably. There are nine stations for practical experiments and each station is fitted with a sink and tap. The walls of the laboratory are quite bare, with only a few pictures and posters. The classroom is fitted with wiring and electricity for the overhead projector and television, and there is a blackboard that is in a working condition. There are enough textbooks for all the learners.

The teaching approach was mostly teacher-centred, but the overall lesson was very interactive. The teacher would ask questions and give the learners time to think and answer the questions. During her lessons, she regularly walked around to make sure that the learners were paying attention. Discipline was good and the classroom had a relaxed atmosphere. Throughout the week, the researcher observed that she planned her lessons in such a way that there was some time left for the learners to start their homework. Homework mostly consisted of exercises from the textbook and worksheets she developed herself. Below are photographs of this laboratory.



Lesson observation of Teacher D

This laboratory looked and felt like a Life Sciences classroom. The walls were decorated with relevant posters and pictures and paper spiders hung from the ceiling. There are nine stations for practical experiments and each station is fitted with a sink and tap. There are enough tables and chairs for all the learners and both teacher and the learners can move around comfortably. In the front of the classroom is a little 'library' of books, which are accessible to the learners for assignments and reading. She has a blackboard, which has a white wall for the use of the overhead projector.

The lessons were quite interactive and the learners were eager to ask questions and answer the questions posed by the teacher. She asked questions which tested the learners' insight and allowed the learners enough time to think about the answers. A combination of teacher-centred and learner-centred approaches was used throughout the week and it was obvious that teaching is her passion. A very positive teacher–learner relationship was observed and there were mutual respect for each other. Below are photographs of this laboratory.



Conclusions made based on the lesson observations

Overall, the pedagogy used by the four participants was overwhelmingly teacher-centred. All the participants engaged the learners by merely asking questions throughout the lesson. The researcher does, however, feel that Teacher B did not provide enough time for the learners to think about the answers. Three participants had enough chairs and tables for all the learners and their blackboards were in a working condition. Teacher B, however, does not have enough chairs and tables for all the learners and her blackboard has been broken for over a year. None of the participants had the facilities to use technology in their classrooms and three of the four participants expressed the need for a data projector. From the photographs it appears that all the participants have the necessary resources and facilities to present their lessons effectively. They might not have the latest technology usage, but at least every participant had a blackboard to

make notes. Overall, the researcher believes that some of the participants are inadequately informed and trained for the effective use of the resources they may need as well as a lack of understanding for the effective use of available resources to present their lessons – an issue that needs to be researched further.

4.3.4 PART 3: ANALYSIS OF SEMI-STRUCTURED INTERVIEWS (ADDENDUM E)

Semi-structured interviews, with the assistance of an interview guide, were used to supplement the results and to fill in the gaps left in the questionnaire. This section reflects on the results of the individual interviews conducted with the interviewees. Informal interviews were conducted with the participants at the school. The researcher conducted two interviews with each participant. Interviews were transcribed and coded to the thematic analysis process.

4.3.4.1 Data structure

The researcher categorised the data into six themes, 20 categories and 81 data extracts. The results of this thematic data analysis are discussed according to the themes and categories that emerged from the data. Where relevant, appropriate direct quotes of the participants are used to clarify the results and literature is provided to supplement the findings. The final product is a rich and thick description of the participants' experiences. The following six themes were identified:

Theme 1: Factors influencing teacher experience and attitude.

Theme 2: Transition strategies and approaches.

Theme 3: Teacher needs.

Theme 4: Teacher support.

Theme 5: Transitional obstacles.

Theme 6: School context.

Theme 1: Factors influencing teacher experience and attitude (overview)

The first theme that emerged from the data is that of the factors influencing teachers' experience and attitude. The other themes and categories appear to relate to this major theme. The following data represents an overview of all the categories in this theme.

Themes and categories:	
Theme 1:	Factors influencing teacher experience and attitude (overview)
Category 1.1	Teacher experience of transition process
Category 1.2	Attitude towards science and teaching
Category 1.3	Attitude towards GET and FET
Category 1.4	Subject preference
Category 1.5	Relationship with learners
Category 1.6	Teacher training
Category 1.7	Class size
Category 1.8	Resources
Category 1.9	Teaching strategy
Category 1.10	Successes within GET and FET

Category 1.1: Teacher experience of transition process

Two out of the four participants indicated that they experienced some difficulty during the transition process from GET to FET. Their experience of the transition process is closely linked to their perception of the perceived learner experience of the transition process, that being that learners struggle during the transition process from GET to FET. Reddy *et al.* (2004:6) and Pelloagae (2009) indicated that a gap exists between the GET band and FET band. Pelloagae (2009:1), in his study of learners' experience during a process of transition, stated that the transition to the NCS represented a serious challenge for both teachers and learners, because it was discontinuous and inconsistent with the curricula with which teachers and learners were familiar. Pelloagae (2009:iv) revealed that learners did indeed experience the transition from GET to FET as very difficult, and that teachers are then left to remedy the situation without proper assistance.

When asked how the participants' experienced the transition from Natural Science (GET band) to Life Sciences (FET band), Teacher A and Teacher D indicated that they did not struggle during the transition process. Reasons offered by Teacher D included that she enjoys and loves her subject, which makes the transition easy. Teacher B and Teacher C indicated that they struggled during the transition process. Evidence hereof is exhibited in Category 1.1.

Category 1.1 Teacher experience of transition process
<p>Teacher A: "For me it's not difficult, but for the learners it is quite difficult, in the sense that you expect a lot more from them."</p> <p>Teacher B: "I would say from the teacher's point of view, it's difficult, because you're struggling now, you now need to make up for the gap."</p> <p>Teacher C: "We are struggling immensely. If we as teachers are struggling, because of the dearth of content in Grade 9, when the learners get to Grade 10, they find it exceedingly difficult."</p> <p>Teacher D: "No, I find it very easy. I enjoy and love my subject so it is easy for me. [laugh]"</p>

Category 1.2: Attitude towards science and teaching

In addition to the teachers' experience of the transition process, their attitude towards science and teaching also emerged as a category (see Category 1.2).

Category 1.2: Attitude towards science and teaching
<p>Teacher A: "I am very fond of Life Sciences."</p> <p>Teacher B: "It has been for me...over the past few years, since the systems changed so frequently. It is becoming increasingly negative and that's unfortunately how I feel now."</p> <p>Teacher B: "The future for me would be that I finish my master's degree and leave the teaching profession."</p> <p>Teacher B: "Life Sciences is for me... It's a passion."</p> <p>Teacher C: "I'm happy in education, yes. Nothing bothers me. Perhaps it is because you accept that which you cannot change."</p> <p>Teacher C: "No, I prefer Life Sciences."</p> <p>Teacher D: "Life Sciences is my area of interest. It's where my passion is."</p> <p>Teacher D: "I personally am very positive about education, because I just think there's a lot of things that might happen, but I think most people are pretty discouraged."</p>

All the participants indicated that they enjoy teaching Life Sciences and some participants described it as their passion. From the preceding opinions, however, it seems that the participants are in disagreement regarding their attitude towards teaching, and one participant even considers leaving the teaching profession. According to Stears and James (2004), the implementation of the Life Sciences curriculum in the FET band is based on the assumption that teachers have the necessary resources and competencies to implement the curriculum. When asked about the available resources and its influence on the successful implementation of FET, Teacher B expressed that her school has almost no resources and that this influences the successful

implementation of FET. Her lack of resources might explain her negative attitude towards teaching. This statement is supported by her observation:

Teacher B: "Definitely. The school has almost no resources for Life Sciences and Natural Sciences."

Teacher C indicated that she have made a difference in the teaching profession, but that that might be attributed to the fact that you accept what you cannot change. When asked if she would still have become a teacher if she knew what she does now, she indicated that she would have chosen a different career path. This participant expressed the following:

"I think I would have made a different choice. If I have known what I have to go through to reach this point in the end that to be happy is a choice. I think I would have done something else. I think I would have."

Teacher C was the only participant who indicated that Life Sciences is not her specialising area and that she had not received any training in FET. She is also the youngest of the four participants with six years' experience within the South African context. Her low morale might be contributed to the lack of training and necessary skills to implement the science curriculum.

Category 1.3: Attitude towards GET and FET

When asked how the participants' experiences GET and FET respectively, the participants had the following observations. Teacher A expressed that certain instances she is positive and Teacher D indicated a positive attitude towards learners in the GET band. Teacher B and C indicated a negative attitude toward the GET band. Regarding the FET band, Teacher A and Teacher C expressed a more positive attitude toward the FET band compared to GET band. Teacher D indicated that the guidance from the DoE was more which contributed to a positive attitude towards the FET band. Category 1.3 depicts these viewpoints.

The data from the questionnaire, attitude survey and interviews on learners' perceptions about science during a process of transition from primary to secondary school all indicated that the learners were more enthusiastic about science at the end of primary school than they were early in secondary school (Speering & Rennie, 1996:294). Pelagae (2009:iv) also confirms that there is an interest decline in science as learners progress through secondary school. Speering and Rennie (1996:294–295) explain this decline in attitude towards science of this cohort of learners to be at least partially connected with the less positive teacher–learner relationship experienced in their secondary school science classrooms. A notable, but unsurprising, outcome of the study conducted by Speering and Rennie (1996) is that teacher–learner relationships, the curriculum and its implementation are all found to be interrelated, so that when considering the reasons for the

changes in learners' attitudes to science during the transition from primary to secondary school, no aspect should be considered to act in isolation from the others (Speering & Rennie, 1996:295).

Category 1.3: Attitude towards GET and FET

Participants' attitude towards GET:

Teacher A: "Certain instances are positive, because you still get cute kids with cute ideas, who really make an effort and are interested in the subject and ask good questions ..."

Teacher B: "In fact, on paper, the idea was supposed to be positive, but the experience was absolutely negative."

Teacher C: "Hmm, I experience it negatively. Hmm, I think that, exactly because of that, makes it very difficult for our teachers, because you need to find extra work and try to build on work that was not there in the past."

Teacher D: "I actually really enjoyed teaching the juniors. They're different from the seniors but I do enjoy it."

Participants' attitude towards FET:

Teacher A: "Usually in the Grade 10 class, there are guys who are not quite sure whether they want to take the course or not and they should also be oriented first [unclear] methods. And when to talk, when to be quiet, when to listen. And, I find that in Grade 11 and 12, it is very enjoyable, because everyone there is interested in the subject and want to know more and make an effort, because they really want to take that path, and are interested. Hmm, they have learned to learn, so it is not a problem and they can also handle the heavy workload."

Teacher C: "Hmm, I, no, much better in person. I do think that the students suffer."

Teacher D: "I enjoyed the seniors. It's completely different from the juniors. The seniors, because you see more of them, you get to know them better and there, the guidance have definitely been more."

Category 1.4: Subject preference

Category 1.4 lists the participants' views on subject preference. All the participants indicated that they prefer teaching Life Sciences to Natural Sciences. Reasons offered included that Life Sciences is their main interest field and passion, which influences the way they present and approach their lessons. Teacher A expressed that she is fond of Life Sciences and likes chemistry, however she is not fond of Physics. Teacher C expressed that if she had a choice she would prefer to only teach Life Sciences. Teacher D indicated that Life Sciences is her field of interest and even though Natural Sciences provides variety, she is not really passionate about electricity. Following the suggestion of Petoagae (2009:79), this finding of a significant difference in teachers' interest in Natural Sciences and Life Sciences should be treated with caution. It is recommended that further research be conducted into the reasons for the difference in teachers' interests in Natural Sciences and Life Sciences.

Category 1.4: Subject preference

Teacher A: "I am very fond of Life Sciences. I also kind of like the chemistry section, but I'm not very fond of Physics."

Teacher B: "Life Sciences."

Teacher C: "You know, if I had the choice I would prefer to do Life Sciences, because that's where my passion lies. I'm not quite, let's say clued up with the Physical Sciences of Natural Sciences and unfortunately it has an impact on how one teaches and how enthusiastic you are about this for and how much information you can eventually pass on to the children."

Teacher C: "No I prefer Life Sciences."

Teacher D: "Again, those are to two completely different things. Life Sciences is my field of interest, that is where my passion lies and that's why when I read, I will read more about life science new inventions or new medicines or those type of things, while I am [not] really passionate about electricity, but in terms of the children it is your grades 8 and 9, is completely different type of education or type of self-assessment, than you are with your seniors, so it provides me with variety and so I enjoy it."

Category 1.5: Relationship with learners

The fifth category that emerged from the data is that of the relationship with learners. Category 1.5 depicts the data in this regard.

Category 1.5: Relationship with learners

Teacher A: "You are much more comfortable with Grade 10s, because those are all learners who indicated that they like the subject based on the choices that they made and they want to know more, so they are a lot more enthusiastic, as they listen easier if you talk to them and they also have more opportunity to ask questions and do homework and so on. While the other group that is not always so interested in your subject, cannot always be silent when they should be silent. And then there is conflict between you and them, because you cannot allow groups in the class, everyone has to be on the same page."

Teacher B: "My attitude towards Grade 9 learners is unfortunately... Sometimes you actually feel sorry for them, because your workload is too much and the classes are so overcrowded; you have the attitude 'the child should just keep quiet and do his work'. As long as his work is in his book, and you looked at it, everything is ok. While, with my Grade 10 group, because they are smaller, I know every learner. I know every child, I know the phone number, I know his attitude when he comes in and pulls his face, I know immediately, no, there's something wrong with him. I talk to them, we are on a completely different level than Grade 9s."

Teacher C: "No, I do not like the Grade 9 children, because this is exactly what I want to start complaining about. They are super annoying to me. Yes, as I said, the Grade 10s have grown up a little and they know where the limits are. The Grade 9s you need to babysit quite a bit and tell them, 'No, this is how we do it and do not do this'. Yes, and Grade 10 they have chosen this subject, therefore you can tell them, 'You wanted to be here. Nobody told you that you have to come'. So they've already had a taste of responsibility, of making choices and living with it."

Teacher D: "It's the same. There is no difference."

There is consensus in the literature that there is a significant decline in learners' attitude towards science between the lower secondary and senior secondary science (Ogura, 2009; Osborne, 2003; Peloagae, 2009; Speering & Rennie, 1996). According to Osborne (2003:1054), attitudes do

no consist of a single unitary construct, but rather of a large number of sub-constructs, all of which contribute in varying proportions towards an individual's attitude towards science. These sub-constructs include the perception of the science teacher, anxiety towards science, the value of science, self-esteem in terms of science, motivation towards science, enjoyment of science, attitudes of peers and friends towards science, attitudes of parents towards science, the nature of the classroom environment, achievement in science, and fear of failing the course.

From the four participants, only Teacher D indicated that she had no preference between Grade 9 and Grade 10 learners. All the other participants indicated a better relationship and attitude towards Grade 10 learners than with Grade 9 learners. Reasons offered by Teacher A and Teacher C is that Grade 10 learners indicated that they like the subject by choosing it as a specialising subject and therefore are more enthusiastic about Life Sciences. Teacher B indicated that class size influenced her negative attitude towards Grade 9. Trowbridge *et al.* (1981:3) state that the best science teachers make an effort to regard each learner positively and to understand him/her as a human being. It is further recommended that science teachers, in order to be more effective, should make an effort to regard not only each grade, but also each educational band positively and to understand it as a whole.

Category 1.6: Teacher training

Category 1.6 contains some of the participants' views on their professional development activities. The participants in this study indicated that their professional development activities mainly consist of attending meetings and workshops and reading up on additional information. Only Teacher A and Teacher D reported reading professional literature, either individually or in the subject groups at the school. Another issue raised is the fact that the training is presented too late in the year, when new initiatives should have been enforced at the beginning of the year. The participants' perceptions of the training offered supports the findings by Reddy *et al.*'s (2004:39) that the training packages should be differentiated to meet the different contextual realities and that a one-size-fits-all model does not work.

The DoE used a cascade model of training to implement the decisions for the transition to infuse the principles of OBE into the FET band. This model of training, however, has been widely criticised as an inadequate model for delivering effective training (Dichaba & Mokhele, 2012; Ono & Ferreira, 2010; Reddy *et al.*, 2004; Taylor & Vinjevold, 1999). One of the objectives of this training was to assist teachers to fill the knowledge gaps as a result of moving from an OBE system to a NATED system. An analysis of the report by Reddy *et al.* (2004:8) in their study of why Grade 10 achievement dropped in 2003, led to the conclusion that the training of educators was not always of high quality and did not offer strategies for dealing with the classroom activities. In

addition, it was found that the training of educators consisted of a high amount of generic rather than specific training and therefore did not give guidance on how educators could cope in the classroom.

Category 1.6: Teacher training

Teacher A: "I attend every course offered. I read a lot and should I come across a topic on my subject, then I read it and see if there is anything I can use."

Teacher A: "One studies the documents, but we actually usually wait for the details, because often they quote one sentence and actually mean a whole chapter."

Teacher B: "We attend the workshops. The problem that of course we have is that it is presented too late as you are already halfway through the year and then there is a new workshop."

Teacher B: "You cannot in June or in September have a workshop on what should have been done throughout the year. Their planning, I think, the problem with the Department of Education is their planning is out. They fumble throughout the year and then expect teachers to fall in line and that is unfair. That is extremely unfair."

Teacher C: "No, because they are wasting a person's time. Someone mentioned today, 'You know, I don't mind going to meetings, if I could just learn something', because it seems to me that they themselves don't know what to do with you while you are sitting there. You must attend. And that's why I say the groups are too large. I really feel that subject advisers can make personal visits and help you with things that you are personally struggling with, because it's not the same for everyone."

Teacher D: "I make sure I read what is available. I make sure I attend [any briefings and training]. I ensure that I go for the training. I think, as a subject team, we also ensure that we read widely, ensuring that we read what's in the media even new discoveries in terms of life sciences and that type of thing.[This] lets us keep track of science magazines like Quest , so I make sure I know what's going on."

Teacher D: "I did not really benefit in terms of content and training focused on admin rather than content. Many trainers are themselves not sufficiently qualified."

Category 1.7: Class size

Category 1.7 contains some of the participants' views on class size. Teacher A indicated that previous smaller classes made the transition easier and that twenty-six would be the ideal class size. Teacher B has the view that learners are disadvantaged by the large classes. Teacher D indicated that the large classes are much more difficult to keep focused. Fullan (1991:124) reports that overcrowded classes are one of the main challenges teachers have to overcome. All of the participants in this study mentioned the issue of large classes and the potential problems it can cause in a classroom. The question then arises: What constitutes a large class? Hayes (1997, cited in Wang & Zhang, 2011) states that there is no quantitative definition of what constitutes a large class, as individual's perception of this varies from context to context. Onwu (1999:126, cited in Onwu & Stoffels, 2005:82) defines a large class as one where the majority of characteristic and conditions present themselves as interrelated and collective constraints that impede meaningful

teaching and learning. Two of these examples include lack of physical space for movement due to overcrowding and teachers resorting to predominantly lectures and teacher demonstrations. As Teacher A describes:

“I would have wanted to be able to do more in Natural Sciences, especially, even though we did a lot of experiments in previous years, what you can show and so forth. We still do experiments with them, however now you do it as a demonstration and not where they do it themselves.”

Category 1.7: Class size
<p>Teacher A: “I think that was the case earlier with the smaller classes, we found much easier to go over, because you never had such a large group that you had to occupy [...] in the GET”</p>
<p>Teacher A: “We try to never have more than 37, because then it is impossible to actually maintain discipline. Especially in a laboratory where they sit in chairs and [...] the groups that are not interested. I would say 26 is your ideal group and it’s just about 10 to 15 more than that.”</p>
<p>Teacher B: “At the moment, because the class is so immense, and the system so, if I may call it that, messed up, the learners are disadvantaged, they are definitely disadvantaged.”</p>
<p>Teacher B: “Unfortunately, I have to be honest, with the Grade 9s, there’s not a possibility that you may be learner-centred. There are 45, 46 in a class. You’re under pressure! You are focused on the syllabus. You teach. That’s it!”</p>
<p>Teacher D: “The problem with a large class in particular is your child that is struggling. It’s difficult to teach a class who are struggling to learn. A large class, they can be easily distracted and so forth, so it is much more difficult to keep them focused.”</p>

Category 1.8: Resources

Extracts relating to resources are contained in Category 1.8. Teacher B is the only participant who indicated that her school had almost no resources and for Natural Sciences and Life Sciences. She is also the only teacher out of the four participants who teaches at a school that is classified as a dysfunctional school (Christie, 1998). Teacher A indicated that she has resources and she also develops her own practicals. Teacher C expressed that she is satisfied with her classroom. Teacher D however has the viewpoint that resources do not make a difference in your teaching and that resources does not mean that you will have better results.

According to MacDonald and Rogan (1988, cited in Muwanga-Zake, 2009), some school environments demotivate learning and teaching. These school environments that could be demotivating include poor physical structures such as dilapidated buildings, environments devoid of examples of ‘school’ science and lack of facilities such as science equipment, laboratories and libraries. As previously discussed, Teacher B has almost no resources and teaches over 40

learners in a classroom with not enough tables and chairs. This is an indication of an environment that is not conducive to effective learning and teaching.

Category 1.8: Resources
<p>Teacher A: "We have quite reasonable resources. I do my own material too. And we develop our own practicals and so on. We pretty much have a free hand with the purchase of hardware and so forth so I do not think we actually have a problem on that front."</p>
<p>Teacher B: "The school has almost no resources for Life Sciences and Natural Sciences."</p>
<p>Teacher B: "No, everything in the class I unfortunately introduced. [...] I cannot use my board effectively. It's the old blackboards. It's been broken five or six years now. It has been reported. It was 100 times I requested them to fix the board and so on and so on. Absolutely nothing gets done. If I wish to use an overhead projector, which is archaic, an archaic method, I have to borrow one."</p>
<p>Teacher C: "No, I am happy in my classroom. It is a laboratory so we can do experiments there if it is necessary. There is a TV which I can use to show them videos or DVDs. We have microscopes that we can use."</p>
<p>Teacher D: "I do not think resources make a difference in your teaching. I think if you have a board and some chalk, then you can be a successful teacher and people make the mistake in thinking if they have all these other fancy things they will have better results."</p>

Category 1.9: Teaching strategy

Category 1.9 includes the participants' viewpoints on the dominant teaching strategy employed in the classroom. Teacher A and Teacher D both indicated that they use a combination of both learner-centred and teacher-centred approaches, depending on the class size or content, whereas Teacher B mainly uses a teacher-centred approach. According to Vasques (2008:61), to improve the future of science instruction, teachers must be held responsible for their content knowledge as well as pedagogical knowledge. The difference between those who just teach science and those who do it creatively is the latter have gone beyond traditional training to acquire the needed content and skills. Unfortunately, from the participants' points of view, their primary focus is to complete the syllabus. Different reasons are given, for example overcrowded classrooms and the syllabus being too wide.

Category 1.9: Teaching strategy
<p>Teacher A: "Hmm, in Grade 9, I think it's basically a little bit of everything [learner- and teacher-centred], but in Grade 10, with the full syllabus, you cannot spend too much time on a topic, to consolidate and play, or to do extra things, because you have to constantly try to finish the syllabus."</p>
<p>Teacher B: "Unfortunately, the fact, it is almost completely teacher-centred because you have to finish your syllabus. Your classes are overcrowded; your syllabus is so wide and so big that you almost do not have a choice. You sometimes feel so frustrated, because it is a practical subject. There must be room not only for practical in class, there must be room for practical outside. There must be room for excursions. There must be room for a lot of smaller things that will make the subject</p>

interesting; that as a teacher you will feel, 'I do, I'm doing justice to my subject', but that is almost an impossibility. So you are more focused on 'I must complete my syllabi and my admin'. Unfortunately, that is unfortunate."

Teacher D: "That's quite a difficult one, because it depends on the content [laugh], but I think my classes are generally very interactive, where I teach the children with me all the time, because it's important that I must know what they know where we're going and that they understand what's going on. So, it's a fairly interactive style, but not really the proper OBE, where it's learner-centred because you'll never get through the content that way."

Category 1.10 Successes within GET and FET

Category 1.10 includes the successes within GET and FET.

Data display 4.1.10: Success within GET and FET

Teacher A: "I think every lesson [...] that the children [come to you] and tell [you] -" That was a good lesson " [...] if you [...] see that everyone is busy working. It's the successes so far."

Teacher B: "It's very difficult. There are really no successes. I am very sorry. I am unable to answer you. No."

Teacher C: "This last year went very well. They were not a group that has had exposure in Grade 9 to the extra notes and so on that we added. So, I believe that their success was attributed to someone who believes in me and positive reinforcement and like the teacher and that type of thing."

Teacher D: "I just think the big thing for me is that our Grade 8s and 9s be prepared when they enter Grade 10. They know they can. You can ask them about their variables. They know their variables. They can draw a graph. They know how to draw a table. They know how to make a sketch. So the basic skills you need, they can do and I know there is now a syllabus, but we spend a lot of time on chemistry so that they have a good base if they continue with Physical Sciences. A lot of time on electricity, so that they will know what to expect. For Biology we specifically looked at the cell quite a lot and Ecology [so] that if they are in Grade 10, they already have a base, they know what the subject is about, and they can. They are prepared."

Overall, the successes mentioned by the participants correspond with the performance and experiences of their learners. Teachers A indicated a positive relationship with herself and her learners in a classroom environment conducive to learning as one of the successes experienced. Teacher B indicated that she experienced no successes and Teacher C believes that the learners' successes are attributed to someone who believes in them and positive reinforcement. Teacher D mentions that her successes are attributed to the learners being prepared when they reach Grade 10. As previously mentioned, Reddy *et al.* (2004) reported that a gap exists between the GET band and FET band. One of the recommendations made includes that educators in the FET band should concentrate more on filling the knowledge gaps, which will assist them with infusing the principles of OBE in the curriculum (Reddy *et al.*, 2004:39). From the preceding comment of Teacher D, it is clear that she has succeeded in filling the knowledge gap between Grade 9 and Grade 10 and these learners are consequently prepared for Grade 10.

Theme 2: Transition strategies and approaches (overview)

The second theme that emerged from the data is that of transition strategies and approaches. The following data provides an overview of this theme.

Themes and categories	
Theme 2:	Transition strategies and approaches (overview)
Category 2.1	Structures GET more like FET regarding skills and assessment
Category 2.2	Reorganises and modifies content across Grade 8 and Grade 9

Category 2.1: Structures GET more like FET regarding skills and assessment

Category 2.1 below present data extracts regarding structuring GET more like FET. Teacher A indicated that she creates modules to structure the GET more like the FET and that they actually do a little more than what is prescribed. Teacher C expressed that they have decided within their subject group to add more content to the Life Sciences section of Natural Sciences in Grade 9. Teacher D has the viewpoint that they as a subject group do not worry too much about what the curriculum prescribed and look at what is needed and make sure that the learners can do the work.

Peloagae (2009:146) suggests that it is of critical importance that curriculum developers concern themselves with the matching of curricula across phases. He also recommends that assessment strategies across phases be aligned. From the interviews conducted with the participants it was clear that the participants took autonomy in restructuring the Natural Sciences curriculum specifically in an attempt to better prepare learners for Life Sciences and Physical Sciences in Grade 10. Reddy *et al.* (2004:25) determined that a content gap does exist between Natural Sciences in the GET band and Life Sciences in the FET band. As a result of this gap, GET educators are faced with various challenges, such as teaching the content and integrating the subjects in learning areas, and they have to use various pedagogic approaches. However as previously discussed, the participants mainly use a teacher-centred approach to their lessons.

Category 2.1: Structures GET more like FET regarding skills and assessment
<p>Teacher A: "So, hmm, I also started to create modules, so everyone is there and they know exactly what they need to learn. [...] In that regard, I also try to make the GET more like the FET as well as to look at different things like the different skills they have to do and it already started in Grade 9 for a faster transition to Grade 10."</p>
<p>Teacher A: "We do everything we ought to do, but we, I think we actually do a little more."</p>
<p>Teacher C: "We have decided eventually, in our team at the school, to add more Biology to the Life Sciences section so that</p>

the learners in Grade 9 then have that as a basis on which one can build.”

Teacher D: “We look at what they need and we make sure they can do it and we do not worry too much about what the curriculum and the papers and the books say, for at the end, it’s all about the child being prepared.”

Category 2.2: Reorganises and modifies content across Grade 8 and Grade 9

In addition to restructuring the GET more like the FET curriculum, some participants indicated that they reorganise and modify content. Data display 4.2.2 depicts these opinions.

Category 2.2: Reorganises and modifies content across Grade 8 and Grade 9

Teacher A: “We do everything we ought to do, but we, I think actually do a little more. Like I said, global warming is just a touch point where we elaborated a lot more. We try to all the aspects over the two years,[...] for example, for Grade 9 are in Grade 8 textbook we would rather do it in Grade 8 than in Grade 9.”

Teacher D: “I know what skills are needed for Life Sciences and have met with Physical Sciences to determine what content is basic for entry-level Grade 10 and make sure that we cover the basics well – it does mean that certain content in Grade 8 and 9, particularly Earth and Beyond, is left out – to make it work.”

Teacher A and Teacher D were the only participants who adapt and/or alter the content across Grade 8 and Grade 9 and even resorts to completely leaving out certain content, which they feel to be irrelevant. According to Reddy *et al.* (2004:24), FET educators who happen to be teaching at the GET level said that although they were expected to have been implementing OBE, some did not receive training at all, while others were inadequately trained. This inadequate or lack of training resulted in there being no uniformity in the teaching of learning areas across schools. As such, Grade 10 learners from different schools are differently prepared. There are therefore a need for the GET and FET subject advisors to conduct information sessions to discuss the curriculum and the gaps between Grade 9 and Grade 10 (Reddy *et al.*, 2004:24).

Theme 3: Teacher needs (overview)

The third theme that emerged is that of teacher needs. The data below gives an overview of the categories in this theme.

Themes and categories

Theme 3:	Teacher needs (overview)
Category 3.1	Directions and guidance from DoE
Category 3.2	Standardised textbook

Category 3.1: Directions and guidance from DoE

Category 3.1 describes the participants' views on directions and guidance from the DoE. There is consensus among three of the four participants that there was very little to no support from the DoE. Teacher C indicated that she has received no training in FET and has had no contact with the subject advisor for the entire year. As a result of this lack of direction and guidance from the DoE, teachers are left feeling abandoned, which can also explain why they resort to altering and restructuring the curriculum. The participants further indicated that the absence of a standardised textbook presents a formidable obstacle with the implementation of the science curriculum.

Category 3.1: Directions and guidance from DoE

Teacher A: "One studies the documents, but we actually usually wait for the details, because often they quote one sentence and actually mean a whole chapter. So that's actually important, especially in Grade 12, that we need to know exactly how deep you should go because the syllabus is terribly full."

Teacher C: "Hmm, well, I'm sure [our subject advisor is responsible] for that and that these things may well be communicated to us via fax or in a meeting. Although, this year there were no meetings, no faxes. Hmm, yes."

Teacher D: "The problem is though, that there has been very little guidance from the department so we're very much been left to our own. Originally, when OBE started, they said to us it's about skills and not content-based so we were very much left to our own to decide on what content to teach. Now, it has started to move back to being content-based but unfortunately, at this stage, the information is coming through a bit late in the year, it is difficult for us to plan and there isn't really enough guidance as to exactly what is expected and at what point, but I enjoyed it."

Category 3.2: Standardised textbook

Category 3.2 includes some of the concerns raised by the participants regarding the issue of a standardised textbook. Teacher B indicated that there are various textbooks and that she is at times unsure where the focus is. Teacher B would prefer that the DoE streamline the work and offer more guidance. Teacher D also mentioned the various textbooks and the lack of guidance from the DoE as to which textbook to use.

According to Lemmer, Edwards and Rapule (2008:175), textbooks are expected to provide a framework for what is taught, how it may be taught and in what sequence it can be taught. Of the many factors that promote or impair science teaching, the textbook is one of the most critical (Lemmer *et al.*, 2008:175). South African educators are expected to design and develop learning materials according to the needs of their learners, but very few teachers do this (Rogan, 2004, cited in Lemmer *et al.*, 2008:176). According to Lemmer *et al.* (2008:176), choosing the appropriate textbook for use in the science classroom is not an easy task. Furthermore, the textbook content is not always aligned with the specifications of the curriculum, as indicated by the participants. It is recommended that the DoE provide more assistance to educators in terms of the selection of textbooks (Lemmer *et al.*, 2008:185).

Category 3.2: Standardised textbook

Teacher B: "There are various textbooks and things are sometimes explained in different [...]ways. So you don't know where the focus is at times because the band that is used, the knowledge is sometimes too wide so how do you break down if you have more than five textbooks at different schools and those five textbooks aren't core, it's different for each school. So where is your focus? You see. What we need the department to do, especially in the senior levels, is, is streamline the work, let there be progression and have workshops where teachers can see, look the focus is on those sections of the work and don't deviate."

Teacher D: "I think I have 'Study and Master', but I at some point I called a curriculum advisor and told him: 'Listen, you sent me a list of 21 books from which I need to choose a textbook but according to the content that you sent not one of these covers the syllabus that you gave me so how do I decide which book to use?' No but they cannot tell me because there's money involved and it's a political decision. And that's unacceptable to me, because it's in the end my taxes being wasted and it's worth millions and currently our curriculum changes every three years. Thus every three years the state buys new books."

Theme 4: Teacher support (overview)

The fourth theme that emerged is that of teacher support. The data below outlines the categories in this theme.

Themes and categories

Theme 4:	Teacher support (overview)
Category 4.1	School management
Category 4.2	Support from the DoE

Category 4.1: School management

All the participants stressed the importance of support of school management in effective teaching and learning. Teacher A indicated that she developed with the school and has autonomy in her subject. Teacher B indicated that she has no support and has the view that the management does not have the necessary skills to support her within the subject. Teacher C has adequate support from her subject head. Teacher D is part of the management group at the school and indicated that there is a very good support structure at the school. They substantiated this by giving some of the following responses, depicted in Category 4.1.

Category 4.1: School management

Teacher A: "I developed with [the school] and at school I am actually part yes. Yes, I'm happy. We have a lot of autonomy with things and I have mostly been my own boss as far as my subject is concerned."

Teacher B: "The management of a school is very important and also, who is the head of a subject. [...] The person must be skilled in a subject in order to be at the head of a subject, to lead and to guide the group. A leader cannot guide if you have no knowledge and no insight. And unfortunately, that is lacking at this school."

Teacher B: "Unfortunately, at our school the department head is not qualified in the subject, so therefore the person unfortunately does not have any insight, and at this school, at the end of the day, the principal does not try to hide that fact that regardless of the subject, he has the final say."

Teacher B: "For this school, unfortunately, I must say, there is no support in my field because the department head had no training in my field. She cannot give me guidance, not even at a lower level, Grade 8 or Grade 9 level."

Teacher B: "We have, I think, four computer labs. We have received CDs from the subject advisor that we can use, not once have we been allowed to use those computer labs. I have beautiful PowerPoint presentations but it's a problem because we do not have access and because the person doesn't have the knowledge and skill and insight in your subjects and the feeling for what you are doing. She's there in name only. Nothing has been done. So you feel you're talking to a brick wall because you're not going to get anything out of it."

Teacher C: "My subject head is always there to answer questions. For support, for advice. I can always fall back on him and lean on him a lot."

Teacher D: "We have a very good support structure in the sense that we're a team that works together very well. We teach across all the grades, [...] it's a lot of work because we're teaching for at least four or five grades, but you know what is required in each grade and therefore, from Grade 8, we're busy preparing them for the senior grades. So it's not a case of working on an island and just working with one grade. We also have a system where we share notes. We have one person responsible per grade, who sort of coordinates it, but we share notes, we make sure that all the children get the same notes. We meet once a week to check that we're all on track on where we are going. So, in terms of support, supporting each other within the school, it's very good. Support from the EMDC [Education Management Development Centre] is not acceptable at all, but again we've made it work for us."

Category 4.2: Support from the DoE

Category 4.2 includes some of the participants' views on the support from the DoE. It is clear from the participants' statements that there is very little to no support from the DoE. Teacher D feels that the DoE should be providing them with planning instead of waiting on the teachers to provide the planning for them. In order to achieve the goal of the successful implementation of the NCS, teachers need the DoE to 'come down to ground-level' and to provide training and solutions specific to the school context. Reddy *et al.* (2004:32) recommend that the DoE initiate follow-up training in all provinces with the focus mainly on the practical realities of teachers' day-to-day activities.

Category 4.2: Support from the DoE

Teacher B: "New curriculum developments, we go to workshops. The problem that we have, of course, is that it is presented too late, as you are already halfway through the year and then there is a new workshop."

Teacher B: "Look, as I told you. You cannot implement a system ... You cannot implement this across the board and then you have rural schools and school like our school where on the surface we might have a computer lab for CAT, a computer lab for Maths, which is not effectively used also."

Teacher B: "I would say, I would say the support is not, it's not aimed and channelled properly, you know... So if you're not in teaching and you're sitting up there, you need to have my input before you implement and you need to understand what is needed at school, because you've been out of teaching, or you've never taught.... And you cannot visit my classroom for a day or a week and then decide, because you don't know. And you can't sit with a principal and ask them what is necessary because they do not teach the various subjects. You see. So, I think the departments need to come down to ground level more and

people, teachers like us, who are qualified and further our qualifications, those are the types of people who need to be in these positions, making these little decisions and planning and putting it down on paper but it's like we working pass each other."

Teacher C: "Very much alone. No, no, no support, especially this year. And no contact with other teachers, absolutely no contact."

Teacher D: "... but I think the problem is, the main difficulty is the lack of communication from the department and, you know, that they expect planning from us and they want us to email them our planning in January, but they only plan and inform us in March, April. You know, I really feel they should be given a lot more guidance and they should perhaps be giving the planning, rather than just use us to provide the planning for other people."

Theme 5: Transitional obstacles (overview)

The data below provides an overview of the categories in this theme.

Themes and categories

Theme 5:	Transitional obstacles (overview)
Category 5.1	Misalignment of curriculum requirements and assessment
Category 5.2	Teacher workload
Category 5.3	Resources

Category 5.1: Misalignment of curriculum requirements and assessment

Category 5.1 includes some of the participants' views on the misalignment of the curriculum requirements and assessment. According to Teacher A, when learners reach Grade 10 they only want to do projects and enjoyable things and are not prepared for tests. Teacher B maintained that the content prescribed in Grade 10 is more than the prescribed content in Grade 9, which causes the learners to struggle to adapt to the amount of new content in Grade 10. According to Teacher C not enough work is covered in Grade 10 and learners struggle to cope with the amount of content when they reach Grade 10. Teacher D also maintains that when learners arrive in Grade 10 they struggle to adjust to the amount of work because the volumes of work is two to three times more in Grade 10 compared to Grade 9.

Category 5.1: Misalignment of curriculum requirements and assessment

Teacher A: "If they [Grade 9s] get to Grade 10, they initially only want to do small projects and other enjoyable things, and it's really more about the knowledge in Grade 10 and the reproduction of knowledge, as 75% is the knowledge content. And at first it's hard, especially after the first test, you have to comfort a little and inform them this is how it's going to be and you have to, or change your study methods, I also look at that, because it is the one thing they have a big problem with."

Teacher B: "Ok. the transition phase, in English, I would say it's lopsided because there's hardly – there's a little bit of linkage but not much and the gap is too wide between the one phase and the next phase. So the learner fumbles when he or she gets to Grade 10 and they find it very difficult to adapt. Also to the bulk of work that is being offered in Grade 10 because now all of a sudden we focusing on Botany and Zoology only and not on Chemistry and Physics, whereas in the two previous grades the focus [...] in Grade 9 tends to be more on Physics so it's a problem if the learner then takes Life Sciences in Grade 10."

Teacher C: “Well, the transition phase, specifically. Hmm, it’s once again that not enough work is being done in the GET, Grade 9. Hmm, so that’s why the children receive such a shock, when they see the amount of work and they tell you that there are too many terms to memorise. They struggle with it specifically.”

Teacher D: “The children are struggling with the transition from Grade 9 to Grade 10, simply because they are in Grade 7, 8, 9, they play. The curriculum is not very bulky. There are not really much is expected of them in terms of intellectual knowledge, it’s more about skills. While, when they arrive in Grade 10, the volume of work they have to learn is two to three times as much and then they struggle because they do not know how to learn, so the transition, the big problem is actually that the children in the lower grades are not taught how to learn, and then they get stuck in Grade 10.”

Teacher D: “So, the children are battling to switch over from Grade 9 to Grade 10 because of the volumes [of content they have to master.] The other thing is, up to the end of Grade 9, they basically got away with not having to be able to learn, because the amount of content is actually not that much and they battle when they get to Grade 10 and because they don’t actually know how to learn, so that’s actually the big problem, that you know there should be focus on teaching them how to learn in the junior grades.”

It can be inferred from the participants’ statements that they experience a gap between Natural Sciences in the GET band and Life Sciences in the FET band. The participants’ notions of a gap between GET and FET support the findings of both Peloagae (2009) and Reddy *et al.* (2004). It was determined that the transition from GET to FET was characterised by a misalignment of not only content knowledge, but also assessment practices. This supports Teacher A’s belief regarding the difference of the assessment weighting between the GET and FET. It was also determined that the emphasis on continuous assessment during the GET did not prepare the learners for the challenges of studying for tests and exams (Peloagae, 2009). The lack of teacher training reported by the participants as well as the lack of basic resources reported by some participants further explains problems with regard to the smooth transition from GET to FET

Category 5.2: Teacher workload

Data extracts on teacher workload are contained in Category 5.2. Two of the four participants agree that their workload has increased during the transition from GET to FET because more content is covered in Grade 10 than in Grade 9. One of the reasons offered includes that teachers are left to compensate for the gap in not only content knowledge, but also in assessment. In the questionnaire data, it was also revealed that some participants spend up to three hours per day on administrative duties alone. This notion supports findings from Chisholm, Hoadley, Kivulu, Brooks, Prinsloo, Kgobe, Mosia, Narsee and Rule (2005: xii), namely that the amount of paperwork and administration teachers are required to do is onerous. Chisholm *et al.* (2005: xiii) further report that there is a gap between the experience of increased workload and actual time spent on different activities. This suggests that policies are out of line with realities or that the demands on educators are so extreme that the overall effect is that work is less well managed and less effectively done.

Category 5.2: Teacher workload

Teacher A: "Well, It's a lot more work. You go [into] much more detail. And you expect that they have to understand what otherwise is merely given to them as a fact, or information given to them, they must now be able to explain. So it is reasonably greater understanding and insight and application than on the GET level."

Teacher B: "I would say from the teacher's standpoint, it's difficult because you're struggling now, you now need to compensate for the gap. So you sit with a group of Grade 10 learners. In my case, I am a little luckier because they are a smaller group, but you are still struggling, because there's quite a gap that you need to cover as well as your syllabus. So your work is doubled."

Category 5.3: Technology in the classroom

During the interview process, some of the participants indicated the need for the use of technology in the science classroom. None of the participants has any access to computer technology in the classroom. Category 5.3 includes some of the participants' views on the use of technology in the classroom. Teacher A indicated that technology would allow her to stimulate the learners visually. Teacher B maintains that an overhead projector is an archaic method and considers buying herself a projector in order to use her laptop as a resource inside the classroom. According to Flick and Bell (2000), the flexibility, speed and storage capacity of computers are causing science educators to redefine the meaning of hands-on experience and rethink the traditional process of teaching. They further state that the challenge facing both science educators and science teacher educators is to evaluate relevant applications for information technologies in the science curriculum.

Teacher D was the only participant who spoke out against the perceived requirement for technological resources. This notion is supported by Flick and Bell (2000), who caution that using technology to perform tasks that are carried out just as easily or even more effectively without technology may actually be a hindrance to learning. Therefore, it is imperative that teachers be properly educated and informed about the correct use of technology in the science classroom.

Category 5.3: Technology in the classroom

Teacher A: "There are one or two things that one would like and also because we live in a technological time the child is more visually oriented, I would much rather show them more visually than just in a book. So, yes I would mostly have loved to do it with Power Points. That would have been ideal [...]. I have done the fynbos with them. [Showing the learners] books where you could have used [an] overhead projector and they would have been much better able to see and then you also would have had everyone's attention."

Teacher B: "Look, as I told you. You cannot implement a system... You cannot implement this across the board and then you have rural schools and school like our school where on the surface we might have a computer lab for CAT, a computer lab for Maths, which is not effectively used also, but then there's nothing else. So how do you implement a system, where the learners [...] are not exposed to resources and materials, etcetera."

Teacher B: "Definitely. The school has almost no resources for Life Sciences and Natural Sciences."

Teacher B: "No, everything in the class I unfortunately introduced [...], I cannot use my board effectively. It's the old

blackboards. It's been broken five or six years now. It has been reported. It was 100 times I requested them to fix the board and so on and so on. Absolutely nothing gets done. If I wish to use an overhead projector, which is archaic, an archaic method, I have to borrow one."

Teacher B: "I'm going to, if I stay on for another year or two, I will need to buy myself a projector, so that I may use my laptop as a resource."

Teacher C: "... such as internet in class and those types of things will help ensure to make it easier for a person."

Teacher C: "At this stage a data projector would be very nice, yes."

Teacher D: "I think if you have a board and chalk and then you can be a successful teacher and people make the mistake of thinking if they have all these other fancy stuff they will have better results. This is nonsense, because it's technology, then you're wasting your time because you do not know how it works and you also make the mistake, it's good for kids to see you start drawing here; you finish there and teacher can draw as well. It's not these works of art that are being thrown at them. So yes, I think the old way of doing things has definitely its place."

Theme 6: School context

The final theme that emerged from the data during the interview process is that of the effect of school context on the overall teacher experience. The data below gives an overview of the categories in this theme.

Themes and categories

Theme 6:	School context (overview)
Category 6.1	Social problems

Category 6.1: Social problems

Category 6.1 includes some of the participants' views on the social problems experienced within their specific school context. All the participants indicated that they experience a diverse range of social problems. Teacher A describes her school as an example of a good multicultural school. Teacher B maintains that the majority of learners' have no support system at home and the educational system is geared towards learners who have parental support. Teacher C has the opinion that the learners at the school make an effort to get to school and don't have the opportunity to focus just on school work. Teacher D indicates that they have learners who they provide with sandwiches because it is their only food they get and they also have learners who are very well off.

Howie *et al.* (2008) determined during her study based on the Trends in the International Mathematics and Science Study (TIMSS), that the performance of South African learners in science, and particularly those in disadvantaged areas, are very low. In addition, teachers in poorer communities must make do with limited resources, which directly affect the achievement

and attitudes of learners (Ferreira, 2004:105; Papanastasiou & Zembylas, 2002). Within the diverse context of South African schools, this can prove to be problematic, as improving science education is often regarded as a priority for developing countries in order to promote long-term economic development (Rogan, 2003:1171). It can therefore be assumed that school context is a major contributor not only to learners' performance but also to teachers' overall experience.

Category 6.1: Social problems

Teacher A: "We are a multicultural school. We have many children with social problems. We also have many social problems in the school, in the sense of truancy and even drugs, which [are] at all schools. And it makes the learner a different type of learner to teach. We have children who possibly did not get enough food at home, so there are very few poor children who receive help from the state. And then multicultural is also hard because there's always that something that the other one does not like.[...] We are used as an example of a good multicultural school."

Teacher B: "See, because ... I cannot implement FET in a school where the majority of the pupils' socio-economic circumstances are of such a nature that parents cannot really be helpful. The child has no support system when he goes home. Most of our learners, when they go home, they are the mother or father. They go and fetch children at the crèche or cook the food or clean the house or do the washing etcetera. The system ... It's geared toward children who have support, who have access to libraries, internet, etcetera. And our learners at this school, in the context where they come from and with the way things are done at school and what's available at school, its failing."

Teacher C: "I think our kind of students makes an effort to get to school. They want to be there and that's because our school's discipline is very good. This is not your rich type of child. I think most of them have a hard time. I also think they come from homes where it is perhaps difficult and where they have to go home the afternoon and have to do some work in the house and look after brothers and that type of thing. So yes, I don't think our children have it very easy and that they don't have the opportunity to focus just on school work."

Teacher D: "We have the richest of the rich to the poorest of poor. We have children for whom we bring sandwiches to school during the day because it is their only food they get, but we also have many children who are very well off."

4.4 CHAPTER SUMMARY

This chapter presented an analysis of the all the data collected, including recurring themes in the interview. Issues such as teachers' experiences of the transition process, transition strategies and approaches, and transitional obstacles were discussed. The demographic information provided background information on the participants and photographic evidence supported data from the questionnaires and observations.

Chapter Five concludes the findings of the study, discusses its limitations and makes recommendations for practice and further research.

CHAPTER FIVE: FINDINGS, LIMITATIONS AND CONCLUSIONS

5.1 INTRODUCTION

Chapter Four produced a thick description of the subjective experiences of science teachers regarding the transition process from GET to FET, with the main focus on Life Sciences in the FET band. In the discussion that follows, the five research questions that this study set out to answer and the relevant findings are presented. The chapter concludes with the limitations and conclusions drawn from the study.

In order to provide a 'thick description' of the findings for this report, the sub-questions are addressed first, followed by the discussion of the findings in terms of the main research question.

5.2 RESEARCH FINDINGS

5.2.1 How do the teachers' experiences of the transition process affect their attitude towards science, FET and teaching in general?

All the participants indicated that they enjoy teaching science and that teaching science is a passion. Teacher B and Teacher C, however, experienced a decline in attitude towards teaching in general and reasons offered included the lack of basic resources and the fact that they as the teachers are left to make up for the gap.

Teacher B and Teacher C indicated that they experienced the transition from GET to FET as difficult. From the questionnaire and interview data it was revealed that their experience of the transition process is closely aligned to the perceived learner experience of the transition process, that being that learners experience the transition from GET to FET as very difficult (Peloagae, 2009:136). The preceding statement is supported by Rollnick *et al.* (2004:454) who state that practitioners (teachers) reach their perception of a gap through the interaction they have with the learners in class. Teacher B had a very negative attitude towards teaching and a low morale, and even contemplates leaving the teaching profession.

All the participants indicated a more positive attitude towards Grade 10 learners in the FET band. Reasons offered include a better teacher–learner relationship and Grade 10s being more mature and having indicated that they wanted to take the subject.

5.2.2 How does the school context, learning resources and infrastructure play a role in the successful implementation of the curriculum?

According to Christie *et al.* (2007:4), the socio-economic status of the schools influences the job satisfaction levels of its teachers and ultimately the achievement of the learners. As Teacher B teaches at a previously disadvantaged school with almost no resources, this could explain her very negative attitude towards the transition process and teaching in general. She is even contemplating leaving the teaching profession. The other participants revealed that they have sufficient resources to implement the NCS even though they indicated the need for more technology use in the science classroom.

5.2.3 How do the available teacher training and support systems assist with the transition from GET to FET? Is this assistance adequate to prepare teachers for their responsibilities to implement the curriculum?

All of the participants expressed the need for better in-service and workshop training and indicated that they did not receive sufficient training to implement the curricula. This notion supports Reddy *et al.* (2004:38), namely that the training of educators was not always of high quality and did not offer strategies for dealing with classroom activities.

There was however consensus on the impact of school support and effective school management on teacher morale and teacher job satisfaction. The participants who indicated that they had sufficient support from not only the school but also their subject group reported a more positive teaching experienced in general, as well as a smooth and easy transition from GET to FET.

5.2.4 What are the successes and failures while negotiating this transition process?

The successes mentioned by the participants correspond with the performance and experiences of their learners. The participants who indicated that they prepare their own modules in order to better prepare learners for Grade 10 reported a greater feeling of success compared to the participants who do not develop their own teaching material. Reddy *et al.* (2004) and Pelloagae (2009) report that a gap exists between GET and FET and recommend that teachers' receive subject-specific training instead of the generic type of training offered via the cascade model in an effort to fill the knowledge gap.

Two findings as possible causes of the failures experienced during the transition process include firstly, teachers' main concern is to complete the curriculum because of time constraints and workload, and secondly, they are unable to do 'more' regarding the presentation of their lessons.

The main research question was formulated as follows:

5.2.5 What are the subjective experiences of science teachers regarding the transition process from Natural Sciences (Grade 9) in the GET band to Life Sciences (Grade 10) in the FET band?

According to Dehaloo (2011), there are three main issues that influence the job satisfaction of teachers, namely demographic factors, organisational factors and organisational practice factors. This statement is supported by the findings of this research study, as the main observed differences between the two participants (Teacher B and Teacher C) who experienced the transition as difficult and the two participants (Teacher A and Teacher D) who did not experience any difficulty can be observed in the demographic information and the management of their particular schools. Both Teacher A and Teacher D consider themselves subject specialists and each has more than 25 years of teaching experience. They can be considered highly qualified in terms of both professional qualifications and years of teaching experience. These two participants succeeded in filling the gaps by teaching extra 'content' in the same timeframe and infusing the principles of OBE. Their views are contained below:

5.3 LIMITATIONS

The findings of the study were limited to the observed case studies, and are not generalisable to the whole teaching fraternity. The findings were limited to answering the research questions and therefore further inquiry and development are required to continue this educational debate on transition theories in South Africa.

A further limitation of this study is that it focused more on Life Sciences than Natural Sciences, which is a limitation that needs to be addressed through further investigations. Some of the findings are also likely to be unique to Natural Sciences and Life Sciences.

5.4 EMERGING ISSUES AND DIRECTIONS FOR FURTHER RESEARCH

There is a need for further studies of this nature to understand why some teachers experience the transition as difficult, while others experience a smooth transition. During the data-collection

process, a few participants suggested that it might be beneficial to divide Natural Sciences into its respective subjects in order to provide specialist teaching to learners. This is an issue that needs to be addressed, as all the participants indicated that they prefer teaching Life Sciences to Natural Sciences.

The importance of effective communication and support between the Department of Education and teachers is a further issue that needs to be addressed, as teachers are left feeling alone and abandoned with no guidance or knowledge of being on the right track. Highly skilled teachers are needed to negotiate the transition process and, if necessary, to address the mismatch between content, assessment, teaching strategies and lack of even basic resources. A further issue voiced by the teachers is the lack of a standardised textbook, as they have the opinion that none of the prescribed textbooks is aligned with the policy requirements of the NCS.

Further research has to be done on the nature of transition processes within the unique South African context. The teachers suggested that in-service training and workshops be re-evaluated in order to provide quality and context-specific guidance and training packages to assist them to fill the knowledge gaps between the different bands of education.

Even though three of the four participants' teacher–learner ratio was within the national norm, they still considered their classrooms overcrowded. An investigation is needed on what constitutes an overcrowded classroom within different subjects and within the South African context.

It is of critical importance that teachers be allowed to have input in curriculum initiatives, as they are at the ground level, which means they are the ones who ultimately implement the curriculum and know what is needed.

It is evident from the findings of this study that highly skilled teachers are needed to ensure a smooth transition from GET to FET. Two of the participants (Teacher A and Teacher D) have 29 years and 26 years' teaching experience respectively, and each indicated that they took autonomy and did not follow policy requirements. This is an issue that needs to be investigated further, as their methods, according to the participants, were successful in preparing their learners for Life Sciences in Grade 10.

5.5 CHAPTER SUMMARY

All four participants in this study all indicated that they did not receive sufficient training to assist them with the transition from GET to FET and teaching in general. In-service training and workshops focused more on administration instead of providing teachers with the necessary context-specific training to implement the NCS. According to the participants it is easier to pass Grade 9 than Grade 10, which can contribute to a less positive attitude of teachers towards Grade

9s as this leads to a reduction in learners' interest in the learning itself. The findings of this study further supports that of Pelloagae (2009) that the emphasis on formative assessment in the GET band does not support the development of study skills required for summative assessment in the FET band. The high retention rate in Grade 10 could be attributed to the assessment gap as well as the knowledge gap at the interface of the GET and FET (Pelloagae, 2009:144).

According to Pelloagae (2009:135), the discontinuity of the curriculum created a gap at the interface between GET and FET. The findings of this research study corresponds with that of Rollnick *et al.* (2004:462), namely that teachers do not teach certain material in Grade 9, which causes articulation problems and eventually becomes a problem of progression, as the material often remains untaught. The findings however also reveal that some teachers include extra content knowledge in Grade 9 in an effort to better prepare learners for Grade 10 and fill the knowledge gap. For those participants who experienced the transition process as difficult, it is suggested that they acquire thorough understanding of the manner of transition in order to assist learners through transitions (Rollnick *et al.*, 2004:464).

REFERENCE LIST

- ANC (African National Congress). 1994. *A policy framework for education and training*. Available: <http://www.anc.org.za/ancdocs/policy/educate.htm> [29 May 2009].
- Anderson, L.W., Jacobs, J., Schramm, S. & Splittgerber, F. 2000. School transitions: Beginning of the end or a new beginning. *International Journal of Educational Research*, 33(4):325–339.
- Aronson, J. 1994. A pragmatic view of thematic analysis. *The Qualitative Report*, 2(1). Available: <http://www.nova.edu/ssss/QR/BackIssues/QR2-1/aronson.html> [30 September 2010].
- Babbie, E. & Mouton, J. 2006. *The practice of social research*. Cape Town: Oxford University Press.
- Bishay, A. 1996. Teacher motivation and job satisfaction: A study employing the experience sampling method. *Journal of Undergraduate Sciences*, 3:147–154.
- Boyatzis, R.E. 1998. *Transforming qualitative information: Thematic analysis and code development*. Thousand Oaks, CA: Sage.
- Braun, V. & Clarke, V. 2006. Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2):77–101.
- Braund, M. & Hames, V. 2005. Improving progression and continuity from primary to secondary science: Pupils' reactions to bridging work. *International Journal of Science Education*, 27(7):781–801.
- Carl, A.E. 2007. Onderwysers in die Wes-Kaap se persepsies en belewing van huidige onderwysveranderinge: Vir of teen. *Acta Academica*, 39(3):200-223
- Chisholm, L., Hoadley, U., Kivulu, M., Brooks, H., Prinsloo, C., Kgobe, A., Mosia, D., Narsee, H. & Rule, S. 2005. *Educator workload in South Africa*. Report prepared for the Education Labour Relations Council. Pretoria: Human Sciences Research Council.
- Christie, P. 1998. Schools as (dis)organisations: The 'breakdown of the culture of learning and teaching' in South African schools. *Cambridge Journal of Education*, 28(3):283–299.
- Christie, P., Butler. & Potterton, M. 2007. *Schools that work*. Report of the Minister of Education. Cape Town: National Department of Education.
- CIE (Catholic Institute of Education). 2010. *Submission on the National Curriculum and Assessment Policy Statement for all subjects listed in the National Curriculum Statement*

Grade R–12. No. 784. Available:

<http://www.cie.org.za/images/uploads/CIE%20CAPS%20RESPONSE%20FINAL.pdf>

- Cohen, L., Manion, L. & Morrison, K. 2007. *Research methods in education*. Sixth edition. London: Routledge.
- Dawson, R. & Shipstone, D.M. 1991. Liaison in science at the primary-secondary interface. *School Science Review*, 72(26):19–25.
- De Clercq, F. 2008. Teacher quality, appraisal and development: The flaws in the IQMS. *Perspectives in Education*, 26(1):7–18.
- Dehaloo, G. 2011. The motivation and job satisfaction of secondary school teachers in KwaZulu-Natal: An education management perspective. Unpublished doctoral dissertation. University of South Africa, Pretoria.
- Demetriou, H., Goalen, P. & Rudduck, J. 2000. Academic performance, transfer, transition and friendship: Listening to the student voice. *International Journal of Educational Research*, 33(4):425–441.
- Denscombe, M. 2007. *The good research guide for small-scale social research projects*. Berkshire: Open University Press.
- Denzin, N.K. 1989. *Interpretive interactionism*. Newbury Park, CA: Sage.
- Denzin, N.K. & Lincoln, Y.S. 2011. The discipline and practice of qualitative research. In N.K. Denzin & Y.S. Lincoln (eds.). *The Sage handbook of qualitative research*. Fourth edition, Thousand Oaks, CA: Sage, 1-19.
- Devetak, I., Glazar, S.A. & Vogrinc, J. 2010. The role of qualitative research in science education. *Eurasia Journal of Mathematics, Science & Technology*, 6(1):77–84.
- De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L. 2007. *Research at grass roots: For the social sciences and human service professions*. Third edition. Pretoria: Van Schaik.
- Dichaba, M.M. & Mokhele, M.L. 2012. Does the cascade model work for teacher training? Analysis of teachers' experiences. *International Journal of Educational Sciences*, 4(3):249–254.
- DoBE (Department of Basic Education). 2011. *Curriculum and Assessment Policy Statement Grade 10–12: Life Sciences*. Cape Town.
- DoE (Department of Education). 1995. *White Paper on Education and Training*. Notice 196. Cape Town: Parliament of the Republic of South Africa.
- DoE (Department of Education). 1997. *Curriculum 2005. Learning for the 21st century*. Pretoria.

- DoE (Department of Education). 1998. *Preparing for the twenty-first century through education, training and work: A programme for the transformation of further education and training*. Education White Paper 4. Pretoria.
- DoE (Department of Education). 1998. Green Paper on further education and training: Preparing for the twenty-first century through education, training and work. Pretoria.
- DoE (Department of Education). 2002. *Revised National Curriculum Statement for Grades R–9 (Schools): Natural Sciences*. Cape Town.
- DoE (Department of Education). 2003. *Phasing in OBE into the FET band: Implementation Strategies (2003–2006)*. Pretoria.
- DoE (Department of Education). 2005. *Teachers for the future: Meeting teacher shortages to achieve education for all*. Available: <http://www.education.gov.za/LinkClick.aspx?fileticket=xigRMoQd9qw%3D&tabid=452&mid=1036>. [15 May 2007]
- DoE (Department of Education). 2006. *The National Policy Framework for teacher education and development in South Africa*. Pretoria.
- DoE (Department of Education). 2009. National Curriculum Statement Grades 10-12 (General): Life Sciences.
- Evans, L. 1998. *Teacher morale, job satisfaction and motivation*. London: Paul Chapman/Sage.
- Feast, L. & Melles, G. 2010. Epistemological positions in design research. A brief review of the literature. Paper presented at Connected 2010, the Second International Conference on Design Education, Sydney, 28 June – 1 July.
- Ferreira, J.G. 2004. An exploratory survey of male and female learner opinions on secondary school biology education in Gauteng. *South African Journal of Education*, 24(2):105–107.
- Fleisch, B. 2008. *Primary education in crisis: Why South African school children underachieve in reading and mathematics*. Cape Town: Juta.
- Flick, L., & Bell, R. 2000. Preparing tomorrow's science teachers to use technology: Guidelines for science educators. *Contemporary Issues in Technology and Teacher Education*, 1(1). Available: <http://www.citejournal.org/vol1/iss1/currentissues/science/article1.htm> [27 November 2013].
- Fullan, M.G. 1991. *The new meaning of educational change*. London: Cassell Educational.

- Galton, M., Gray, J. & Rudduck, J. 1999. *The impact of school transitions and transfers on pupil progress and attainment*. Research Report No. 131. London: Department for Education and Employment.
- Galton, M. & Morrison, I. 2000. Concluding comments. Transfer and transition: The next steps. *International Journal of Educational Research*, 33(4):443–449.
- Glaser, B.G. 2004. Naturalistic inquiry and grounded theory. *Qualitative Social Research*, 5(1). Available: <http://www.qualitative-research.net/index.php/fqs/article/view/652> [20 September 2013].
- Golafshani, N. 2003. Understanding reliability and validity in qualitative research. *The Qualitative Report*, 8(4):597–607.
- Gray, B.V. 1999. Science education in the developing world: Issues and considerations. *Journal of Research in Science Teaching*, 36(3):261–268.
- Guba, E.G. & Lincoln, Y.S. 1994. Competing paradigms in qualitative research. In N.K. Denzin & Y.S. Lincoln (eds.), *Handbook of qualitative research*. Thousand Oaks, CA: Sage, 105-117
- Hargreaves, A. & Fullan, M. 1998. *What's worth fighting for in education?* Buckingham: Open University Press.
- Hiles, D. 1999. *Paradigms lost – paradigms regained*. A summary of the paper presented to the 18th International Human Science Research Conference, Sheffield, 26–29 July. Available: <http://www.psy.dmu.ac.uk/drhiles/Paradigms%20Lost.htm>. [20 September 2013].
- Horn, G. 2006. Educational solutions to improve the employability of senior high school learners. *South African Journal of Education*, 26(1):113–128.
- Howie, S., Scherman, V. & Venter, E. 2008. The gap between advantaged and disadvantaged students in science achievement in South African secondary schools. *Educational Research and Evaluation*, 14(1):29–46.
- Jessop, T. & Penny, A. 1998. A study of teacher voice and vision in the narratives of rural South African and Gambian primary school teachers. *International Journal of Educational Development*, 18(5):393–403.
- Kagan, S.L. & Neuman, M.J. 1998. Lessons from three decades of transition research. *The Elementary School Journal*, 98(4):365–379.
- Kriek, J. & Grayson, D.J. 2009. A holistic professional development model for South African physical science teachers. *South African Journal of Education*, 29(2):185–203.

- Kvale, S. 1996. *Interviews: An introduction to qualitative research interviews*. Thousand Oaks, CA: Sage.
- Kvalsund, R. 2000. The transition from primary to secondary level in smaller and larger rural schools in Norway: Comparing differences in context and social meaning. *International Journal of Educational Research*, 33(4):401–423.
- Le Grange, L. 2000. The use of photographs in case study research: Reflections and suggestions. *South African Journal of Education*, 20(3):169–174.
- Lemmer, M., Edwards, J. & Rapule, S. 2008. Educators' selection and evaluation of natural sciences textbooks. *South African Journal of Education*, 28:175–187.
- Lincoln, Y.S., Lynham, S.A. & Guba, E.G. 2011. Paradigmatic controversies, contradictions and emerging confluences, revisited. In N.K. Denzin & Y.S. Lincoln (eds.). *The Sage handbook of qualitative research*. Fourth edition, Thousand Oaks, CA: Sage, 97-128.
- Louw, D. & Badenhorst, G. 2008. Job satisfaction among urban secondary-school teachers in Namibia. *South African Journal of Education*, 28(2):135–154.
- Mack, L. 2010. The philosophical underpinnings of educational research. *Polyglossia*, 19. Available: http://www.apu.ac.jp/rcaps/uploads/fckeditor/publications/polyglossia/Polyglossia_V19_Lindsay.pdf . [20 September 2013].
- Mda, T. & Erasmus, J. 2008. *Educators: Scarce and critical skills research project*. Research commissioned by the Department of Labour, South Africa.
- Merriam, S.B. 1991. *Case study research in education: A qualitative approach*. San Francisco, CA: Jossey-Bass.
- Merriam, S.B. 1998. *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.
- Mertens, D.M. 1998. *Research methods in education and psychology: Integrating diversity with quantitative & qualitative approaches*. Thousand Oaks, CA: Sage.
- Mouton, J. 2006. *How to succeed in your master's and doctoral studies: A South African guide and resource book*. Pretoria: Van Schaik.
- Muwanga-Zake, J.W.F. 2009. *Is science education in a crisis? Some of the problems in South Africa*. *Science in Africa*. Available: <http://www.scienceinAfrica.co.za/scicrisis.htm> [22 October 2009].

- Nkosi, B. 2012. Teachers unprepared for curriculum. *Mail & Guardian*, 17 August. Available: <http://mg.co.za/article/2012-08-17-teachers-unprepared-for-curriculum> [20 September 2013].
- Ogura, Y. 2009. Comparison of attitudes toward science between Grade 9 and 10 Japanese students by using the PISA questions and its implications on science teaching in Japan. Paper presented at the PISA research conference, Germany, 14-16 September.
- Ono, Y. & Ferreira, J. 2010. A case study of continuing teacher professional development through lesson study in South Africa. *South African Journal of Education*, 30:59–74.
- Onwu, G. & Stoffels, N. 2005. Instructional functions in large, under-resourced science classes: Perspectives of South African teachers. *Perspectives in Education*, 23(3):79–91.
- Osborne, J. 2003. Attitudes towards science: A review of the literature and its implications. *International Journal of Science Education*, 25(9):1049–1079.
- Overton, M. & Reis, M. 1990. A survey of teachers' views on the transition to A-level biology from GCSE. *Journal of Biological Education*, 24(2):100–102.
- Papanastasiou, E. & Zembylas, M. 2002. The effect of attitude on science achievement: A study conducted among high school pupils in Cyprus. *International Review and Education*, 48(6):469–484.
- Patton, M.L. 2009. *Understanding research methods: An overview of the essentials*. Seventh edition. Glendale, CA: Pyrczak.
- Peloagae, M.J. 2009. Learner experiences of transition from the General Education and Training band to the Further Education and Training band in science. Unpublished doctoral dissertation. University of Pretoria, Pretoria.
- Pietarinen, J. 2000. Transfer to and study at secondary school in Finnish school culture: Developing schools on the basis of pupils' experiences. *International Journal of Educational Research*, 33(4):383–400.
- Reddy, V., Dlamini, N. & Ntshingila-Khosa, R. 2004. *Investigate the reasons for the low pass rate in Grade 10 in 2003*. Final report from the Department of Education Task Team. Pretoria: Department of Education.
- Reyes, O., Gillock, K.L., Kobus, K. & Sanchez, B. 2000. A longitudinal examination of the transition into senior high school for adolescents from urban, low-income status and predominantly minority backgrounds. *American Journal of Community Psychology*, 28(4):519–544.

- Robson, C. 2002. *Real world research: A resource for social scientists and practitioner researchers*. Second edition. Oxford: Blackwell.
- Rogan, J.M. 2003. Towards a theory of curriculum implementation with particular reference to science education in developing countries. *International Journal of Science Education*, 25(10):1171–1204.
- Rollnick, M., Manyatsi, S., Lubben, F. & Bradley, J. 1998. A model for studying gaps in education: A Swaziland case study in the learning of science. *International Journal of Educational Development*, 18(6):453–465.
- Rous, B., Teeters Myers, C. & Buras Stricklin, S. 2007. Strategies for supporting transitions of young children with special needs and their families. *Journal of Early Intervention*, 30(1):1–18.
- Saunders, L. 2000. *Effective schooling in rural Africa. Report 2: Key issues concerning school effectiveness*. Washington, DC: World Bank.
- Schagen, S. & Kerr, D. 1999. *Bridging the gap? The national curriculum and progression from primary to secondary school*. Slough: National Foundation for Educational Research.
- Schulze, A. 2007. The usefulness of reflexive photography for qualitative research: A case study in higher education. *South African Journal of Higher Education*, 21(5):536–553.
- Science in Africa*. 2004. From laggard to world class: Reforming maths and science education in South Africa's schools. Available: <http://www.scienceinafrica.co.za/2004/november/scienceed.htm> [22 October 2009].
- Shenton, A.K. 2004. Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22(2):63–75.
- Speering, W. & Rennie, L. 1996. Students' perceptions about science: The impact of transition from primary to secondary school. *Research in Science Education*, 26(3):283–298.
- Stears, M. & James, A. 2004. The National Curriculum Statement for the Life Sciences: Are we disempowering teachers? In R. Balfour, T. Buthelezi & C. Mitchell (eds.). *Teacher development at the centre of change*. Pietermaritzburg: Intrepid Printers, 165–168.
- Steyn, G.M. 2004. How do professionals develop? Lessons for the effective implementation of the South African Skills Development Act. *South African Journal of Education*, 24(3):217–224.
- Tamir, P. 1989. Home and school effects on science achievement of high school seniors in Israel. *Journal of Educational Research*, 83:30–39.

- Tamir, P. 1992. High school biology teachers' image of subject matter: An exploratory study. *The American Biology Teacher*, 54(4):212–217.
- Taylor, N. 2001. Anything but knowledge: The case of the undisciplined curriculum. Paper presented at the International Conference Designing Education for the learning society, Johannesburg, 14 February. Available: http://www.jet.org.za/publications/research/Taylor_Anything%20but%20knowledge_14_Feb%202001.pdf [22 October 2009].
- Taylor, N. & Vinjevold, P. 1999. *Getting learning right*. Johannesburg: Joint Education Trust.
- Tirri, K., Husu, J. & Kansanen, P. 1999. The epistemological stance between the knower and the known. *Teaching and Teacher Education*, 15:911–922.
- Trowbridge, L.W., Sund, R.B. & Bybee, R.W. 1981. *Becoming a secondary school science teacher*. Columbus: Merrill.
- Vasques, J. 2008. *Tools and traits for highly effective science teaching K–8*. Portsmouth: Heinemann. Available: http://www.heinemann.com/shared/onlineresources%5CE01100%5CVasWebSam3_3_08.pdf [27 November 2013].
- Wang, Q. & Zhang, N. 2011. Teaching large classes in China – English as a foreign language. Unpublished class notes. China: Beijing Normal University. Available: http://www2.warwick.ac.uk/fac/soc/al/research/projects/telc/5_wang_qiang_overview_of_china_research_0.pdf [27 November 2013].
- Ward, R. 2000. Transfer from middle to secondary school: A New Zealand study. *International Journal of Educational Research*, 33(4):365–374.
- Weston, P., Lazonby, J. & Tomlins, B. 1994. *Progression to post-16 chemistry: A survey of schools and colleges*. Slough: National Foundation for Educational Research.
- Yin, R.K. 1984. *Case study research: Design and methods*. Beverly Hills, CA: Sage.

**ADDENDUM A: APPROVAL LETTER TO CONDUCT RESEARCH FROM WESTERN CAPE
EDUCATION DEPARTMENT**

Navrae
Enquiries **Dr RS Cornelissen**
IMibuzo
Telefoon
Telephona **(021) 467-2286**
IFoni
Faks
Fax **(021) 425-7445**
IFeksi



Wes-Kaap Onderwysdepartement

Western Cape Education Department

ISEBE leMfundo leNtshona Koloni

Verwysing
Reference **20091204-0046**
ISalathiso

Ms Edwina Mettler
48 Toscana Villas
Verdi Boulevard
Sonstraalhoogte
DURBANVILLE
7550

Dear Ms E. Mettler

**RESEARCH PROPOSAL: SCIENCE TEACHERS' EXPERIENCE OF THE TRANSITION PROCESS FROM
GENERAL EDUCATION AND TRAINING (GET) TO FURTHER EDUCATION AND TRAINING (FET): A
MULTIPLE CASE STUDY.**

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. The programmes of Educators are not to be interrupted.
5. The Study is to be conducted from **18th January 2010 to 30th June 2010**.
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Dr R. Cornelissen at the contact numbers above quoting the reference number.
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as submitted to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:
**The Director: Research Services
Western Cape Education Department
Private Bag X9114
CAPE TOWN
8000**

We wish you success in your research.

Kind regards.

Signed: Ronald S. Cornelissen
for: **HEAD: EDUCATION**
DATE: 15th December 2009

ADDENDUM B: ETHICAL CLEARANCE CERTIFICATE



UNIVERSITEIT • STELLENBOSCH • UNIVERSITY
jou kennisvenoot • your knowledge partner

12 August 2010

Tel.: 021 - 808-9183
Enquiries: Sidney Engelbrecht
Email: sidney@sun.ac.za

Reference No. 323/2010

Mrs E Mettler
Department of Curriculum Studies
University of Stellenbosch
STELLENBOSCH
7602

Mrs E Mettler

APPLICATION FOR ETHICAL CLEARANCE

With regards to your application, I would like to inform you that the project, *Science teachers' experience of the transition process from General Education and Training to Further Education and Training. A multiple case study*, has been approved on condition that:

1. The researcher/s remain within the procedures and protocols indicated in the proposal;
2. The researcher/s stay within the boundaries of applicable national legislation, institutional guidelines, and applicable standards of scientific rigor that are followed within this field of study and that
3. Any substantive changes to this research project should be brought to the attention of the Ethics Committee with a view to obtain ethical clearance for it.

We wish you success with your research activities.

Best regards



Sidney Engelbrecht
.....
MR SF ENGELBRECHT

Secretary: Research Ethics Committee: Human Research (Non-Health)



The purpose of the questionnaire:

This questionnaire is addressed to every Life Sciences teacher from their respective schools, to obtain the following information:

- *Basic biographical information including your teaching experiences in general and your experience teaching Life Sciences.*
- *Your personal experience of Life Sciences.*
- *Your comments on how learners are experiencing Life Sciences.*
- *Your training received and duration of training in the Life Sciences.*
- *Aspects that will be required for the successful implementation of Life Sciences in the Further Education and Training phase.*

Kindly try to answer all questions to the best of your ability and as objectively as possible.

BIOGRAPHICAL INFORMATION

1. Name

2. How old are you

3. Name of school

4. Total months/years of teaching experience

5. Months/Years of experience teaching:

Natural Sciences

Life Sciences

6. Are Natural Science and Life Sciences the only learning areas you are teaching?

YES	NO
-----	----

If **NO**, what other learning areas are you also teaching?

7. Total amount of Learners you are teaching

8. Amount of learners:

Natural Science

Life Sciences

Other

9. Are you involved with extra mural activities?

YES	NO
-----	----

If **YES**, please list the different activities you are involved with

10. Amount of time (hours per day) you spend on preparation for lessons

Natural Science

Life Sciences

Other

11. Amount of time (hours per day) you spend on administrative duties

12. Years of experience with Further Education and Training (FET)

13. Is Life Sciences your specialist area?

If **YES**, what are your reasons for specialising in Life Sciences?

If **NO**, do you think you are treating Life Sciences fair with regard to the planning and teaching there of?

YES	NO
-----	----

Motivate

.....

.....

.....

.....

.....

.....

14. Have you received training in Further Education and Training, specifically in the subject area, Life Sciences?

YES	NO
-----	----

If **YES**, please explain the nature and duration of the training session.

.....

.....

15. In your opinion, was the training received sufficient to prepare you to implement Life Sciences successfully at your school?

YES	NO
-----	----

Motivate:

16. Do you think you are equipped with the necessary knowledge and skills to implement Life Sciences successfully within the Further Education and Training band?

YES	NO
-----	----

Motivate:

17. Do you, as the Natural and Life Sciences teacher(s), have a professional relationship with other teachers (schools) during the year, specifically where planning is concerned?

If **YES**, how often do you meet and what information is discussed?

If **NO**, why, in your opinion, do you not have a professional relationship?

YES	NO
-----	----

Motivate:

21. What, in your opinion, will ensure that Life Sciences are implemented successfully?

22. Are there any additional comments about your experience of the transition from GET to FET?

23. Does the school context, resources and infrastructure affect the implementation of GET (Natural Science) and FET (Life Sciences)?

23.1 School context:

23.2 Resources:

23.3 Infrastructure:

24. How do you feel about the assessment practices in Natural Science (GET) and Life Sciences (FET)?

Thank you for your co-operation

Title: Science teachers' experience of the transition process from the General Education and Training (GET) to Further Education and Training (FET): A Multiple case study.

OPEN QUESTIONNAIRE (NATURAL SCIENCE/LIFE SCIENCES TEACHER)

The purpose of the questionnaire:

This questionnaire is addressed to every Life Sciences teacher from their respective schools, to obtain the following information:

- *Basic biographical information including your teaching experiences in general and your experience teaching Life Sciences.*
- *Your personal experience of Life Sciences.*
- *Your comments on how learners are experiencing Life Sciences.*
- *Your training received and duration of training in the Life Sciences.*
- *Aspects that will be required for the successful implementation of Life Sciences in the Further Education and Training phase.*

Kindly try to answer all questions to the best of your ability and as objectively as possible.

BIOGRAPHICAL INFORMATION

1. Name

2. How old are you

3. Name of school

4. Total months/years of teaching experience

29

5. Months/Years of experience teaching:

Natural Sciences

29

Life Sciences

29

6. Are Natural Science and Life Sciences the only learning areas you are teaching?

YES NO

If NO, what other learning areas are you also teaching?

7. Total amount of Learners you are teaching

303

8. Amount of learners:

Natural Science

233

Life Sciences

70

Other

9. Are you involved with extra mural activities?

YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
---	-----------------------------

If YES, please list the different activities you are involved with

Tennis, Athletics, Netball

10. Amount of time (hours per day) you spend on preparation for lessons

Natural Science

$\frac{1}{2}h - 1h$

have 4 gr 9 + 3 gr 8 classes (lot of repeating)
 Prepare in advance for chapter/module
 + get things ready

Life Sciences

$\frac{1}{2}h - 1h$

prepare when setting modules questions
 + reading through info + making transparencies
 + getting material

Other

11. Amount of time (hours per day) you spend on administrative duties

2-3h

preparing modules, question papers,
 marking, assessing,

12. Years of experience with Further Education and Training (FET)

13. Is Life Sciences your specialist area?

If YES, what are your reasons for specialising in Life Sciences?

If NO, do you think you are treating Life Sciences fair with regard to the planning and teaching there of?

YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
---	-----------------------------

Motivate

Loves Physiology + biochemistry

14. Have you received training in Further Education and Training, specifically in the subject area, Life Sciences?

YES	<input checked="" type="checkbox"/>	NO
-----	-------------------------------------	----

If YES, please explain the nature and duration of the training session.

Orientation sessions before the start of Life Sciences in gr 10 and 11 SAOU session and workshop on evolution.

15. In your opinion, was the training received sufficient to prepare you to implement Life Sciences successfully at your school?

YES	<input type="checkbox"/>	<input checked="" type="checkbox"/> NO
-----	--------------------------	--

Motivate:

Could not answer our questions and could not provide us with material / examples. Had to work with other teachers to prepare material and make sense of all the terminology they used. Text books did not cover all the information required in "detail" of syllabus.

16. Do you think you are equipped with the necessary knowledge and skills to implement Life Sciences successfully within the Further Education and Training band?

YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
---	-----------------------------

Motivate:

Made study of syllabi and ways to implement it. Prepared modules that covered the detail of syllabus + questions + tasks to help them master the work.
Subject adviser also supplied us with work shops + material

17. Do you, as the Natural and Life Sciences teacher(s), have a professional relationship with other teachers (schools) during the year, specifically where planning is concerned?

If YES, how often do you meet and what information is discussed?

If NO, why, in your opinion, do you not have a professional relationship?

YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
---	-----------------------------

Motivate:

Have contact with fellow teachers from other schools + discuss problems etc. informally. Share activities, papers, etc.
Subject adviser also supplied us with material that we can use.

18. Do you think the Life Sciences learners have the necessary knowledge, skills and attitude to complete Life Sciences successfully?

YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>
---	-----------------------------

Motivate:

Make sure that all the information required by syllabus is covered + mastered. They only need to study the work.

19. Do you feel that you receive enough support from either the school or Department of Education to assist you to implement Life Sciences successfully?

The school try to get us all the help we need. Allow us to attend work shops, obtain extra material, etc.
Subject adviser also try to help.

20. In your own words, how would you describe your experience of the transition process from General Education and Training (Natural Science) to Further Education and Training (Life Sciences)?

In gr 8+9 learners are very task orientated and rely on it to pass. We do try to equip them with different skills - e.g. graphs, scientific process, biological thinking. The CTA at end of year was not the right way to end NS - too much emphasise on group work + questions not on their level.

In gr 10 they struggle with the huge amount of information they have to master. The many new scientific terms and other skills expected from them - e.g. reasing, recollectron, critical thinking - are problematic for them. Many have never learned to study and think that reading through work is enough.

With the change in the amount of work, they need to change their attitude towards homework and mastering it - whole work ethics must change

21. What, in your opinion, will ensure that Life Sciences are implemented successfully?

Shorten the syllabus - more time to master work, discuss matters and time for experiments

22. Are there any additional comments about your experience of the transition from GET to FET?

Learners are not as motivated as previously to work hard. Too much emphasise on tests in gr 8+9 to pass. Did not really learn to handle large amounts of work or how to study. Always want to know if work that they have to do - is it for marks.

23. Does the school context, resources and infrastructure affect the implementation of GET (Natural Science) and FET (Life Sciences)?

23.1 School context:

More lesson time needed. Perhaps longer periods.

23.2 Resources:

Fairly well equipped. Would love to have more access to the newest technology, software.

23.3 Infrastructure:

Lap top + projector would be nice - Only 2 tv's in school. Khanya lab not enough. (Could work out lessons for with lots of internet material etc which I cannot do now.)

ADDENDUM D: LESSON OBSERVATION

Title: Title: Science teachers' experience of the transition process from the General Education and Training (GET) to Further Education and Training (FET): A Multiple case study.

Lesson Observation (ADDENDUM D)

Observation Instrument adapted from: University of Stellenbosch - Faculty of Education Lesson Evaluation:

Teaching Acts	CATEGORY	Acceptable	Good	Very good	Notes
	• Teacher appeared interested/uninterested/optimistic				
	• Involvement of learners in lesson				
	• Making use of different pedagogical methods				
	• Managing class/learners				
	• Makes use of relevant resources to aid teaching and learning				
	• Language usage appropriate to Life Sciences lesson				
	• Manage to capture learners attention				

Classroom Condition	<ul style="list-style-type: none"> • Organisation promotes teaching and learning 					
	<ul style="list-style-type: none"> • Classroom space encourages movement/group work/individual work 					
	<ul style="list-style-type: none"> • Teaching aids/resources visible and accessible to learners 					
	<ul style="list-style-type: none"> • Classroom is overcrowded 					

ADDENDUM E: SEMI-STRUCTURED INTERVIEW GUIDE

Semi-structured Interview Guide

1. How has your experience been teaching Natural Science in the GET band?
2. How has your experience been teaching Life Sciences in the FET band?
3. Do you think that Natural Science adequately prepare learners for Life Sciences? Please motivate your answer.
4. What is your dominant style of teaching Natural Science and Life Sciences?
5. How would you grade your understanding of the National Curriculum Statement and Further Education and Training? Motivate.
6. What kind of curriculum support structures exists at your school?
7. Do you see FET succeeding in your particular school? Motivate.
8. What are the difficulties, obstacles and challenges that you are experiencing in implementing GET (Natural Science) and FET (Life Sciences) simultaneously?
9. What are the successes and achievements you are experiencing in implementing GET in the Natural Sciences classroom?
10. What are the successes and achievements you are experiencing in implementing FET in the Life Sciences classroom?

ADDENDUM F: TEACHER A INTERVIEWS TRANSCRIPTIONS

Teacher A: Interview 1

R = Researcher

T = Teacher

1. R: Hoe was u ervaring tot dusver met die AOO fase of Natuurwetenskap?

T: Ek dink dis baie taakgeoriënteerd. Leerders stel meer belang om punte te kry as om werklik iets te leer. Hulle hou ook baie van dinge doen en nie soseer om kennis te akkumuleer nie. So die oomblik as jy met 'n formele les-gee situasie begin, waar hulle dinge moet leer, dan verloor jy 'n groepie van hulle. Ek dink ook dat leerders, het nie, leer nie om werklik te leer nie en baie van hulle kom slegs deur omdat hulle hulle takies gedoen het en baie van die takies goed in gedien het.

2. R: So, as u nou kan sê wat u ervaring is, is dit dan positief of negatief?

T: Sekere opsigte is positief, want jy kry nog steeds oulike kinders met oulike idees en wat rêrig moeite doen en belangstel in die vak en lekker vrae vra en veral sekere onderwerpe. As jy dit aanraak, dan kom die vrae amper voordat jy die antwoord kan gee. So, dis lekker, maar die negatief is dat jy met almal sit wat belangstel in die vak of nie en veral nie baie goed was nie. En dan, veral die wat nie belangstel nie, of wat nie presteer nie, probeer negatief aandag kry en dit maak dit moeilik.

3. R: En u ervaring met die VOO fase – Lewenswetenskap?

T: Gewoonlik in die Graad 10 klas is daar nog outjies wat nie so heeltemal seker is of hulle die vak wil neem of nie en hulle moet ook nog eers georiënteer word (onduidelik) metodes. En wanneer om te praat, wanneer om stil te bly, wanneer om te luister. En, ek vind dat in Graad 11 en 12, dit baie lekker is, want almal wat daar is, stel belang in die vak, wil meer weet en hulle doen ook moeite, omdat hulle rêrig in daai rigting wil gaan en belangstel. Hmm, hulle het ook al geleer om te leer, so dit is nie so 'n probleem nie en hulle kan ook al die massa werk hanteer.

4. R: Dink u dat Natuurwetenskap die leerders genoegsaam voorberei vir Lewenswetenskap in Graad 10?

T: Ons probeer om al die verskillende 'skills' aan te raak soos 'Wetenskaplike ondersoek'. Ons doen ook baie grafieke en etiese kwessies en so aan, wat vir hulle kan help om sekere vraagstukke te hanteer, maar die een ding wat ons nou nie so baie op kan op konsentreer nie, is 'Weergee van kennis', want jy moet hulle op hulle vlak toets en hulle kan nog nie op so 'n groot

mate, of weens hulle ondervinding in die laerskole, kan hulle nog nie groot massas werk hanteer nie en hulle kan ook nie hulle eie menings baie goed weergee nie.

5. R: *Nou, wat is dan die probleem vanaf Graad 9 to Graad 10, want ek hoor, daar is ietsie waarmee u nie heeltemal tevrede is nie?*

T: Soos ek vir jou sê, te veel taakgeoriënteerd. As hulle in Graad 10 kom will ook aanvanklik net net projekies doen en lekker goed doen en dit gaan eintlik meer oor die kennis in Graad 10 en die weergee van kennis omdat 75%, is die kennis inhoud. En aanvanklik is dit moeilik om, veral na die eerste toets, moet jy nou maar eers 'n bietjie troos en sê maar dit is hoe dit nou gaan wees en jy moet nou maar, of maar jou studiemetodes verander, ek kyk ook graag daarna, want dit is een ding waarmee hulle 'n groot probleem het. Hulle weet glad nie hoe om te studeer nie. Lees deur die werk, is vir hulle studeer en hulle spandeer omtrent 10 na 20 minute en dan dink hulle hulle ken die werk. So, jy moet dan eers vir hulle wys hoe om te leer en ook dat jy in die klas moet oplet en aantekeningtjies maak en jou werk moet volledig wees en, so na die Junie maand, dan sal hulle nou vir die eerste keer op die pyl wees waar jy nou met hulle kan werk.

6. R: *Wat is u dominante styl van klasgee vir Natuurwetenskap en Lewenswetenskap? Is dit meer leerdergesentreerd of Onderwysgesentreerd?*

T: Hmm, in Graad 9, dink ek, dit is so basies iets van als, maar in Graad 10, met die vol syllabus, kan jy nie te lank op 'n onderwerp spandeer nie, om bietjie vas te lê en speel, ekstra goedjies te doen nie, want jy moet voortdurend probeer om die syllabus klaar te kry. Ons probeer maar gedurig goedjies insit soos, goed Graad 11 sal ons disseksies doen, maar Graad 10 soos sketse maak, soos hierdie wat ons vandag gedoen het, waar hulle self so 'n bietjie moet gaan kyk en hulle eie antwoorde gee, dat alles nou nie net van die onderwyser kom nie, maar dis ook belangrik dat hulle weet wat die regte antwoord is, al het hulle hulle eie antwoorde gegee. So ons probeer sulke goedjies doen. So jy probeer nog steeds om hulle te akkommodeer, maar ook op die regte vlak van onderwys. Nie net speel nie, maar dat daar werklik kennis is en terminologie is, wat hulle moet kan baasraak.

7. R: *So, hmm, dink u, dat die nuwe VOO fase is mos nou leerdergesentreerd, die ou OBE of uitkomstgesentreerde onderwys wat nou implementeer moet word. So dink u dat leerdergesenteerde onderwys kan werk in die VOO fase?*

T: Jy kan nie net dit doen nie. Ek sou sê omtrent, soos wat die punte toekenning, is moet jy dit doen. Die werk doen, vaslê met 'n aktiwiteit wat leerdergesentreerd is veral in die wetenskappe wat baie feitlik is. Ek doen ook somtyds ook waar hulle, soos hierdie wat hulle self goedjies moet ontdek. En dan ander plekke wat nou bietjie moeilik is soos die proses wat jy dan vir hulle moet verduidelik. Ja, dit is eintlik maar, jy kan nie net leerder(..) doen nie, want dan jy nêrens kom nie. Jy gaan die helfde van die werk doen.

8. R: Watter kurrikulumondersteuningsstrukture bestaan hier by die skool?

T: Ons het 'n persoon, wat nou, hoe sal ek nou sê? Die koördineerder daarvan, so sy sal vir ons sê as daar nuwe goedjies uitkom, maar ook as daar kursusse is en ons gaan gewoonlik na die kursusse wat hulle ons aan bekendstel. Ons vakadviseur doen ook nogals heelwat en, soos toe ons met Evolusie begin werk het het ons min agtergrond gehad. Hulle het werkswinkels gehad en ons moes gegaan en hulle het ook vir ons materiaal gegee wat ons kon gebruik, wat nou skyfies is en so aan (onduidelik)

9. R: Dink u dat VOO suksesvol geïmplementeer kan word hier by die skool?

T: Hmm, ek dink ons gaan by die eindpunt uitkom, miskien nie heeltemal leerdergesentreerd, soos wat hulle wil hê ons moet nie, maar as jy nog steeds 'n matriekeksamen skryf, dan moet jy werk bemeester. En jy probeer alles inpas, maar jy kan nie net leerdergesentreerd onderwys gee nie.

10. R: Watter struikelblokke of probleme of challenges het u ervaar met die VOO fase?

T: Hmm, 'n bietjie baie admin. Die feit dat die klasse, ek kom uit die ou bedeling, so waar jy sit en bespreek en kinders sit en luister, vrae gevra en kinders het dit beantwoord. Nou met die selfontdekking gebeur dit dat die kinders baie meer rusteloos is en nie meer so goed gedissiplineerd is nie. En hulle raak ook baie gou verveeld waar hulle baie langer kon luister met aandag, wil hulle nou self besig wees, so jy neem dit ook in ag.

11. R: Watter suksesse het u ervaar met die nuwe VOO fase?

T: Hmme, suksesse?

R: (laggie)

T: Ek dink elke les wat jy, wat die kinders vir jou na die tyd kom sê – 'Dit was nou 'n lekker les' – of jy kan sien dat almal besig is om te werk. Dis die suksesse sover. Ons kinders is nie baie akademies geïnteresseerd nie, en ons moet gedurig maar probeer om vir hulle aan te spoor en so aan. So as die kinders goed doen in die toetse, as hulle goed doen in 'n takie, as hulle hulle kameras uithaal om af te neem as waar hulle dissekter, dan is dit vir my lekker.

12. R: Hmm, en die laaste vragie. Is u gelukkig met u klaskamer? Dink u dis reg toegerus vir die aanbieding van Natuurwetenskap en Lewenswetenskap of wetenskap oor die algemeen?

T: Ons het nogals 'n vrye hand van aankoop van apparaat en so aan. Ons het 'n begroting wat ons moet in werk, maar ons word net beperk tot in, laat ek dit so stel, ons het 'n vryer hand as wat ons voorheen miskien gehad het, voordat ons hierdie Model C tipe van onderrig gehad het, waar

ons net van die staat afhanklik was. Maar daar is goed wat ek sal vir wil hê. Ek sou graag daai laptop wil hê (onduidelik) Jy kan al jou lesse in Lewenswetenskappe so aanbied, maar ek kan nie. Ek moet een of twee keer gaan en dan moet ek die lokaal bespreek en dis nie altyd wanneer jy dit wil hê nie, daar's botsings en daar's so baie material wat jy kan gebruik wat ek nie op hierdie stadium kan gebruik nie.

(Onderhoud word geonderbreek)

-END-

Teacher A: Interview 2.

R = Researcher

T = Teacher

1. R: Kan U net kortliks beskryf waar U studeer het, hoe lank die kursus U geduur het en die naam van U kwalifikasie?

T: Ek het by Stellenbosch studeer, BSc. Daai tyd nog die vyf vak kombinasie. 'n Driejaar kursus en toe het ek HOD gedoen en ek het ook "EVOS" gedoen, Botany.

2. R: By hoeveel skole het U al Skoolgegee?

T: Twee

3. R: En hoe lank is U by hierdie skool?

T: 26 jaar

4. R: En is u gelukkig by hierdie skool?

T: Ek het saam met hom gegroei en by die skool is ek ook eintlik deel van ja. Ja, Ek is gelukkig. Ons kry baie vrye hand met dinge en ek is omtrent nog heelyd my eie baas wat vak bedryf

5. R: U bied beide Natuurwetenskap aan en Lewenswetenskap aan. Hoeveel graad 9 klasse het U?

T: Ek bied 4 klasse aan vir Graad 9. Een Afrikaans en drie Engels

6. R: En hoeveel graad 10 klasse het u?

T: Een klas.

7. R: U is nou al 26 jaar in die onderwys, soos wat u gesê het op die vraelys. Het u houding teenoor onderwys afgeneem, toegeneem/ of dieselfde gebly vanaf die onderwystransformasie in 1997?

T: Ek dink ek was baie meer entoesiasies aan die begin, want die kinders was meer taakgeoriënteerd,, vakgeoriënteerd, werksgeoriënteerd en ook, die klasse was kleiner. So jou dissipline was ook baie makliker. Vandag. My senior klasse is baie lekker. Junior klasse sukkel jy om die kinders die heelyd gefokus te kry. So die, meeste van jou energie gaan nie in die vak in nie, maar in die dissipline.

8. R: Hoe bly U op hoogte van nuwe Kurrikulumontwikkelinge?

T: Ek woon elke kursus by wat aangebied word. Ek lees baie en ek, as ek 'n onderwerp raakloop wat oor my vak gaan, dan lees ek dit en kyk of daar nie iets is wat ek kan gebruik nie.

9. R: By wie sal U se lê die verantwoordelikheid om uit te vind van nuwe kurrikulumontwikkelinge?

T: Ek sal sê by ons, maar ook by die vakadviseur dat hy dit aan jou beskikbaarstel. In die verlede het baie veranderings plaasgevind en jy moes maar selfontdek. Gelukkig het ons nou 'n nice vakadviseur wat vir ons ook materiaal beskikbaar stel, maar in die begin jare was dit nogal 'n gesukkel en jy het maar bymekaar kers opgesteek, want jy het nie baie leiding gekry nie.

10. R: Sal U sê dis maklik of moeilik om uit te vind wat die nuutste ontwikkelinge of die nuutste kurrikulumontwikkelinge is?

T: 'n Mens bestudeer maar die dokumente, maar ons wag eintlik maar gewoonlik vir die details, want baie keer sê hulle een sinnetjie en dan bedoel hulle omtrent 'n hele hoofstuk daarmee. So dis nogal, veral by Graad 12 baie belangrik dat ons presies moet weet hoe diep jy moet gaan, want die sillabus is verskriklik vol.

11. R: So u sukkel 'n bietjie?

T: Ja, hmm, soos.. Gelukkig, die eerste keer wat ons begin het met die sillabus het ons glad nie geweet hoe diep om te gaan nie en jy het maar gemik, en gehoop maar vir die beste. Met die nuwe, die volgende jaar het ons toe nou die inligting ontvang en toe kon jy nou jou goedjies plooi daar volgens. En ek was Vrydag by 'n, kom ek sê maar 'n seminaar, waar ons ook gaan kyk het wat in die nuwe sillabus, wat verander het en so aan, en hoeveel dit 'n 'draft' is het ons dit darem nou al gekry.

12. R: As u die keuse weer aangebied word om weer hierdie kombinasie van leerareas aan te bied, Natuurwetenskap en Lewenswetenskap. Sal u dit weer so doen of sal u verkies om liewers Natuurwetenskap of Lewenswetenskap aan te bied?

T: My liefde lê maar by Lewenswetenskap. Ek hou ook nogal van die Chemie gedeelte, maar ek is nie baie lief vir die Fisika nie.

13. R: Dink u dat die leerders bevoordeel of benadeel word deur die feit dat u altwee leerareas aanbied?

T: Ek dink tog dat as 'n mens dit apart kon aanbied, sou dit beter wees, siende dat ek is meer 'n Biologie persoon en die Skeinat persoon is meer 'n vakspesialis in Natuur- en Skeikunde. So, hy weet presies wat in matriek gevra gaan word en waarnatoe jy werk en ek weet weer die Biologie

rigting. So, Ja. Ek dink dit sou eintlik beter gewees het as jy die twee kon skei.

14. R: Waarvan hou u meer Natuurwetenskap of Lewenswetenskap?

T: Definitief Lewenswetenskap.

15. R: Hoekom hou u meer van Lewenswetenskap?

T: Ek hou baie van Fisiologie en die nuwe sillabus is nogals baie Fisiologie, Hoe kan ek sê, ja, dis meestal maar Fisiologie vir die leerplan. En 'n mens kan baie dinge sien en beproef met die kinders en jy kan ook sien hoe hulle vorder en entoesiasme en so aan (onduidelik).

16. R: U bied mos nou net die Biologie aspek deel van Natuurwetenskap, dis hoe ek dit verstaan, Hoekom sal u se dis dalk beter of nie beter om dit so te doen nie?

T: Ek is 'n vakspecialis in Biologie. Dis vir my baie lekker om dit aan te bied en ook, ek weet presies waarheen ek oppad is in die senior klasse. En, ag, as 'n mens net in iets belangstel dan bied jy dit net lekkerder aan.

17. R : So as u die keuse gegun word , Sal u dan Natuurwetenskap aanbied soos wat u dit nou aangebied word of soos in die ou bedeling waar dit soos algemene wetenskap waar, dit, Biologie en Fisika komponent geskei was?

T: Kyk ons bied dit nou apart aan. In die verlede het ek dat saam aangebied en dan moet jy baie keer...Jy moet eers jou onderwerp kan klaar maak voordat jy met 'n onderwerp aangaan. Ek het gevind dat die skeinat deel vat baie langer, so die tyd wat jy eintlik het vir die Biologie is baie korter wat jy dan in 'n korter tyd moet doen. Maar ek kan altwee aanbied. Ek het ook nogal van die eksperimente, ensoan gehou. Hoewel dit deesdae moeilik is omdat ons nie meer 'n Laboratoriumassistent het om alles uit te sit en so aan nie, maar Lewenswetenskap is nog steeds my eerste liefde.

18. R: In u eie woorde. Hoe sal u die oorgangsfase vanaf AOO,dis natuurlik Natuurwetenskap na VOO, Lewenswetenskap beskryf U ervaring in eie woorde?

T: Goed, Dis baie meer werk. Jy gaan [in] baie meer detail. En jy verwag ook meer dat hulle dinge moet verstaan wat andersins net bloot as feit vir hulle gegee is, of inligting vir hulle gegee is moet hulle nou kan verduidelik. So daar is nogals redelik meer verstaan, en insig en toepassing as wat op die AOO vlak is.

19. R: So is dit, is die oorgangsfase van AOO na VOO vir u maklik of is dit moeilik vir u?

T: Vir my is dit nie moeilik nie, maar vir die leerders is dit nogals moeilik, in die sin dat jy baie

meer van hulle verwag, hulle moet nou goed kan verduidelik en intepretasies maak van data en van inligting. Ja, so vir hulle is dit moeiliker en ook die baie werk, is vir hulle moeiliker, want jy doen omtrent, in die 1ste kwartaal soveel soos wat jy in die hele AOO band gedoen het.

20. R: Beskryf asb. vir my die ideale onderwyser ervaring?

T: Goed, as jy in 'n klas instap en almal sit gretig met hulle boeke uitgehaal. Reg vir die les. As hulle, sodra hulle iets nie verstaan nie vra, en ook die ander luister vir hulle terwyl hulle vra en dan natuurlik ook die feit dat hulle kom met inligting wat hulle self gaan navors het en inligting waarvan hulle meer van wil weet en dan doen hulle hulle huiswerk en ken hulle werk in die toetse, dis die ideale ervaring.

21. R: En hoe is dit nou?

T: (Sug). Dit gaan nou al beter met die VOO groep , want hulle weet wat jy van hulle verwag en hulle weet al, hulle het al 'n hele paar eksamens geskryf. Hulle sien dat jy nie jy nie net kan sit hier en dink jy gaan groepwerk doen en deurkom nie, maar jy sukkel maar. Hulle sal inkom en nie hulle goed uithaal nie en wag eers dat jy moet sê en daar is maar altyd 'n groeapie wat jy 'n bietjie moet aan praat oor hul aandag gee en huiswerk doen en so aan. Maar die klompie wat, kom ons sê nou maar, jou sterleerders is, jy kan sien daai wat ek gesê het, is presies wat hulle vir jou elke periode gee.

22. R: Het u houding teenoor Wetenskap, dis nou, Natuurwetenskap en Lewenswetenskap, afgeneem , toegeneem of dieselfde gebly gedurende die oorgangsfase van AOO na VOO?

T: Ek dink wat vroër die geval was met die kleiner klasse, het ons baie makliker gevind om oor te gaan, want jy het nooit so 'n groot groep gehad wat jy in die VOO, ag AOO moes besig hou nie. Deesdae is daar maar altyd 'n groepelement wat dit moeilik maak vir jou. So dissipline is nogal 'n probleem om die kind gefokus te hou en laat hy moet aandag gee en laat hy sy werk moet doen. So, hmm, ek het ook begin ook om modules op te stel, sodat elkeen daar is en dat hulle presies weet wat hulle moet leer. Ook meer geplooi soos wat ek dit wil hê. In daardie opsig het ek dit ook die AOO meer probeer maak soos VOO en ook na verskillende goed gaan kyk soos die verskillende skills wat hulle moet gaan doen en dit alreeds in Graad 9 begin, sodat jy makliker oorgang het na Graad 10 toe.

23. R: Hoe groot is u vier, graad 9 klasse?

T: Sewe en dertig, gemiddeld in die klas

24. R: En u Graad 10?

T: Graad 10 het ons net een klas met drie en dertig

25. R: Sal u sê die gemiddelde getalle, is dit groot klasse, of is dit klein klasse, of is dit gemiddeld?

T: Ons probeer dit nooit meer hou as 37 nie, want dan is dit ontmoontlik om eintlik dissipline te handhaaf. Veral in 'n laboratorium waar hulle in stoeltjies sit en so aan die groepies wat nie belangstel nie. Ek sou sê 26 is jou ideale groep en dit is nou net mooi 10,15 meer as dit.

26. R: Hoe vergelyk u manier van klasgee tussen Natuurwetenskap en Lewenswetenskap?

T: Goed. In Natuurwetenskappe verwag jy nie so 'n baie om in 'n periode te doen nie so jy het jou stukkies werk wat jy verduidelik en dan het jy 'n doen deel waarin jy vaslê en waarin hulle aantekeninge maak of prentjies maak, of so. En in die VOO is dit baie meer op hulle eie wat hulle 'n stuk werk behandel en dan moet hulle teruggaan na die handboek en vragies doen en dan kyk ons na hoe hulle die vrae beantwoord het. Ons doen ook selfontdekking ensoaan. Selfontdekking, soos daai eenperiode wat jy hier was, wat ons gedoen het oor kloning so ons probeer sulke goedjies doen. Ons doen disseksies wat sy nie by die junior klassies kan doen nie, waar elkeen nou meer disseksies doen op sy eie veral Graad 11. En, ja dit is basies maar, so hulle doen meer en jy doen minder.

27. R: Is u tevrede met hoe u dit nou doen in NW en LW?

T: Ek sou graag ook wou gehad het dat 'n mens meer kan doen in Natuurwetenskappe, veral, al ons het nogal baie eksperimente gedoen, vroeër jare, wat jy kon wys ensoaan. Ons doen nog steeds so af en toe 'n eksperimentjie met hulle, maar nou doen jy as 'n demonstrasie en nie waar hulle dit self doen nie. Ja.

28. R: Hoe sal u die konteks van hierdie skool beskryf?

T: Hoe bedoel jy met konteks?

29. R: Die konteks van die skool. As jy kyk na die tipe leerder wat hier skoolgaan, die sosiale omstandighede van die kinders.

T: Ons is 'n multikulturele skool. Ons het baie leerders met sosiale probleme. Ons het ook baie sosiale probleme in die skool, in die sin van, stokkiesdraai en selfs dwelms, wat maar by al die skole is. En dit maak dat die leerder 'n ander tipe leerder is om voor klas te gee. Ons het kinders wat nie genoeg kos kry miskien by die huis nie, so daar is baie arm kinders wat ook staathelp kry, hierdie subsidie kry. En dan is multikultureel maar ook moeilik, want daars altyd een wat iets se, wat die ander een nie van hou. Ons het dit so, in 'n mate nogal onder beheer en ons word as 'n voorbeeld gebruik van 'n gebruik van 'n goeie multikulturele skool. Ja

30. R: Dink u dat die konteks van hierdie skool, soos wat u nou beskryf het beïnvloed u houding teenoor onderwys en u houding teenoor wetenskap?

T: Ek dink, hnn, ek het meer ook met die inhoudelike te doen. Vroëer jare het ons nie so baie probleme gehad wat dissipline betref nie, Groter klasse het definitief 'n probleem geraak. Groepe wat nie met mekaar oor die weg kom nie, het miskien 'n probleem geraak En ook die feit dat jy nie so baie kan laat doen nie. Dat jy eerder meer demonstreer. Ja, dit het definitief 'n rol gespeel in die manier waarop jy die klasse aanbied

31. R: Hoe vergelyk U houding, teenoor graad 9 leerders teenoor die graad 10 leerders?

T: 'n Mens is baie meer gemaklik met graad 10's, want dis almal leerders wat aangedui het dat hulle van die vak hou deur die keuse wat hulle gemaak het en hulle wil graag meer teweete kom, so hulle het 'n baie meer entoesiasies, so hulle luister makliker as jy met hulle praat en hulle het ook meer geleentheid om vrae te vra en huiswerk te doen en so aan. Terwyl die ander groep wat nie altyd so belangstel in jou vak nie, nie altyd kan stil bly wanneer hulle moet stilbly nie. En dan is daar konflik tussen jou en tussen hulle, want jy kan nie dat daar groepe in die klas is nie, almal moet saam op 'n punt wees.

32. R: Wat verstaan u onder die term leerdergesentreerd?

T: Leerdergesentreerd is wanneer jy meer dinge probeer uit die leerder se oogpunt kry as wat jy net 'n inligting of aanbieding bied so deur ontdekking deur disseksies, deur selfstudie, deur klasgesprekke, hnn ja, op daai manier probeer jy dan inligting by hulle kry.

33. R: Dink u dat die konteks van die skool 'n effek het op die suksesvolle implementering van VOO?

T: Definitief. Ek sou nie sê ons is onsuksesvol nie. Al die skole sukkel maar met die woeligheid van die kinders en die inhoudelike en ook die feit dat so baie van die punte meer op take gerig is. Die kinders kom dit agter en die oomblik as jy iets doen dan vra hulle: "Is dit vir punte?" so, dit beïnvloed definitief jou manier van aanbied en ook jou gesindheid teenoor die klas en inhoudelike wat jy het.

34. R: Nou kom ek nou by die assessering. Graad 9 bestaan uit 75% mos uit jou DASS punt en dan graad 10 is dit heeltemal anders dan is dit net 25%. Daai verskil in die assessering metodes. Hoe beïnvloed dit u houding oor die oorgangsfase?

T: Ons probeer om meer toetse ook in te skakel. So ons kombineer baie keer 'n taak met 'n toets. Soos ons doen in VOO die 1ste kwartaal 'n toets en 'n taak in Biologie deel en ook 'n toets en 'n ondersoek, so dis eintlik vier goed ons doen i.p.v. twee want ons kombineer dit. So ons probeer op daai manier so 'n bietjie meer die inhoudelike ook toets, want as jy nog minder doen as dit dan gaan dit nog moeiliker gaan in graad 10. In graad 10 is jou praktiese meer ter ondersteuning en nie soseer as die middelpunt van assessering nie. Dis meer, ekskuus, ek het nou verkeerd gesê, ter ondersteuning van die vakinhoud en nie soseer die middelpunt van die

vakinhoud soos jy by AOO doen nie. Ons probeer ook ons goedjies so organiseer dat die stuk werk wat jy gedoen het, die assessering daarby inpas, soos ons bv. in die 2de kwartaal doen ons asemhaling, dan doen ons nou rook waar ons nou kyk na die effek op asemhaling en ook mense in die omgewing by bring met die gesindheid teenoor rook ensoaan.

35. R: So u volg nie heeltemal die National Kurrikulumverklaring woord vir woord, soos wat hulle sê nie?

T: Ons doen alles wat ons behoort om te doen, maar ons, ek dink doen eintlik so 'n bietjie meer. Soos ek gesê het Aardverwarming is maar net 'n raakpuntjie daar wat ons baie meer uitgebrui het. Ons probeer om in al die aspekte oor die 2 jaar, want ons handboeke is, ons is ook so dat, wat alles sê het vir graad 9 is daar by graad 8 handboek en dan doen ons dit eerder in graad 8 as wat ons dit in graad 9 doen sodat aan die einde van, soos met die GTA wat dan ook gedoen het, dat ons daar sorg dat oor die 2 jaar, hulle alles gedek het en dan het ons voor die GTA natuurlik vir hulle alles wat hulle in die Graad 9 jaar moet weet net weer met hulle hersien wat alles gedoen het.

36. R: En die hulpbronne tot u beskikking? Het dit 'n effek het op die suksesvolle implementering van VOO en Lewenswetenskappe in Graad 10?

T: Ons het nogals redelik hulpbronne. Ek doen my eie materiaal ook. En dan ontwikkel ons ons eie prakties en so aan. Ons het nogal baie vrye hand met die aankoop van apparatuur ensoaan so ek dink nie ons het eintlik 'n probleem met wat dit aanbetref nie.

37. R: Het u hulpbronne tot u beskikking 'n effek op u het houding teenoor onderwys en wetenskap?

T: Daar is een of twee goedtjies wat 'n mens graag so wil hê en ook omdat ons in 'n tegnologiese tydperk lewe en die kind meer visueel gerig is sou ek baie goed eerder visueel wil wys vir hulle as net om dit in 'n boek vir hulle te wys. So, ja ek sou verskriklik graag meestal met Powerpoints wou gedoen het. Dit sou ideal gewees het. Waar jy dan baie goedjies op die internet kon gekry het. Ek het nou die fynbos met hulle gedoen. Nou wys jy maar met boeke terwyl as jy dit nou op die oorhoofse projektor kon wys dan sou hulle dit baie beter kon sien het en dan het jy ook almal se aandag. Dan het jy nie 'n boek wat rond gestuur word en so aan nie. So dit sou ek graag, baie graag wou he.

38. R: Is u gelukkig met u klaskamer? En hoekom is u gelukkig of nie gelukkig nie?

T: Ja. Ek sukkel nogal om dit altyd so skoon te hou, want die kinders is maar morserig en veral, ek probeer elke dag nagaan en die tafels skoon maak want ek glo 'n mens moet 'n skoon

klas hê, so ek het nou nog nie vandag al die papiertjies en goed opgetel en so aan nie, maar die uitleg is 'nice' met die tafels wat daar is en jy kan gou gou in 'n groep in gaan, want jy skuif hulle net so dat die voorstes en agterstes saamwerk in 'n groep. Ons het lekker tafels agter vir praktiese werk soos dissekering ensoaan. Ons het apparatuur. Ons het skelette en sulke goed waarvan jy kan vertoon, so ek is redelik tevrede, maar daars altyd, 'n mens wil meer hê as wat jy het (laggie)

39. R: *Watter suksesse het u ervaar met die implementering van VOO?*

T: Ag, ek dink die feit dat die kinders nou al op hierdie stadium van ontwikkeling is waar hulle 'n bietjie self kan werk, weetgerigheid wat hulle ontwikkel, skills wat hulle ontwikkel het. Ja, ek dink ons het, wat dit betref, het ons redelik naby gekom as wat die Nasionale verklaring sê wat jy moet kan doen. Hulle kan al redelik praat oor en terminologie gebruik wat vir my ook baie belangrik is en natuurlik dat jy entoesiasme aankweek is vir my baie belangrik.

40. R: *En hoe vergelyk dit met die AOO of graad 9 Natuurwetenskap?*

T: AOO, Hmm, omdat dit sulke groot klasse is kan jy nie eintlik altyd sien of jy die doelpunt bereik het nie. Jy probeer maar almal inskakel as jy bv. 'Wetenskaplike Proses' doen met vraagstellingtjies en ook waar hulle een of twee eksperimentjies doen waar hulle dit moet toepas maar jy weet nie altyd of jy suksesvol is nie.

41. R: *En wat was nie so lekker vir u met die, die implementering van VOO nie?*

T: Hmm... Laat ek eers so bietjie dink daar. Ek is maar 'n persoon wat, as ek met 'n, 'n kom ons sê maar uitdaging gestel word, probeer ek maar altyd aanpas en so ek het nie rêrig vreeslik 'n probleem gehad nie waar ek gesukkel het nie. Soos ek sê, ek probeer altyd die werk uitsorteer, kyk wat ek gaan gebruik en hoe ek dit gaan gebruik en maak hulle modules maak, waar ek dit infaseer. En soos wat dit verander probeer ek ook maar verander wat houding ensoaan betref. Ja, so ek het nie rêrig, dink ek, moeilikheid gehad, miskien aanvanklik, maar ek dink. Ek is nou al so in die storie wat ek nie nou kan onthou wat toe 'n die probleem was nie.

42. R: *Die opleiding wat u ontvang het. Dink u dat dit voldoende was vir u om u werk te doen en wat u gelukkig is as persoon?*

T: Die aanvanklike opleiding het gepas by die sillabus van daai tyd toe die oorgang bereken is en ons kursesse bygewoon het, wou hulle altyd weet hoe gaan jy dit doen en hulle het nooit vir ons idees gegee nie. So wat ons gedoen het en die suksesse en die tekortkominge is nie ons skuld nie, want ons het nie genoeg leiding gekry nie.

43. R: *Watter leiding het u nodig as onderwyser? Watter leiding kan die WKOD, so wat kan hulle gee sodat u kan voel u word ondersteun?*

T: Toe hulle begin het met hierdie 'Wetenskaplike Proses' het hulle eintlik vir ons so half laat

deurskemer, inhoud is nie belangeriker en ek dink in wetenskap kan jy nooit se inhoud in nie belangerik nie, want inhoud is feite en feit is wetenskap, so dit het vir my geweldig baie gepla en ook die feite dat jy enige iets kon gebruik het. Daar was geen struktuur nie. Dan het jy GTA gedoen en gelukkig het hulle elke keur die onderwerpe gekies wat ek al gedoen het. So ek was, miskien het hulle ook besef dit is belangrik in wetenskappe. Vandat dit meer gestruktureerd is, voel 'n mens veiliger, laat jy vir die kind reg voorberei het vir dit. Ek voel as 'n sillabus geimplimenteer word, dan moet hulle vir jou presies sê wat hulle van jou verwag in praktika ook presies wat hulle wil hê jy moet met die kind bereik dat daar nie misverstande tussen jou en hulle en kind is nie, want dis sy toekoms wat op die spel is en dis wat ek verwag [...]

44. R: *En dan die laaste vragie. Het u gehou van onderwys, meer of minder voor die verandering in 1997 of is dit nou beter vir u?*

T: Die eerste paar jaar was maar [mogetrofe.] , want ons het nie geweet wat om te doen nie, maar soos ek se soos wat die details uitgekome het, veral in die VOO, laat jy presies weet en jy kan jou, want die handboeke is ook nie altyd gewees volgens wat hulle wou gehad het nie. So wat ek nou doen, gewoonlik voor 'n met 'n nuwe sillabus is ek vat die sillabus ek vat die handboek, ek vergelyk die, ek stel vir my notas op waar ek die twee kombineer en so kan jy dan seker waas dat jy alles dek so dit is dis vir my nou baie makliker, want ek het nou al geleer wat om te doen en hoe om te doen. En dan gaan soek jy maar in die verskillende boeke wat is nou lekker vragies en wat is lekker aktiwiteite wat jy kan doen en prakties wat jy kan aanbied en so aan. En dan probeer jy dit inpas by die assessering wat ook gedoen moet word. En dan ook vir toepassing want 'n leerder moet leer hoe om te kan toepas. Hy kan nie net sommer doen nie. So, jy moet ook vir hom leer om, dis hoekom ek vragies en antwoorde met hulle doen wat hulle kan sien wat die regte, wat jy eintlik van hulle verwag en wat hulle geskryf het en dat hulle dit(die twee) bymekaar kan uitbring.

45. R: *Dankie Juffrou.*

-END-

ADDENDUM G: TEACHER B INTERVIEWS TRANSCRIPTIONS

Teacher B: Interview 1.

R = Researcher

T = Teacher

1. R: Hoe was u ervaring tot dusver met die AOO en Natuurwetenskap?

T: Ok, hmm, toe hulle dinge verander, van die ou sisteem na die nuwe sisteem, het ons aangeneem dit gaan meer prakties wees. You know, that they going to assist, as far resource material is concerned, as far as infrastructure and smaller classes and all of that. That didn't happen. We don't even have a core or standardized textbook. When we go to workshops, people have the complaint of, "Where and how do we streamline?", because they tell you to use various textbooks, which mean when we test, especially when the grade 9 learners had to do the, at the end of the year, the national.(struggling to find words).

2. R: (unclear)

T: Yes, the National Testing, form of testing because the textbooks was so varied the work wasn't streamlined so you fumbled around and you did what you thought was supposed to be core and most of the times what you did in class wasn't tested at the end of the year when they send us those little booklets around (unclear), so that in itself was problematic. And because Natural Science is a practical subject you cannot change a syllabi and not allow, or leave room and resources for the teacher to implement it in such a practical way, as what is expected on paper. So that is the problem we had in the Grade 9, the GET phase.

3. R: So as U sal opsom, hoe was u eraring, positief, meer positief of meer negatief?

T: Om die waarheid te sê, op papier, was die idêe veronderstel om positief te wees, maar die ervaring was absoluut negatief.

4. R: Hoekom sal u sê? Is dit omdat, is dit die spesifieke skool waar u onderrig of wat spesifiek, dink u, is die probleem in die AOO of met Natuurwetenskap?

T: Behalwe dat onse skool in die algemeen nie genoeg...Wat is resources?

R: hulpbronne

T: hulpbronne het nie (lag), hmm, voel ek dit was nie reg deurdink nie en onderwysers was nie geken, vooruit in die veranderinge nie. You were expected to go to workshops and when you get

to the workshops your input was asked but it's like saying, "Yes, I hear you, but that's where it ends". Nothing has been planned. And how can I go to a workshop in March, where the core or the new syllabus has now been enforced upon me in January? So what is, what is my role there? It's a waste of my time actually because you [are] not allowing me really to give input. You want that workshop and the idea of me giving input on paper so that you can say, on paper, that it was done, but your timing is out and there is no coordination between what you want us to do and what is supposed to happen.

5. R: *So, nou wat sê u nou eintlik van die Departement, die Departement van Onderwys? Sê u hulle ondersteun of ondersteun hulle glad nie onderwysers nie?*

T: Ek sou sê, ek sou sê die ondersteuning is nie, it's not aimed and channeled properly, you know. You can't give support if you haven't allowed me to, because I'm at ground level. I'm teaching. I know what is necessary. I have been in teaching for, let's say, more than 10 years. Some of us for 20 years or 30 years. So if you're not in teaching and you're sitting up there, you need to have my input before you implement and you need to understand what is needed at school, because you've been out of teaching, or you've never taught. So you cannot say that you do know because you don't know. And you cannot visit my classroom for a day or a week and then decide, because you don't know. And you can't sit with a principal and ask them what is necessary because they do not teach the various subjects. You see. So, I think the Department need to come down to ground level more and people, teachers like us, who are qualified and further our qualifications, those are the types of people who need to be in these positions, making these little decisions and planning and putting it down on paper but it's like we working past each other.

6. R: *En u ervaring met die VOO en Lewenswetenskap? Hoe was dit vir U?*

T: Die ervaring met die VOO is basies dieselfde, maar die grootste probleem wat ons het is weereens, there's no core textbook. Really, even for the grade 12's. There are various textbooks and things are sometimes explained in different, in different ways. So you don't know where the focus is at times because the band that is used, the knowledge is sometimes too wide so how do you breakdown if you have more than 5 textbooks at different schools and those 5 textbooks aren't core, it's different for each school. So where is your focus? You see. What we need the Department to do, especially in the senior levels, is, is streamline the work, let there be progression and have workshops where teachers can see, look the focus is on those sections of the work and don't deviate. You cannot in June or in September have a workshop on what should have been done throughout the year. Their planning, I think, the problem with the Department of Education is, their planning is out. They fumble throughout the year and then expect teachers to fall in line and that is unfair. That is extremely unfair. And you cannot have things done in Grade 8 or in grade 7 even, in the GET phase that is repeated in exactly the same way in grade 8 and

repeated in exactly the same way in grade 9 and then in grade 10, when you reach FET, there's this huge gap, and then the learners doesn't know, "Ok, where am I at now?" You see.

7. R: So, dan kom ons nou by die volgende vraag. Dink u dat Natuurwetenskap in die AOO Band genoegsaam die leerders voorberei vir Lewenswetenskap in Graad 10 of Verdere Onderwys Opleiding?

T: No! No, no, no. I don't think that at all because, like I said, there's no, there's very little progression. There's an overlapping or repetition of work that has been done from grade 7 and grade 8 but there's very little progression and the link between work in grade 9 and grade 10 should be more focused on work, like especially from grade 9 to grade 10, work should be more focused, there should be progression between the two and that is too big and the syllabus is too wide, too wide. I really think for grade 9's, if you really want to, was the idea lately, was that we need to focus more on the physics section for the grade 9's but when we combine it with Biology. In the past, before we had the FET and GET, we had separate classes for Grade 8 and 9 for Biology and Physics. That was a brilliant idea 'cause then when the learner moves up to grade 10 you get a stronger physics learner and a stronger Biology learner because the focus was right and I think that is the premise that, on which we should work from instead of fumbling around with this diverse Physics and Biology section and when they get to grade 10, then they are not (unclear).

8. R: Wat is u dominante styl van klasgee? Sal u sê dis meer leerdergesentreerd of meer onderwysgesentreerd?

T: Ongelukkig, om die waarheid te sê, dit is amper heeltemal onderwysgesentreerd want jy moet jou sillabus klaarmaak. Jou klasse is oorvol, jou sillabus is só wyd en só groot, dat jy half nie 'n keuse het nie. Jy voel soms so gefrusteerd, want dis 'n praktiese vak. Daar moet ruimte wees, nie net vir prakties in die klas nie, daar moet ruimte wees vir prakties buite. Daar moet ruimte wees vir ekskursie. Daar moet ruimte wees vir 'n klomp kleiner goedjies wat die vak gaan interessant maak wat jou as onderwyser gaan laat voel: "Ek doen, I'm doing justice to my subject" but that is almost an impossibility. So you are focused more on: "I must complete my syllabi and my admin", unfortunately, that is unfortunate.

9. R: Watter kurrikulumondersteuningstrukture bestaan hier vir u by hierdie skool

T: Vir hierdie skool, ongelukkig, moet ek sê, daar is geen ondersteuning in my vakgebied nie omdat die departementshoof het geen opleiding in my vakgebied. Sy kan nie vir my leiding gee, selfs nie eens op 'n laer vlak, graad 8 of graad 9 vlak nie. Die leiding wat sy wel kan gee is tegnies, goed wat in jou lêer moet wees, sulke tipe. As dit by die vak kom en aanbieding van die vak en daai aanvoeling van, "ek moet my kollegas in die vakgebied help om beter klas te het", miskien 'n kleiner klas of my vakgebied moet meer, it must be more streamlined and you know, that type of thing where I look after my people. I make sure the resources are there, whether it's

something like an overhead or whether I complain. I make sure that they use the computer labs. We have, I think, four computer labs. We have received CD's from the subject advisor that we can use, not once have we been allowed to use those computer labs. I have beautiful power point presentations but it's a problem because we do not have access and because the person doesn't have the knowledge and skill and insight in your subjects and the feeling for what you are doing. She's there in name only. Nothing has been done. So you feel you're talking to a brick wall because you're not going to get anything out of it.

10. R: So basies wat ek hoor is u sê die bestuur van 'n skool is ook belangrik?

T: Ja, definitief definitief. Die bestuur van 'n skool is bitter baie belangrik en dan ook, wie aan die hoof is van 'n vakgebied. Daardie persoon moet... The person must be skilled in a subject in order to be at the head of a subject, to lead and to guide the group. A leader cannot guide if you have no knowledge and no insight. And unfortunately, that is lacking at this school.

11. R: Dink u dat VOO in hierdie skool suksesvol geïmplementeer kan word? Met die opset van die skool, en die tipe leerders en die ekonomiese omstandighede in die area.

T: Nee, glad nie! Glad nie. That is impossible. Because, like I said, because teaching is so administrative and more teacher-centered. You lose a lot of good learners, you know. It's not like because a learner comes from a poor socio-economic condition that he or she is lacking mentally or in other ways, in skills. Yes, there are the problems but because there isn't the insight in dividing- if you look at the distribution of classes of this specific school you will have grade 8 classes, English where there's 30, 35 in a class and in the Afrikaans classes where there are 40, 47 in a class. The grade 9 classes have been, it's been a fact that when the learner gets to grade 9, something happens because of Biological development and a lot of other issues. So if the learner is in a bigger group in grade 9, they tend to get out of hand etc., etc. There are many reasons for that. Now, if you do not take cognisance of that, so you see, so then going over to Grade 10 you lose from grade 9 to Grade 10 in all subjects, you lose a lot of learners because just the logistics around the curriculum itself is problematic because of that big gap and also because of the way management runs the school in itself and streamlined teachers in different fields and the subject choices and so on, and subject choices of the learner is in itself, it becomes a problem to implement these two bands, especially the FET Band.

12. R: Watter struikelblokke of 'challenges' het u nou al ervaar met die implementering van AOO na VOO of Natuurwetenskap na Lewenswetenskap? Watter probleme was daar vir U?

T: Die grootste probleme was aan die begin toe hulle, when they implemented the GET and the FET phase. We had (thinking) a type of elementary workshop. Where you had teachers at tables in groups and a page or a little booklet is being read back to you and then maybe one or two

experiments are then demonstrated to you as if you are a student and you haven't been teaching x amount of years but no real input, like I said, is being asked and what's on paper is a problem so you cannot then go back to class with new vision, you really don't, you really don't. What you take back to class is, the department has changed this now and that is what I must complete, so and also, really like I said, in the past now. You don't have textbooks so you can't say 'I must use the 'Spot On' textbook for grade 8 and 9 because that's the best textbook and maybe the 'Today', those two, with your 'Teachers Guide'. No, you have to fumble around and asked and beg and find out and three different, four different schools will tell you: "no, but we think that book is better", you know, so it's a real problem

13. R: *Watter suksesse het u ervaar met die VOO fase, veral spesifiek in Lewenswetenskap? Suksesse, wat was lekker vir u met die onderrig van VOO?*

14. R: (unclear)

T: Ok, with the grade 8's especially, but then again, I have smaller grade 8 classes so you try to make their work as practical as possible in class. So that makes the lesson a little bit more interesting but then you also need to show a little bit more and with lack of resources, it's difficult...(unclear). But the grade 8 and 9 syllabus tend to, to lend itself to more to practical things that you can depend on at which school you are and how big the group is.

15. R: *Nou, ek hoor nou Gr. 10 is anders. Ek hoor in die nuanse van u stem Gr. 10 is anders. Wat is anders omtrent Gr. 10. Geniet u Gr. 10 of geniet u dit nie eintlik soos graad 9 nie?*

T: Weet jy, die Graad 9 se syllabus, op papier is interessant. Hmm, jy kan 'n bietjie meer doen, juis omdat dit twee gedeeltes, Biologie en Fisika, alhoewel ek sou verkies dat dit geskei word, want dan, because then you can do justice to both sections. Die graad 10 syllabus is ook interessant, maar ek voel dis te wyd. Dis te wyd. Om op Gr. 10 vlak vir 'n kind te begin leer en praat oor Evolusie, en so, dis bietjie te veel. Dis te wyd op daai vlak. Ek voel dan moet die graad tiene se werklading ook meer prakties wees as net, ek sien die graad 10 sillabus het ook 'n hele stel plante en goed wat hulle moet doen. Streamline dit more, sodat die fokus dan miskien op een gedeelte is van plante en dat die kind dan alles daar omtrent dit verstaan, the core knowledge of that area, than using these diverse things, so that they can get used to the bulk of work as well because moving from grade 9 to grade 10, there's are a huge difference in the bulk of work as well and the learner is not used to it. Even in the way of assessment, you see, there's a big difference between the way we assess in grade 9 and the way we assess in grade 10 and the weighting of that.

16. R: *Nou wat is die verskil?*

T: In Grade 8 and 9, the weighting of assessment is year work, 75% and exam 25%. In grade 10 it changes like that (hand gesture). Exams, 75% and year work is 25%. Now we need to find a balance... (unclear). The difference can't be that big and that immediate from the one phase to the next. It would have worked better if in Gr. 8 and 9 is 50/50 and Gr. 10 we change it a little bit and 11 and 12, now you guys are into, you see, what I'm saying. That would have worked much better. Because now the grade 9 learner that goes to grade 10, he's used to 'I don't have to work as hard because I'm in this OBE system, where I can do little assignments and little research projects and I score'. And on paper their marks actually look nice but if you look at an exam mark, then it's not a good thing.

17. R: *En die laaste vraag. Geniet u dit om onderwys te gee?*

T: Ongelukkig, nee.

18. R: *Hoekom nie?*

T: Omdat, soos ek vir jou sê, jy word nie gesien as mens nie. Not by the Department of Education, not by management, not at all. You're a number here, You're the robot that has to perform and the Department of Education says 'jump', everyone from Top-down will tell you to jump as high and that is not what a teacher should be about and that is the problem I have with teaching, the way it is now and the system. So I think I need to get out of the level at which I am now and address the problem at a different kind and from a different place because the WCED do not hear our teachers they don't pay attention. That's just how it's (unclear).

19. R: *Dankie Juffrou. Ek's klaar.*

-END-

Teacher B: Interview 2.

R = Researcher

T = Teacher

1. R: Kan U kortliks net verduidelik waar U studeer het, hoe lank die kursus U geduur het en die naam van U kwalifikasie?

T: Ek het by Hewitt College gestudeer. Ek het die HOD 4 Sekondêre kursus gedoen. Dit het 4 jaar geneem en in 1990 het ek deelyds by UWK studeer, BA, gespesialiseer in sielkunde en dan ook my honneurs in BA gedoen by dieselfde universiteit.

2. R: En watter planne het U vir U studies in die toekoms?

T: Ek beoog om my meestergraad klaar te maak en dan natuurlik ook die doktorsgraad.

3. R: By hoeveel skole het U al Skoolgegee?

T: So om en by 6 of 7

4. R: En hoe lank is U by hierdie skool?

T: By hierdie skool is ek, hmm as ek nou die aantal jare wegneem wat ek by ander skole was, is ek omtrent so 18, 17 jaar.

5. R: U bied beide Natuurwetenskap en Lewenswetenskap aan. Hoeveel graad 9 klasse het U?

T: Op die oomblik het ek drie graad 9, klass 45 in 'n klas.

6. R: Engels of Afrikaans?

T: Hierdie jaar is net engels.

7. R: En U graad 10 klasse?

T: Ek het 1 graad 10 klassie en dis net 25 in 'n klas.

8. R: Hoe sal U U houding teenoor onderwys tot op hede beskryf?

T: Tot op hede, sou ek sê, ek is diep teleurgesteld in die sisteem en natuurlik in die manier waarop die sisteme, hoe die departement probeer het om die sisteme aan te pas by die Suid Afrikaanse opset en dit het natuurlik nie gewerk nie, so ja, ek sou sê, ek is teleurgesteld.

9. R: So positief of negatief?

T: Ongelukkig negatief.

10. R: Hoe bly U op hoogte van nuwe Kurrikulumontwikkelinge?

T: Nuwe kurrikulumontwikkelinge, ons gaan na werksinkels toe. Probleem wat ons natuurlik daarmee het, die werksinkels is, dit word te laat aangebied dan is jy al halfpad deur die jaar en dan is daar 'n nuwe werksinkel.

11. R: By wie sal U se lê die verantwoordelikheid om uit te vind van nuwe kurrikulumontwikkelinge?

T: Nuwe kurrikulumontwikkelinge sou ek sê dis natuurlik ons areabestuurder wat dan dit moet laat deursyfer na die departementshoof en dan dit laat deurskemer na die onderwyser toe.

12. R: Sal U se dis maklik of moeilik om uit te vind van die kurrikulumontwikkelinge of die nuutste kurrikulumontwikkelinge?

T: Dis nogals 'n bietjie moeilik, want ons het bv. 'n paar dae gelede 'n werksinkel gehad en ja, die een dametjie van Edgemead, sy het, ek dink, hulle noem dit 'n CAPS dokument. She downloaded the CAPS document and then she spoke to the person and said: "Look what you [are] doing is not on par with what's in the document, but you're telling us this is a preliminary thing that we have to implement next year and the CAPS document is telling us this is what we have to do and the two things are two different entities. Somewhere along the line, they do overlap but not entirely. So, Ek sou sê dis 'n probleem, dit lyk asof mense gaan (verby mekaar?) bymekaar werk.

13. R: As U die keuse keuse weer aangebied word om beide leerareas aan te bied m.a.w Natuurwetenskap en Lewenswetenskap. Sal u dit weer so doen of sal u verkies om liewers een of die ander aan te bied?

T: Ek sou sê, as jy wil spesialiseer en 'n regte geronde gevormde produk of student wil uitstuur. Gee dan jou persoon of jou onderwyser 'n graad 8 klas of 'n graad 8 en 9 klas wat die persoon opvat deur 'n fase sodat die grondslagfase reg gelê is in graad 8 en 9 en dat die persoon dan weet waarmee hy of sy te doen het as hy die kind graad10, 11 en 12 opvat. Dan is jou basis reg en dan jou. As jy, When you link it to10, 11 and 12, it is so much easier because the learner knows you and you know how to work with them.

14. R: Dink u dat die leerders bevoordeel of benadeel word deur die feit dat u altwee leerareas aanbied?

T: Op die oomblik, omdat die klas so oorgroot is en die sisteem so, as ek dit mag noem, opgemors is, die leerders word benadeel, hulle word definitief benadeel.

15. R: Waarvan hou u meer Natuurwetenskap of Lewenswetenskap?

T: Lewenswetenskap.

16. R: Hoekom sal u sê, Lewenswetenskap?

T: Lewenswetenskappe is vir my. Dis 'n passie. Ek voel, as ek dit in engels mag noem. If you take in 8 and 9 and you have the Lifescience or General Science section and Physics Section together, it's kind of like, it's diverse. Its two different directions and you're not doing justice to anyone of the two so, vir my om dan Biologie, of soos in die ou dae gesê is of Lewenswetenskappe te onderig, omdat dit my passie is, sou dit my beter pas.

17. R: U het nou my volgende vraag geantwoord. So u sal verkies dat die Natuurwetenskap deel, dat die Biologie aspek en die Fisiesewetenskap deel geskei word. En dan, sal u, sou u natuurlik diesal die Biologie aspek onderig? Hmm, dink, dink u dis goed dat iemand wat bv. net 'n Biologie agtergrond het, Natuurwetenskap dan aanbied? Omdat dit beide dele insluit?

T: Hmm, ongelukkig leer ons mos nou maar om aan te pas. So op Gr. 8 en 9 vlak is die Natuurwetenskap nie te moeilik om aan te bied nie. Dit sou net beter wees as die persoon wat dan Natskei, Gr. 10, 11 en 12 aanbied dit dan ook op graad 8 en 9 vlak aanbied. Wat ek ook nie verstaan nie bv. die ander probleem met die sisteem. Hulle het Geografie en Geskiedenis in twee gesplit, wat rêrig nie so nodig is as jy nou kyk na die tipe vrae en tipe area wat gedek word nie. En dan hoekom, en dan het hulle toe Natskei en Wetenskappe, dit was eers gesplit in graad 8 en 9. En nou wat die sisteem verander het, toe sit hulle hom weer saam en dit maak glad nie sin nie.

18. R: Nou hoekom kan u dit nie so maak by die skool nie, want by ander skole bied hulle dit so aan waar die , Natuurwetenskap word geskei en die persoon wat spesialiseer in bv. in Natuur- en skeikunde bied net die Fisiesewetenskap deel aan en dan die persoon wat Biologie aanbied, bied net Biologie aspek aan. Wat stop U om dieselfde te doen?

T: Ongelukkig by ons skool is die departementshoof nie gekwalifiseerd in die vak nie so die persoon het ongelukkig nie die insig nie, En by hierdie skool, aan die einde van die dag, maak die hoof nie 'n geheim daarvan nie dat maak nie saak van die vakgebied nie, hy het die laaste sê.

19. R: In u eie woorde. Hoe sal u die oorgangsfase tussen AOO m.a.w Natuurwetenskap en VOO m.a.w Lewenswetenskap beskryf? U ervaring in u eie woorde?

T: Ok. die oorgangsfase is ongelukkig in english, I would say it's lopsided because there's hardly – there's a little bit of linkage but not much and the gap is too wide between the one phase and the next phase. So the learner fumbles when he or she gets to grade 10 and they find it very difficult to adapt. Also to the bulk of work that is being offered in grade 10 because now all of a sudden we focusing on Botany and Zoology only and not on Chemistry and Physics, whereas in the two previous grades the focus was actually in grade 9 tends to be more on physics so it's a

problem if the learner then take Life science in grade 10.

20. R: So, hoe sal u sê was die oorgangsfase vir u? Maklik of moeilik, positief, negatief?

T: Ek sou sê van die onderwyser se standpunt, is dit moeilik, want jy sukkel nou, jy moet nou opmaak vir die gaping. So nou sit jy met 'n groep graad 10 leerders. In my geval is ek 'n bietjie gelukkiger, want hulle is 'n kleiner groepie, maar jy sukkel nog steeds, want daars 'n hele gaping wat jy nou moet dek en dan ook jou sillabus. So jou werk is verdubbel.

21. R: Wat spesifiek maak dit vir u moeilik? Hierdie oorgangsfase van die een na die ander?

T: Hmm, soos ek sê, omdat die fokus was meer op die Fisika gedeelte, so dit maak dit nou moeilik. Nou moet jy weer klein goetjies weer oorvaslê. Simpel goed soos Fotosintese. Klein goetjies wat die kind nou al moet ken. Verskillende tipes plante. Zerofiete. Sulke goed. Dis goed wat die leerling nou al moet ken op daai vlak, sien jy? So nou moet jy weer herhaal en jou hele graad, wat in graad 9 gedek kon gewees het, moet jy half oordoen in graad 10.

22. R: Hoe sou u die ideale onderwyserervaring beskryf?

T: Die ideale onderwyserervaring sou wees (laggie), as ek 20 tot 25 leerlinge in my klas het met 'n... with an absolute well equipped lab where I can really do, you know, justice to my subjects because it's a practical subject. I need to be able to show learners practically, what can be done and etc. And I also need to have a budget and space to take them out to various institutions and at the moment, unfortunately, at our state schools that's not the case.

23. R: Het u houding teenoor Wetenskap m.a.v Natuurwetenskap en Lewenswetenskap toegeneem, afgeneem of dieselfde gebly gedurende die oorgangsfase van AOO na VOO?

T: Dis 'n verskillende moeilike vraag (laggie), want daar's tye wat jy jou positief voel oor sekere goed. As jy 'n groep leerders uitneem bv, ons het nou die dag 'n groep leerders uitgeneem Kistenbosch, 'n oulike groepie. En dan voel jy weer heel opgewonde oor jou vak en as jy terug kom by die skool, dis amper asof alles weer op jou inzoom en dan val alles net weer plat so aan die einde van die dag. Oor die algemeen, you act robotically. You come and you teach because you have to, unfortunately. There's no space and enough time in the day or week or year to do what you really love and would like to do with your learners.

24. R: Hoe vergelyk die klasgee metode tussen die van graad 9 en die van graad 10 m.a.w Natuurwetenskap en Lewenswetenskap?

T: U klasgee?

25. R: U klasgeemetode. Hoe vergelyk dit tussen die graad 9 en graad 10's

T: Verduidelik gou vir my wat bedoel jy met 'klasgeemetode'?

26. R: Met klasgeemetode bedoel ek. Hoe is u houding teenoor die klas teenoor die leerders, hoe is u houding teenoor die vak. Gee u op 'n baie meer leerdegesentreerde manier klas of onderwysergesentreerde manier klas. Hoe relate U met die graad 9's en met die graad 10's?

T: Ok, hierdie jaar, omdat my graad 8 groepie bietjie kleiner is, is dit bietjie makliker om meer leerdegesentreerd te wees. Ongelukkig, moet ek eerlik wees, met die graad 9's, daar's nie 'n moontlikheid dat jy leerdergeoriënteerd kan wees nie. Dit is 45, 46 in 'n klas. Jy's onder druk. Jy is sillabusgerig. Jy gee klas. Punt. Klaar. Met my Gr.10 is dit ook 'n bietjie makliker. Graad 11 ook makliker. Graad 12 ongelukkig, as gevolg van die druk van die sillabus, probeer jy by hulle uitkom vakansietye, Saterdag of na skool, maar oor die algemeen is jou werk maar meer, "ek moet my sillabus klaar kry", a.g.v die admin en goed. So, ja, jy probeer om daai balans te tref maar nie rêrig nie. Jy kom nie rêrig daarby uit nie.

27. R: En die graad tiene?

T: Met jou graad tiene, omdat jou groepe, in my geval, omdat my groepie kleiner is, is dit makliker om meer leerder, ek zoom in. Dis eintlik 'n oulike groepie wat ek eintlik graag wil opvat graad 11 en graad 12 toe.

28. R: En is u tevrede met hoe u dit nou doen?

T: Op die oomblik, Kom ons sê in engels, give and take the situation. It is the best I can do.

29. R: Hoe sal u die konteks van hierdie skool beskryf?

T: Konteks, in die opsig van?

30. R: Die konteks van die skool. As jy kyk na die tipe leerder wat hier skoolgaan, die sosiale omstandighede van die kinders.

T: By onse skool is daar nou ongelukkig leerling van alle sosio-ekonomiese toestande en bitter baie min word gedoen, as 'n mens in ag neem waardeur die kind moet gaan, is dit fisies emosioneel of ekonomies. Dit word heeltemal misgekyk, sou ek sê. They create a façade of "yes, I'm paying attention", but they're not.

31. R: Dink u dat die konteks van hierdie skool, soos wat u nou beskryf het u houding teenoor onderwys en u houding teenoor wetenskap beïnvloed?

T: Absoluut.

32. R: Hoekom sal u so sê?

T: Omdat, ek kom van 'n plek waar die onderwys word op 'n - vir my en myself, moet die onderwys op 'n sekere vlak wees en by ons se skool voel ek dat daai vlak was ongelukkig afgebring, so dit beïnvloed dan jou houding, hoe jy voel, oor waar jy is en dit werk eintlik nadelig op die onderwyser in.

33. R: Hoe vergelyk U houding, u attitute teenoor graad 9 leerders teenoor die graad 10 leerders?

T: My attitute teenoor graad 9 leerder is ongelukkig...Jy kry hulle soms jammer eintlik en omdat jou werklading so baie is en die klasse so oorvol is het jy die houding van.."die kind moet net stilbly en sy werk doen". Solank sy werk in sy boek in is en jy daarna gekyk het, is alles ok. Terwyl met my graad 10 groepie omdat hulle kleiner is ken ek elke leerder. Ek ken elke kind, ek ken die telefoonnommer ek ken jou houding as jy inkom en jou gesig trek, weet ek onmiddelik, nee, daar's fout met jou. Ek praat met hulle, ons is op 'n heeltemalle ander vlak as graad 9's, geheel en al.

34. R: Wat verstaan u onder die term leerdergesentreerd?

T: Leerdergesentreerd. Ek sou sê leerdegesenteerd is wanneer die onderwyser meer op die kind konsentreer. Nie net sy leer volgens 'n sillabus nie, maar ook waarom en wat met die kind, in sy algeheel aangaan. Dit sou ek sê is meer leerdergesentreerd, want ek moet verstaan hoekom jy met tye nie wil werk nie of hoekom jy met tye rebelleer. Hoekom jy met tye besluit jy het nou jou boek aspris by die huis vergeet en sodat die werk kan ook effektief gedoen kan word want dit kan mos nou nie gebeur in 'n klas van 46 nie.

35. R: Dink u dat die konteks van die skool 'n effek het op die suksesvolle implementering van VOO?

T: Absoluut.

36. R: Hoe beïnvloed die konteks van hierdie skool die implementering van VOO?

T: Kyk, omdat... Ek kan nie VOO implementeer in 'n skool waar die meerderheid van die leerlinge se sosio-ekonomiese omstandighede van so 'n aard is dat ouers nie rêrig behulpsaam kan wees nie. The child has no support system when he goes home. Most of our learners, when they go home, they are the mother or father. They go and fetch children at the crèche or cooks the food or clean the house or do the washing etc. Die sisteem...It's geared toward children who have who have support, who have access to libraries, internet etc. And our learners at this school, in the context where they come from and with the way things are done at school and what's available at

school, its failing, its failing.

37. R: Graad 9 bestaan uit 75% uit jou deurlopende assessering. Graad 10 is dit 25% en dan 75% is natuurlik jou toetse en jou eksamens. Hoe beïnvloed, of het dit 'n effek op die houding van teenoor die oorgangsfase van AOO na VOO?

T: Op my houding?

38. R: U houding.

T: Ja, ek het 'n baie groot probleem daarmee, want jy kan nie 'n kind, kyk in die een fase word die kind half... The child is spoon-fed in a certain way because I can pass without writing my exam because my year mark is 75% and then all of a sudden in grade 10, 11 and 12, I have to work so much harder and all of that because it's then the reverse. So ek het 'n groot probleem daarmee. Vir my behoort dit of 50/50 te wees in graad 8 en 9 sodat die kind dan 'n meer gebalanseerde idee kan kry en harder kan werk. En aan die einde van die dag kry jy 'n beter student. As wat jy die groot gaping tussen die twee het en dan "it leads to failure in a big way.

39. R: Het u hulpbronne tot u beskikking? Dink u dat dit 'n effek het op die suksesvolle implementering van VOO

T: Definitief. Die skool het amper geen hulpbronne vir Lewenswetenskappe en Natuurwetenskappe nie.

40. R: Is u gelukkig met u klaskamer? Dink u dis reg toegerus vir die onderig van wetenskap?

T: Nee, alles wat in die klas is het ek nou ongelukkig ingebring. Ek het bv, ek kan nie my bord effektief gebruik nie. Dis die ou swartborde. Hy's nou al 5 of 6 jaar stukkend. Dit was aangemeld. Dit was 100 keer het ek aangevra hulle moet die bord regmaak en so aan en so aan. Absoluut niks word gedoen nie. As ek 'n oorhoofse projektor wil gebruik, wat ook al argief is, 'n argiewe metode, moet ek een gaan leen. Ek is nou van plan om, as ek nou aanbly vir nog jaar of twee, moet ek maar vir my 'n projektor kry, sodat ek my laptop kan gebruik as hulpmiddel, verstaan jy,

41. R: Watter suksesse ervaar u met die implementering van VOO?

T: (Sug)... Dis baie moeilik. Daar is rêrig geen suksesse nie. Ek is baie jammer. Ek kan nie vir jou sê nie. Nee

42. R: En wat was nie vir u lekker nie? Waarmee het u gesukkel met die implementering van VOO?

T: Kyk, soos ek vir jou gesê het. Jy kan nie 'n sisteem implementeer... You cannot implement this across the board and then you have rural schools and school like our school where on the

surface we might have a computer lab for CAT, a computer lab for maths which is not effectively used also, but then there's nothing else. So how do you implement a system, where the learner aren't, who aren't.. Ag how do I say this? Waar hulle nie bloodgestel word aan resources en material ensoaan nie. Verstaan jy?

43. R: En hoe vergelyk dit met die AOO band?

T: Nee, dis nie rêrig... Dis dieselfde. Dis nie anders nie.

44. R: Wat was u...So u sê, daar was geen suksesse met die implementering van VOO nie of u het baie gesukkel?

T: Ek sou sê die bietjie sukses wat daar was is op die man af en op die oog af, was die kind nou seker meer geforseer, in 'n mate om 'n bietjie meer navorsing te doen. Projekies wat mense nou vir 'n portefeuljies moes uitwerk is was miskien 'n bietjie meer praktes, maar nie rêrig nie, want die manier hoe ek my vak aangebied het, dit was maar net so. Ek het maar dat die kind 'n model maak en dan dit bepunt, of debateer of wat ook al. So vir my was dit rêrig. Ek weet nie hoekom mense so 'n groot saak daarvan gemaak het nie.

45. R: En dink u die opleiding wat u ontvang het. Dink u die opleiding was genoeg of voldoende vir u om al die verantwoordelikhede te dra van die nasionale kurrikulumverklaring?

T: As jy nou Vrydag se opleidingsessie in ag neem. Vrydag se opleidingsessie het meestal oor Evolusie gegaan. Dit was in engels sê ons, "too little, too late". En dit is die probleem wat ek met hierdie opleidingsessie het.

46. R: So dit was nie voldoende nie?

T: Nee, Dit was vir my nie voldoende nie.

47. R: Hoe was 'n kontak met die vakadviseur. Hoe was die kontak hierdie jaar?

T: Hierdie jaar was dit 'n klein bietjie beter, maar dis het die skool in die moeilikheid is, dink ek. Die skool is 'n lasskool. So hy het nie rêrig op Lewenswetenskap ingezoom nie, maar die vakadviseurs was 'n bietjie meer sigbaar.

48. R: So watter leiding bv. moet die WKOD gee sodat u heeltemal tevrede kan voel en sodat u kan voel u word ondersteun bv. as onderwyser.

T: Ek sou sê, ondersteun my in die sin van, het 'n bietjie meer sê. Ek verwag die WKOD moet bietjie meer sê het van grootte van klasse en dan ook sorg dat klasse korrek ingerig is dat skole min of meer dieselfde handboeke gebruik en hulpmiddels het en so aan. Dan help jy die onnie. Op die oomblik...We're being dumped. Do that and that's it! And no proper help is being given.

49. R: En dan net weer. Hoe ervaar u onderwys hierdie jaar en vir die toekoms. Hoe dink u hoe gaan die toekoms wees vir u?

T: (lag) Die toekoms vir my sou wees, dat ek my meestersgraad moet klaarmaak en uit die onderwys uit moet beweeg.

50. R: (onduidelik.)

T: Dit was vir my oor die afgelope paar jaar, vandat die sisteme so aanmekaar verander het. Dit word net meer negatief en dis nou ongelukkig hoe ek nou voel.

-END-

ADDENDUM H: TEACHER C INTERVIEWS TRANSCRIPTIONS

Teacher C: Interview 1.

R = Researcher

T = Teacher

1. R: *Hoe was u ervaring tot dusver met die AOO?*

T: Hmm, wel, op hierdie stadium kan ek net sê dat ek dink die werk te min is en omdat daar nie 'n sillabus is nie, maak dit die werk wat gedoen word, ek dink nie, in die AOO band heeltemal behandel word op die ou end nie.

2. R: *En u persoonlike ervaring. Is dit positief of negatief?*

T: Hmm, ek ervaar dit negatief. Hmm, ek dink omdat, juis daarom omdat so vir ons onderwysers baie moeilik maak, want jy moet ekstra werk gaan soek en ja, probeer bou op werk wat daar nie was in die verlede dan nie.

3. R: *En u ervaring met die VOO, Lewenswetenskap?*

T: Hmm, ek, nee, baie beter, persoonlik. Ek dink wel dat die leerders baie swaar kry. Ek dink dat die nuwe sillabus, soos hulle hom nou verander het, wel voldoende is, plante insluit en diere insluit en dat daar genoegsame werk is. So daarmee is ek tevrede.

4. R: *Dink u dat Natuurwetenskap, hmm, genoegsaam die leerders voorberei vir Lewenswetenskappe in Graad 10?*

T: Glad nie! Glad nie! Hulle sukkel verskriklik, juis omdat hulle nie die goeie grondslag het nie.

5. R: *Wat dink u, behalwe die grondslag, wat is die probleem?*

T: 'n Ander probleem is, omdat Lewenswetenskappe 'n leervak is, het hierdie leerders nooit geleer om goed te memoriseer nie. Hmm, ja. en daarom dink hulle at hulle met die minimum gaan wegkom en hulle punte is baie swak.

6. R: *Wat is u dominante styl om klas te gee vir Natuurwetenskap en Lewenswetenskap? Is dit meer 'learnercentred' of is dit teacher centred. Of is dit beide?*

T: Nee, ek is nog teacher-centered, baie. Daar's wel tyd vir groepwerk en interaksies en so aan, maar meestal neem ek maar die leiding.

7. R: *Watter kurrikulumondersteuningsstrukture bestaan hier by die skool vir u?*

(T is onseker oor vraag)

8. R: *Dis nou soos, is daar iemand wat u in kennis stel van nuwe ontwikkelinge vanaf die department af, vind u maar al hierdie tipe goed alleen uit?*

T: Hmm, wel, ek is seker dat ons vakadviseur so half verantwoordelik is daarvoor en dat hierde goed wel per faks of met die vergaderings moet ons gekommunikeer word. Alhoewel, hierdie jaar was daar geen vergaderings nie, geen fakse nie. Hmm, ja.

9. R: *So u was baie alleen?*

T: Baie alleen,. Geen, geen, geen ondersteuning nie, spesifiek hierdie jaar nie. En geen kontak met ander onderwysers nie, niks hoegenaamd nie.

10. R: *En hier by die skool? Is daar soos 'n mentor vir u?*

T: Ja, definitief! My vakhoof is altyd daar vir vrae beantwoord. Vir ondersteuning, vir raad gee. Ek kan altyd op hom terugval en steun baie op hom.

11. R: *Dink u dat VOO, FET, hier in hierdie skool sal succeed?*

T: (Sug) Hmm, met Lewenswetenskappe, spesifiek, kan ek sê dat ons getalle van graad 10 leerders wat die vak neem, baie agteruit gegaan het, want die storie loop by die juniors dat dit 'n baie moeilike vak is, omdat hulle nie kan leer nie, so hulle punte is laag, so ons sien elke jaar dat die hoeveelheid leerders wat die Lewenswetenskappe neem, minder raak. Hmm, ja, so ek weet nie of dit so 'n positiewe ding is op die ou end nie.

12. R: *Watter struikelblokke of watter 'challenges' het u nou al ervaar met die implementering van AOO en VOO?*

(T: onseker oor vraag)

13. R: *As u kyk na beide fase en die hele oorgangsfase van die een na die ander, is dit moeilik. Watter struikelblokke is daar. Hoe ervaar u dit. Wat is moeilik omtrent die hele oorgangsfase?*

T: Wel, die oorgangsfase, spesifiek. Hmm, dis nou weereens dat daar nie genoegsame werk gedoen word nie in die AOO, Graad 9 nie. Hmm, so daarom skrik die kinders hulle dood, as hulle die hoeveelheid werk sien en hulle sê vir jou dat die terme te veel is om te memoriseer. Hulle sukkel daarmee spesifiek. Ja, so, dis veral. En om vir hulle te bly interessant maak. Om hulle te lok om dit te neem en omdat ons nie rêrig die 'resources' het om dit te kan doen nie, verg dit nogals baie van 'n mens (onduidelik)

14. R: *En, wat is lekker vir u met die hele VOO, vir FET of Graad 10 Lewenswetenskap?*

T: Dis vir my baie lekker in die sin dat hulle met die nuwe sillabus dit baie prakties gemaak het vir die leerders. As jy 'viruses' gedoen het, dan doen hulle virusinfeksie, so dis nie 'n ding wat hulle in die lug in bly hang nie en abstrak is nie. Jy doen lekker siektes en hulle vind dit baie interessant. En veral met die Graad 12's nou al, hulle kommunikeer lekker, ja, en dis lekker as hulle ander vrae begin vra want ek dink hulle begin nou so half bietjie verstaan maar hoe werk my liggaam. En ek dink die ander 'Environmental Studies', daai goed, is vir hulle 'n bietjie vaag, maar ja, ek dink die menslike liggaam is lekker en dis lekker as om meer kan uitvind, veral as 'n mens nie vrae weet nie (.....) terug te rapporteer, so daai aspek is vir my lekker. Daar's meer interaksie.

15. R: *En dan die laaste vragie. Is u gelukkig met die klaskamer? Dink u dat die klas reg toegerig is vir Lewenswetenskappe of Natuurwetenskappe?*

T: Ja, wat (stem gaan op-glo nie wat sy se nie?) Ek dink vir eksperimente is daar dalk meer toerusting (nodig) as wat ons het op hierdie stadium. Ek dink dat aan die anderkant, dat 'n mens baie meer interaktiewe goed, soos daai interaktiewe borde behoort te kry, want ek dink daarmee kan jy lekker vir hulle 'video clips' wys en kinders 'relate' baie lekkerder met rekenaars, want dit is 'n wêreld wat hulle verstaan. Hmm,ja, so daar's nou (onduidelik) Maar verder dink ek dat my klas orraait is (onduidelik).

16. R: Goed, ons is klaar!

T: Is dit al?

17. R: Dis al, juffrou. Baie dankie.

-END-

Teacher C: Interview 2.

R = Researcher

T = Teacher

1. R: Kan jy net kortliks verduidelik waar U studeer het, hoe lank die kursus geduur het en die naam van jou kwalifikasie?

T: Ek het by Kopsies, Bloemfontein Universiteit gestudeer. Ek het eers 4 jaar verbruikerswetenskap gedoen en toe 'n jaar Nagraadse Onderwysertifikaat net.

2. R: By hoeveel skole het jy al skoolgegee?

T: In SA, net 1 en dan in London "supplied teaching" gedoen, by verskillende skole.

3. R: Wat verkies jy? Verkies jy Suid Afrikaanse Skole of dit wat U ervaar het in London?

T: Definitief Suid Afrikaanse skole.

4. R: Hoekom?

T: Die dissipline in London was vir my baie erg.

5. R: 'n Mens sal dink dis erger hier in Suid Afrika.

T: Neel, Ek het gedink hulle is engeltjies. Rêrig.

6. R: Hoe lank is jy nou al by hierdie skool?

T: Ses jaar.

7. R: Jy bied beide Natuurwetenskap en Lewenswetenskap aan. Hoeveel graad 9 klasse het jy?

T: Ek het 4 Gr. 9 klasse.

8. R: En Gr. 10 klasse?

T: Net een.

9. R: Jy het nou al 6 jaar ervaring, nê? Hoe sal jy jou houding teenoor onderwys op hede beskryf?

T: Weet jy, ek dink 'n mens gaan maar deur fases en (oorweeg antwoord). Ek dink tog in die toekoms, meeste mense en selfs ek, is nie baie positief oor die onderwys nie, en ek dink net veral

as 'n mens nou weer luister na die matriekuitslae en hoe daar so half getamper is is daarmee en jy weet nie hoe geloofwaardig dit is dan nou nie, dan twyfel 'n mens nogals 'n bietjie maar ek dink met die nuwe sillabusse en CAPS en daai goed wat hulle uitgebring het wat 'n mens nou al half vooruitsig het oor wat gaan gebeur, dink ek tog hulle gaan terug na die inhoudsgebaseerde goed. So, ek glo dat daar hoop is vir die onderwys vir die toekoms.

10. R: Wat verkies jy? Verkies jy hierdie inhoud en sillabus? Of verkies jy die ou uitkomsgebaseerde onderwys?

T: Nee, ek is glad nie pro- uitkomsgebaseerd nie en ek dink nie 'n mens moet veel redes te verstrek nie. Ek dink hy't homself sommer as 'n flop bewys. Ek dink laat as 'n mens teruggaan na die inhoudsgebaseerd toe die kinders weet op die ou end hulle leer iets. Dit is maar 'the way to go'.

11. R: Hoe bly jy ophoogte van nuwe kurrikulumontwikkelinge?

T: Jong, dit is maar moeilik. Dit wat ek, sê maar nou weet van die graad 9 goed wat kom het ons maar van die internet af gekry, want andersins, vakadviseurs en sulke goed sien ons glad nie so die onus is maar op jousef om op hoogte te bly.

12. R: En dan kom ons nou by die volgende vraag. Wie dink jy by wie lê die verantwoordelikheid om uit te vind van nuwe kurrikulumontwikkelinge? Sal jy sê dis jou verantwoordelikheid of dan die van die WKOD?

T: Ek sou graag wou gehad het dat die WKOD dit moet doen. Hmm, ek dink dit is hulle verantwoordelikheid om hierdie goed vir ons deur te gee. Ja, want dit kom tog van topstruktuur af, ek dink, dit is ons as onderwysers het genoeg werk om ons mee besig te hou as om nou nog na ure te gaan soek vir hierdie goed.

13. R: Sal jy sê dis maklik of moeilik om uit te vind van die nuutste kurrikulumontwikkelinge?

T: Jong, hmm, ek dink as jy net eers weet waar, is dit dalk maklik, maar daar is soveel goed wat nie aan al die skole gekommunikeer word nie, dat almal ook nie dieselfde inligting kry nie. Ons het nou, met die graad 12's toe ons gaan merk het, was daar hierdie een lang vraag gewees oor stamselle en baie skole het dit geweet, want hulle se daar was 'n website, op wie een van die eksamenators so half gesê het, kyk daarna en die ander skole het nou niks geweet nie, so hoe regverdig is dit dan nou? Ja.

14. R: As jy weer die keuse aangebied word om Natuurwetenskap en Lewenswetenskap aan te bied. Sal U dit weer so doen of sal U verkies om liewers die een of die ander aan te bied?

T: Weet jy, as ek die keuse het sou ek lievers Lewenswetenskap wil doen, want dit is waar my passie lê. Ek is nie so heeltemal, sê nou maar clued up met die skeinat van Natuurwetenskap nie en ongelukkig het dit 'n invloed op hoe 'n mens klas gee en hoe entoesiasies jy daar oor is en hoeveel inligting jy kan deurgee dan die ou end dan die kinders.

15. R: So dink U die leerders word bevoordeel of benadeel deur die feit dat U beide leerareas aanbied?

T: Weet jy, Ek sou wou glo dat hulle nie benadeel word nie, want 'n mens doen tog jou bes, om nou maar te gaan oplees daaroor, so bevoordeel dalk nie, maar benadeel definitief ook nie.

16. R: Waarvan hou jy meer? Natuurwetenskap of Lewenswetenskap?

T: Nee, Lewenswetenskap, verkies ek.

17. R: Hoekom?

T: Hmm, ek dink net dit is iets meer konkreefs. 'n Mens verstaan dit makliker en dis tog lekkerder om oor jou eie liggaam te leer, hoe dit werk en dit is so 'n wye en interessante veld vir my.

18. R: As jy die keuse aangebied word. Sal jy dit aanbied soos wat dit nou NW, Fiesiese wetenskap en jou lewenswetenskap. Of sal jy dit apart aanbied bv. net die spesialis sal daai deel aanbied en dan die van fiesewetenskap, bied daai deel aan.

T: Ek sou wil kies om net die lewenswetenskap deel te wou gee vir die redes wat ek reeds genoem het. Ek dink net jou entoesiasme word aan die kinders oorgedra as jy self 'n passie het vir iets.

19. R: Hoe word dit by [skool se naam] gedoen?

T: Nee, Jy bied nou maar altwee aan. Ek weet nie hoekom nie. Ons rooster is nooit anders aangepas of dit gaan net nie so werk nie, maar dis nie asof ons daar twee kollegas is wat in graad 9 klas op dieselfde tyd sien nie, so dit is nie regtig moontlik om te ruil, die een deel en die ander deel dan nou nie.

20. R: In jou eie woorde. Hoe sal jy die oorgangsfase van AOO na VOO bekryf m.a.w van NW na LW. Jou ervaring.

T: Weet jy, Myne? Nie hoe dit vir die kinders is nie?

21. R: (onduidelik)

T: Ons sukkel geweldig. Ons as onderwysers sukkel, omdat daar nie genoeg inhoud is in graad 9 nie so nou kom hulle in graad 10 en dan is dit vir die leerders onsettend moeilik, want nou is dit skielik massas werk waaraan hulle glad nie gewoond is nie. Dis al hierdie onbekende terme wat

hulle moet leer en dan raak dit vir hulle moeilik en natuurlik is dit vir ons ook moeiliker, want jy moet so half ekstra hard werk om nou hierdie goed by hulle tuis te bring.

22. R: En vir die leerders? Hoe sal jy sê, hoe beleef hulle dit?

T: Weet jy, dis vir hulle net so moeilik en jy kan dit ook sien aan hulle punte dat alhoewel hulle hard werk, sukkel hulle met die volumes werk wat gedoen word en ek dink nie daar word so half gebou op werk nie, dat jy in Gr. 9 'n bietjie doen en dan in Gr. 10 bietjie meer en so aan, so hulle het nie eers daai basiese grondslag van hierdie werk nie. Als is nuut en vreemd vir hulle.

23. R: Beskryf asb jou ideale onderwys ervaring?

T: Soos wat ek sal klasgee?

24. R: Wat wil jy hê as onderwyser? Wat sal vir jou ideaal wees, die skool, die omstandighede, die konteks. Wat wil jy hê sodat jy volkome gelukkig voel.

T: Ek dink nie dit sal eers vir my te veel... Ek dink nie ek sal te veel vra nie. Ek sal net só graag 'n bietjie meer media in my klas in wou gehad het en ek sou verskriklik graag meer insekte wou gehad het. Ek sou wou gehad het dat 'n vakadviseur die skool persoonlik moet besoek en dat hulle ook 'n bietjie 'n mens 'n bietjie, sê nou maar help met assesseringstake, want 'n mens weet nie altyd is jy op die regte spoor is nie en jy doen een ding jaar na jaar na jaar net omdat jy nie tyd het om iets nuuts op te stel nie, so daar sou ek meer leiding wou gehad het en ja op hierdie stadium het ek 'n vakadviseur, ag 'n vakhoof wat baie clued up is en 'n mens goeie leiding gee, so dit is reeds in plek.

25. R: Het jou houding teen wetenskap, dis nou Natuurwetenskap en Lewenswetenskap, toegeneem, afgeneem of dieselfde gebly gedurende die oorgangsfase van AOO na VOO?

T: Hmm, sjoe! Weet jy, ek dink aanvanklik was dit vir ons ontsettend moeilik. Ek wil amper vir jou sê, 'n mens se houding het so half negatief begin raak, omdat jy sien hoe sukkel die kinders en daar is nie fondasies nie, sê maar nou, vier jaar terug, maar ek toe baie skole het toe ook, so half begin reg in eie hande begin neem en so half besluit al sê jy, dit is nie wat ons moet doen nie, Ons gaan dit so doen, want dit maak die lewe vir ons beter en vandat 'n mens daai goed in plek het, raak dit vir 'n mens makliker en 'n mens sien die verskil.

26. R: Hoe groot is jou klasse? Die van Gr. 9 en die van Gr. 10?

T: My Gr. 9 klasse is so dertig in 'n klas. En my Gr. 10 klas, vyf en twintig.

27. R: Lekker klein.

T: Heerlik.

28. R: Hoe vergelyk jou klasgee metode van die van Gr. 9 en die van Gr.10?

T: Weet jy, dit bly maar redelik dieselfde. Baie verduidelik, soos ek verduidelik het. Ek is nie 'n groot voorstaander van UGO nie so ek het nog maar my metodes van, ek staan voor in die klas en gebruik transpirante en die bord en so aan om te verduidelik en weer te verduidelik en dan is daar gewoonlik nog 'n oefening wat hulle moet doen daarna. So ek dink met die klasgee self is daar nie vreeslik van 'n verski nie. Die pas en tempo waarteen jy werk is dalk vinniger met graad 10, maar ek dink tog 'n mens se houding teenoor die kinders is anders. Dit verskil definitief.

29. R: Wat is jou houding teenoor die van Gr. 9 en die van Gr.10?

T: Graad 9's. Hmm, wil 'n mens so half net deur die werk kom en 'n mens is nog ontsettend streng met hulle. En in Gr. 10 het hulle so half 'n bietjie groot geword, meer selfstandig, daars 'n bietjie meer interaksie en natuurlik help dit ook dat die klasse 'n bietjie kleiner is. Dus meer persoonlik.

30. R: Van wie hou jy meer?

T: Nee, definitief my Gr. 10's.

31. R: Is jy tevrede met hoe jy dit nou doen? Of hoe sal jy dit verkieslik wil doen? Of is jy tevrede met hoe jy dit nou doen?

T: My Klasgeemetode?

32. R: Ja.

T: Weet jy, Ek sal verskriklik graag vir die leerders meer interessant wou maak. En hierdie stadium, voel ek so half, jy kan dit net doen deur rekenaar media te gebruik, die internet en so, so ek sou verskriklik graag meer 'real' goed wil wys en wat vir hulle interessanter is.

33. R: Nou wat stop jou nou om nie dit te doen nie?

T: Wel, op hierdie stadium het ek nie 'n dataprojektor in my klas nie, in die eerste plek en dan kan ek dit êrens anders gaan doen, maar dan moet ek nou met 'n kollega klas ruil, so dit verg nogals baie beplanning en dan moet julle altwee eers gaan vra, is dit reg? En jy moet voor die tyd gaan opstel en reël dat jou klas soontoe gaan en al die dinge.

34. R: Hoe sal jy die konteks van hierdie skool beskryf?

T: Ek dink ons tipe leerders doen moeite om by ons skool te kom. Hulle wil graag daar wees en dis omdat ons skool se dissipline baie goed is. Dit is nie jou ryk tipe kind nie. Ek dink die meeste van hulle kry maar swaar. Ek dink ook hulle kom uit huise waar dit miskien ook moeilik gaan en waar hulle in die middag moet huis toe gaan en self nog bietjie gaan werk in die huis en boeties

oppas en daai tipe van ding. So ja, ek dink nie ons kind het dit net maklik nie en dat hulle die geleentheid het om net op skoolwerk te fokus nie.

35. R: *Dink jy die konteks van die skool beïnvloed jou houding teenoor onderwys of die skool selfs? Of selfs teenoor die leerders?*

T: Ek dink, definitief dit het 'n invloed op 'n mens. Hmm, so half wat jy verwag, wat jy gaan kry van die leerders, dat 'n mens nie daarvoor onrealisties moet wees nie en daarom negatief moet raak as jy nie net A-kandidate het nie. Hmm, maar ek dink ook, 'n mens is baie meer simpatiek teenoor hulle. Hmm, en 'n mens probeer vir hulle die beste gee, want ek dink, dit is hoekom hulle daar is. Hulle verdien net die beste. Ja.

36. R: *Hoe vergelyk jou houding teenoor die van Gr. 9 leerders en die van Gr. 10 leerders?*

T: Nee, Ek hou nie van die graad 9 kinders nie, want dit is nou juis waaroor ek wil begin kla. Hulle is vir my super irriterend. Ja, Soos ek reeds gesê het, die Gr.10's het nou al 'n bietjie groot geword en hulle weet al waar die perke is. Die graad negetjies moet jy nog baie babysit en sê: "Nee, so doen ons dit nou en moenie dit doen nie". Ja, en Gr. 10 het hulle mos nou gekies om hierdie vak te he , so dit is, jy kan vir hulle sê, "man, jy wou hier gewees het. Niemand het vir jou gese jy moet kom nie", So hulle het nou al 'n bietjie verantwoordelikheid ook van keuses maak en saamleef met dit.

37. R: *In Suid Afrika is daar mos nou net jou primêre skole of jou gewone primere skole en jou gewone sekondêre skole, jou hoerskole. Oorsee, Amerika, Korea het hulle drie verskillende skole Jou Elementary, Middle school en hoërskool. Dink jy hoe Suid-Afrika dit doen is reg, want graad 9 is eintlik jou graad 3 van jou middle school. Dink jy Suid-Afrika moet liewers in daardie rigting in beweeg? Of is die twee tipe skole reg?*

T: Weet jy, Ek weet nie regtig nie. Ek het nie 'n opinie hieroor nie omdat ek nie weet hoe werk dit met daai skole nie.

38. R: *In middle school is gewoonlik jou graad 7, graad 8 en graad 9. Hoerskool is graad 10-12.*

T: Wat ek wel daarop sal kan sê, kyk ons het ook daai graad 7, 8 en 9 band. so dis vir ons baie moeilik om te weet wat het hulle nou al in graad 7 gecovert het, so dit maak vir my sin dat daai band dan saam is , maar ek dink 'n mens aanvaar so wat hier aangaan, dat jy amper nie dink dat dit anders moet kan gewees het nie.

39. R: *Wat verstaan jy onder die term leerdergesentreerd?*

T: Leerdergesentreerd, is dan nou seker maar dat hulle al die kennis self moet ontdek, hmm, en ja UGO.

40. R: Dink jy die konteks van die skool het 'n effek op die suksesvolle implimentering van VOO m.a.w Gr. 10, spesifiek graad 10?

T: Hmm, ek dink nie by ons maak dit rêrig eers saak nie. Ek dink nie dit het rêrig iets te doen met die konteks nie. Dit het niks daarmee te doen nie. Dit gaan amper hoe ons dit van bo af kry, Hoe dit van die topstrukture af kom, want as hulle goed in plek is, is dit maklik om dit vir die kinders te gee, want daars niks fout met ons kinders nie.

41. R: En hoe is dit van bo af?

T: Nee, daar is niks van bo af nie. Dit voel vir my hulle kom nou eers 'n bietjie by.

42. R: (onduidelik).. hoe was dit hierdie jaar by jou?

T: Nee! nee, daar was niemand nie, niks nie. Ons het op die ou end in ons span besluit, by die skool om meer Biologie by te sit by die Lewenswetenskap deel sodat die leerders in Gr. 9 dan daai grondslag het waarop 'n mens kan bou. Maar nee, vakadviseurs, enige kontak. Nul. Daar was nie. Ek het hom gesien 'n by graad 12 vergadering.

43. R: Was dit die CAPS ding gewees?

T: Nee, Ja, Ja, Hulle het die CAPS met ons gedoen en so 'n internet, so interaktiewe les oor Evolusie.

44. R: Die assessering in Gr. 9 en Gr. 10. Graad 9 is 75% jou DASS en 25% jou toetse en eksamen. Gr. 10 is dit natuurlik die teenoorgestelde, 25% toetse en eksamen. Ag 75% toetse en eksamen en 25% jou DASS. Hoe beïnvloed dit jou houding teenoor die oorgangfase van AOO na VOO?

T: Weet jy? 'n Mens is definitief baie negatief daaroor, want dit maak onmiddellik dat die leerders 'n wanpersepsie het van hoe hulle eintlik doen. En hulle kom in Gr. 10 en dan dink hulle, "Ek moet die minimum te doen en ek kom nog steeds deur" en dan kry hulle nou 'n verrassing van Gr. 10 is dit net mooi anderste om. So ja, dit is definitief nie goed nie.

45. R: Die hulpbronne met jou beskikking. Het dit 'n effek op die suksesvolle implimentering van VOO of Lewenswetenskap?

T: Ja, Ek dink verseker so. Hulpbronne eerstens, moet vir 'n mens help, soos vakadviseurs. As hulle vir 'n mens so 'n bietjie leiding kan gee, sou dit verseker baie meer gehelp het en dan, ek dink, ander hulpbronne wat 'n mens by die skool self het, soos ekstra boeke soos internet in die klas en daai tipe van goed sal verseker help om dit vir 'n mens makliker te maak.

46. R: Is jy gelukkig met jou klaskamer. Hoekom? Hoekom nie?

T: Wel, op hierdie stadium glad nie, want hy's 40 grade. (grap). Nee, ek is gelukkig met my klaskamer. Dit is 'n laboratorium, so ons kan eksperimente daar doen as dit moet. Daar is 'n TV wat ek vir hulle videos of DVD's kan wys. Dis net jammer dat dit so moeilik is om dit in die hande te kry, want dit wat ons het, is baie verouderd. Ek het al gaan internet searches doen en dis regtig moeilik om iets te kry wat jy net daar kan gebruik. Dit is 'n hele DVD gaan sê nou, gaan oor klomp goed, maar daar is nou net 'n stukke in van sê nou maar van fotosintese of wat ook al. So dit sou 'n mens wou verander, maar soos ek noem, dit het ek. Ons het mikroskope wat 'n mens kan gebruik. Op hierdie stadium sou 'n dataprojektor baie lekker wees, ja.

47. R: Watter suksesse het jy ervaar met die implementering van VOO of Lewenswetenskap in graad 10?

T: Dit het laas jaar baie goed gegaan. Hulle was nie 'n groepie nog wat die blootstelling gehad het in Gr. 9 aan die ekstra notas en so wat ons ingesit het nie. So, ek glo dat hulle sukses toegeskryf was aan iemand wat in my glo en positive reinforcement en hou van die juffrou en daai tipe van ding.

48. R: Hoe vergelyk dit met die AOO of Natuurwetenskap?

T: Ja, Weet jy nou moet ek vir jou sê, dit gaan nou weer oor. "Ek hou ook nie van hulle rêrig nie". So 'n mens het nie daai band nie. So dus nogals moeilik om vir hulle te motiveer en hulle doen onsettend sleg as dit kom by 'n toets of 'n eksamen. En dan sit jy die jaarpunt by en dan lyk die prentjie mos nou heel anders weer.

49. R: Wat was vir jou lekker met die implementering van VOO?

T: Weet jy, met die VOO het hulle toe tog vir ons later meer vaste riglyne gegee. So jy het geweet, dit wat ek met hierdie kind doen is wat hulle van my verwag om te doen en dis wat almal doen so dit het regtig baie gehelp dat daar van topstruktuur sê nou maar , meer vaste riglyne gekom het. Wat almal weet wat van hulle verwag word.

50. R: Die opleiding wat jy ontvang het. Professioneel natuurlik die (onduidelik) CASS tipe, ag die opleidingsessies. Dink Jy dit was voldoende vir jou om die NCS te implimenteer?

R: (onduidelik)

T: Nee, want hulle mors so 'n mens se tyd. Iemand het vandag ook gesê: "weet jy, ek gee nie om na vergaderings toe te gaan nie, as ek net iets leer", want dit voel vir my hulle weet self ook nie wat om met jou te maak nie en as jy daar sit nie. Jy moet dit bywoon. En dis waarom ek se die groepe is ook te groot. Dit voel vir my regtig die vakasadviseurs kan met persoonlike besoeke doen en dan vir jou help met goed waarmee jy persoonlik sukkel, want dis mos nou ook nie vir almal dieselfde nie.

51. R: Hoeveel is julle gewoonlik in 'n groep wat gaan vir hierdie opleidingsessies, min of meer?

T: Ek sou raai 30, 40.

52. R: Het jy vertroue in die mense wat die opleidingsessies kom aanbied? Dink jy hulle weet waarvan hulle praat?

T: Ek dink nie so nie, want as jy 'n vraag so vra, weet hulle ook maar nie so, nou weet ek nie of hulle net nie weet nie of as daar, die mense bo hulle ook nie geen idee het nie. Ek weet nie, ek weet nie, maar 'n mens kry so half die idee dat, hy weet maar net soveel soos ek.

53. R: Het die WKOD jou ondersteun hierdie jaar?

T: Nee wat, soos ek reeds vroeër genoem het. Ons het 'n vergadering gehad vir Lewenswetenskappe en dit was om die graad 12 CAPS te bespreek en dit was al. Dit was al. Daar was verder geen kommunikasie nie. Niks, so nee.

54. R: Wat kon die WKOD doen sodat jy kan voel jy word geondersteun?

T: Ja, soos ek reeds genoem het. Ek wil graag hê. Ek weet nie wat doen 'n vakadviseur andersins nie. as jy hulle nooit sien nie. Wat doen hulle?

55. R: Hulle is veronderstel om skoolbesoeke te doen?

T: Maar dit is mos nou presies wat ek graag wil sien hulle moet doen en dat hulle... Dis wat ek sê. Ons het nie tyd nie. Hulle kom by baie skole om bv. vir mens iets saam te stel en te sê hier is voorbeelde van assesseringsgoed wat jy kan gebruik, of so iets doen. Hulle het met die graad 9 goed laas jaar moes ons mos nou vir die eerste keer afdeling B opstel. Toe, nadat ons die eksamen vraestelle opgestel het kom daar 'n email deur, nadat ek vir Ellen gevra het, by die graad 12 ding. "Hello, hoe moet ons eksamen vraestel lyk?" Na dit het die email deur gekom.

56. R: So daar was nie 'n pilot vraestel of (onduidelik) gewees nie?

T: Niks. Hulle het ons belowe hulle gaan help. Daar was niks nie. Toe het daar 'n riglyn deurgekom oor hoe ons dit moet doen, hoeveel punte en hoeveel wat en toe het ek klaar my vraestel opgestel, so wat help dit? Ondersteuning is nul.

57. R: En hoe ervaar u onderwys nou?

T: Weet jy. Miskien is dit ook omdat ek nou al langer in die onderwys is. 'n mens raak rustiger en 'n mens steur jou nie so baie aan wat reg en verkeerd is nie. 'n Mens volg jou eie instruksies, want jy wil in die ou end die beste vir jou leerder hê so, gaan soos wat jy dink dit is goed.

58. R: Maar is jy gelukkig?

T: Ek is gelukkig in die onderwys, ja. Daar is niks wat vir my pla nie. Dalk is dit ook maar omdat jy aanvaar wat jy nie kan verander nie.

59. R: So jy is nie gelukkig nie?

T: Nee, wat ek is gelukkig, want dit gaan op die ou end oor die kind want dit is met wie jy elke dag werk en as jy voel jy kan vir hulle gee wat hulle nodig het, vir hulle stimuleer. Dit is mos wat jou gelukkig maak.

60. R: En die laaste vraagie. As dit wat jy nou weet op hede. As jy dit geweet het wat jy nou weet, sou jy weer besluit het om in die onderwys te gaan? Sal jy dieselfde keuse gemaak het of sal jy miskien 'n ander keuse maak?

T: Ek dink ek sou dalk 'n ander keuse gemaak het. As mens geweet het, waardeur jy alles sal moet gaan om op die ou end hierdie punte te bereik om gelukkig te wees ook maar 'n besluit is. Ek dink ek sou iets anders gedoen het. Ek dink ek sou.

-END-

ADDENDUM I: TEACHER D INTERVIEWS TRANSCRIPTIONS

Teacher D: Interview 1.

R = Researcher

T = Teacher

1. R: *How has your experience been teaching Natural Science and GET, General Education and Training?*

T: I actually really enjoyed teaching the juniors. They're different from the seniors but I do enjoy it. The problem is though, that there has been very little guidance from the department so we're very much left to our own. Originally, when OBE started, they said to us it's about skills and not content-based so we were very much left to our own to decide on what content to teach. Now, it has started to move back to being content-based but unfortunately, at this stage, the information is coming through a bit late in the year, it is difficult for us to plan and there isn't really enough guidance as to exactly what is expected and at what point, but I enjoyed it.

2. R: *And how has your experience been teaching Life Sciences and Further Education and Training?*

T: That as well, I enjoyed the seniors, it's completely different from the juniors. The seniors, because you see more of them, you get to know them better and there, the guidance have definitely been more. I do think, however that particularly grade 10 and 11 Life Sciences, the content is way too much for those grades and Grade 12, there's very little content. So, the children are battling to switch over from Grade 9 to Grade 10 because of the volumes of which they have to do it. The other thing is, up to the end of grade 9, they basically got away with not having to be able to learn, because the amount of content is actually not that much and they battle when they get to Grade 10 and because they don't actually know how to learn, so that's actually the big problem, that you know there should be focus on teaching them how to learn in the junior grades.

3. R: *Question three. Do you think that Natural Science adequately prepares learners for Life Sciences? You touched on it now.*

T: I think, at Settlers, we make it work, so we make sure that it prepared them for Grade 10, but that's not necessarily, what the curriculum prescribed. In terms of skills, we prepare them well, so in terms of 'Science in society' and even particularly 'Scientific skills', graphing, investigation, that kind of thing, we really prepare them very well, but in terms of content, the jump is very big and they do get over that.

4. R: *What is your dominant style of teaching Natural Science and Life Science?*

T: (laugh) That's quite a difficult one, because it depends on the content (laugh), but I think my classes are generally very interactive, where I teach the children with me all the time, because it's important that I must know what they know where we're going and that they understand what's going on. So, it's fairly interactive style, but not really the proper OBE, where it's learner-centered because you'll never get through the content that way.

5. R: *How would you grade your understanding of the National Curriculum Statement and Further Education and Training?*

T: I think I know enough. I know what is required, I know the basic learning outcomes, I know the specific outcomes and broadly, that's what we work on.

6. R: *What kind of curriculum support structures exists at your school?*

T: We have a very good support structure in the sense that we're a team that works together very well. We teach across all the grades, which means because it's a lot of work because we're teaching for at least 4 or 5 grades, but you know what is required in each grade and therefore, from grade 8, we're busy preparing them for the senior grades. So it's not a case of working on an island and just working with one grade. We also have a system where we share notes. We have one person responsible per grade, who sort of coordinates it, but we share notes, we make sure that all the children get the same notes. We meet once a week to check that we're all on track on where we are going. So, in terms of support, supporting each other within the school, it's very good. Support from the EMDC is not acceptable at all, but again we've made it work for us.

7. R: *Do you see FET succeeding in your particular school?*

T: Definitely!

8. R: *What are the difficulties, obstacles and challenges that you are experiencing in implementing GET and FET simultaneously?*

T: It's working well, but I think the problem is, the main difficulty is the lack of communication from the Department and, you know, that they expect planning from us and they want us to email them our planning in January, but they only plan and inform us in March, April. You know, I really feel they should be given a lot more guidance and they should perhaps be giving the planning, rather than just use us to provide the planning for other people. Hmm, so, the biggest obstacle is actually, I would say, lack of communication and late communication. You know, there's no thorough planning because to plan a year, you actually have to start in August of the previous year, so that's

the biggest problem. But in terms of textbooks and that kind of thing, our school is well resourced so, you know, we have enough, we have access to the internet, so from that point of view, it's fine.

9. R: *And are you satisfied with your science classroom?*

T: Absolutely! I love my lab (laugh). I love my lab, so I'm absolutely satisfied (laugh)

10. R: (onduidelik)

R: *What are the successes and achievements you are experiencing implementing GET in the Natural Science classroom?*

T: I think, the successes are that many of our children are actually following this career path, you know, we've had an absolute drought in terms of teachers in the Life Sciences and Natural Sciences the last few years. In the last two years now, we've had almost with every batch, there's been two or three Life Sciences students, you know, which to me, means we've sowed the seed of that desire to know more and we teach it even more so, not just the Life Sciences, but I mean to be teachers, I just think that's very important.

11. R: *In other schools less students (learners) are opting taking Life Sciences, what's it like here at Settlers?*

T: I'm sure the main reason for less students taking it, it's because it is difficult. This is just a sign from that school so if the kids don't take Physical science than Life Sciences is the other science option and with our school it is definitely on the increase and I think we have, I think with Grade 10, this year, we have 170 learners doing Life Sciences out of a grade of probably about 240. We in fact, we are the biggest subject after the languages and maths, but I think a lot of the children, you know, where Biology used to be a learning subject, Life Sciences isn't a learning subject anymore and so it's quite a difficult subject for them to achieve in as well, so they do go for the easier options.

-END-

Teacher D: Interview 2.

R = Researcher

T = Teacher

1. R: *Kan U net kortliks verduidelik waar U studeer het, hoe lank die kursus geduur het en die naam van U kwalifikasie?*

T: Ek het 'n B.SC.Ed. Ek het by RAU in Johannesburg geswot in 1980. Ek het my eerste graad of my B.SC.Ed het ek in 1983 klaargemaak. Toe het ek my B.ED gedoen en ek het einde '86 klaargemaak, ook by RAU.

2. R: *By hoeveel skole het U al skoolgegee?*

T: Ek het begin by 'n privaatkollege in Johannesburg, wat ek 6 Jaar by skoolgehou het toe was ek 'n jaar in die Kaap by Settlers, toe was ek 'n jaar by Fairmont, toe was ek vir 3 jaar by Simonstad en sedert 1995 es ek terug by Settlers.

3. R: *En wat verkies u? Verkies u die privaatskole of verskies u die "public" schools?*

T: Ek dink albei het hulle voordele. By privaatskole loop jy die gevaar dat 'Money Talks' Terwyl jou staatskole het jy, word jy blootgestel aan 'n groot gros van die samelewing wat 'n goeie ding is.

4. R: *Hoeveel graad 9 klasse het U?*

T: Ek het een graad 9 klas.

5. R: *En hoeveel graad 10 klasse het U?*

T: Een graad 10 klas.

6. R: *U het nou al n hele paar jaar ervaring. Hoe sal u die verhouding teenoor onderwys op hede beskryf?*

T: Ek dink dit hang van jouself af. Oor die algemeen dink ek die publiek is baie negatief oor onderwys oor dat die media baie negatiewe boodskappe uitstuur. Ek persoonlik is baie positief oor onderwys, omdat ek net dink daars baie goed wat dalk gebeur, maar ek dink die meerderheid mense is maar redelik moedeloos.

7. R: Hoekom is u positief? Dink U dis te doen met u kwalifikasies of is dit te maar net 'n houding teenoor onderwys self.

T: Ek dink dit is... Ek hou skool omdat dit is wat ek wil doen. Dit is my passie. Dit is wat ek geniet om te doen. Ek dink my kwalifikasies, dink ek maak nie regtig van 'n verskil nie. En ek dink net die, selfs hierdie uitgkomsgebaseerde onderwys, dis nie alles sleg nie. Ek dink ons moet 'n middeweg kry tussen die ou manier en die nuwe manier van dinge doen want ek dink albei het baie goeie eienskappe, so dis 'n interessante tyd, want ons verander die heelyd.

8. R: Hoe bly u op hoogte van nuwe kurrikulum-ontwikkelinge?

T: Ek sorg dat ek lees wat beskikbaar is. Ek sorg dat ek vergaderings bywoon, so enige inligtingsessies, as daar opleiding is, dan sorg ek laat ek vir die opleiding gaan verder dink ek, as 'n vakspan, sorg ons ook laat ons wyd lees, sorg dat ons lees wat in die media, selfs nuwe ontdekkings in die terme van lewenswetenskappe en daai tipe van ding, laat ons op hoogte kan bly van jou "Science Magazines" soos "Quest" of ja, so, ek maak seker dat ek weet wat aangaan.

9. R: By wie sal u se lê die verantwoordelikheid by om uit te vind van nuwe kurrikulumontwikkelinge. U of is dit dan die departement se verantwoordelikheid?

T: Ek dink dit is beide, want 'n onderwyser wat nie self 'n plan maak om ingelig te word nie gaan nie ingelig wees nie. En om 'n vergadering by te woon omdat jy dink dis iemand anders se werk, gaan jy in elk geval nie by leer nie so, dit moet gaan daaroor dat jy in beheer van jou klas wil - wees en daarom sal jy dit jou besigheid maak om ingelig te word. Ek dink wel die departement doen te min en daar word soveel tyd gemors met geskiedenis en waar ons nou eintlik vandaan kom en in plaas van om net gaan en wat is nou weer in die kurrikulum? "Hoe gaan ons dit toepas? En hoe gaan ons dit doen, want dit is ... die res maak nie actually saak nie.

10. R: Sal u sê dis maklik of moeilik om uit te vind van nuwe kurrikulumontwikkelinge?

T: Ek dink dis maklik. Ek dink dis beskikbaar op die internet. Dis partykeer net baie lywige dokumente. Ek dink wat jammer is, is soos nou weer met die nuwe CAPS, wat einde 2010 uitgekom het. Dit het uitgekom en daar was basies 2 weke tyd om kommentaar te lewer en ek dink dis onredelik. Dis glad nie genoeg tyd nie. Dis glad nie 'n goed deurdenkte proses gewees nie en ek dink op die ou end gaan goed weer deurgaan wat nog baie aan geskaaf moet word omdat die tydsrooster glad nie rekening gehou het met alles wat gedoen sal moet word nie.

11. R: U bied beide leerarea aan. Natuurwetenskap en Lewenswetenskap. As u die keuse nou weer aangebied word, sal u weer hierdie kombinasie aanbied of sal u verkies om miskien Natuurwetenskap of Lewenswetenskap individueel aan te bied?

T: Nee, ek sal definitief altwee aanbied. Ek dink dis baie goed om te weet wat in die

Natuurwetenskap aangaan én jy moet weet wat in die senior grade aangaan om seker te maak dat jy in graad 8, graad 9 vir die kinders die nodige fundamente lê, vir dit wat hulle in die toekoms gaan nodig hê. So ek dink, ia baie belangrik om by beide betrokke te wees.

12. R: *Dink u die leerder word benadeel of bevoordeel deur die feit dat u beide leerareas aanbied?*

T: Ek dink hulle word bevoordeel. Ek dink daar is gevare. Baie skole. By ons doen ons die natuurwetenskap - gee ons die fisiese deel die NW, die Lewenswetenskap en Fisiesewetenskap. By baie skole word dit deur aparte onderwysers aangebied. Weereens dink ek daar's voordele en nadele aan albei, maar ek dink wel enige Lewenswetenskap of Fisiesewetenskap onderwyser het die leergierigheid om wel dit, wat nodig is vir graad 8 en 9 te kan aanbied, maar dit hang van jouself af.

13. R: *Waarvan hou u meer? Natuurwetenskap of Lewenswetenskap en hoekom?*

T: Weer, dis twee heeltemalle verskillende goed. Lewenswetenskap is my belangstellingveld dis waar my passie lê en dis ook hoekom as ek lees, sal ek meer lees oor lewenswetenskaplike nuwe uitvindings of nuwe medisynes of daai tipe van goed, terwyl ek nou regtig passievol is oor elektrisiteit nie, maar in terme van die kinders, is dit jou graad 8 en 9, is heeltemal ander tipe onderwys self of tipe aanslag, as wat jy met jou seniors het, so dit gee vir my variteit en so ek geniet dit.

14. R: *En, dan kom ons by my volgende vraag, wat u basies klaar geantwoord het. As jy die keuse aangebied word met Natuurwetenskap, sal u dan die Lewenswetenskap en fisiese wetenskap apart wil aanbied of dan gekombineerd?*

T: Ek dink die voordeel daaraan om dit gekombineerd te doen is net dat jy die geleentheid dan het om die kinders beter te leer ken. En ek dink net om sinvol te evalueer. As jy nie jou kinders ken nie is dit net oor kopkennis, terwyl, as jy meer van hulle sien en hulle beter leer ken dan kan jy 'n meer sinvolle, globale prentjie hê van waar die kind regtig is, so ek sou, in die junior grade glo ek daaraan dis beter om albei aan te bied.

15. R: *Beskryf asb in u eie woorde die oorgangsfase, of u ervaring van die oorgangsfase van AOO na VOO.*

T: Dis nou van graad 9 na graad 10?

16. R: *Ja, van Natuurwetenskap na Lewenswetenskap.*

T: Die kinders sukkel met die oorgang van graad 9 na graad 10 toe, bloot omdat hulle in

graad 7, 8, 9, speel hulle. Die kurrikulum is nie baie lywig nie. Daar word nie regtig veel van hulle verwag in terme van kopkennis nie, dit gaan baie maar oor 'skills'. Terwyl, as hulle skielik in graad 10 kom is die volume werk wat hulle moet leer twee tot drie keer so veel en dan sukkel hulle, want hulle weet nie hoe om te leer nie, so die oorgang, die groot probleem is eintlik dat die kinders nie in die laer grade leer hoe om te leer nie en dan brand hulle vas in graad 10.

17. R: En dan nou vir U? Vind u dit maklik of moeilik?

T: Nee, vir my is dit maklik, want dis, ek geniet my vak en ek is lief vir my vak so dis vir my maklik (lag). En omdat ek weet hulle sukkel, doen ek moeite in die eerste paar weke in graad 10 om tyd te spandeer aan hoe leer ons wat is 'n goeie manier om Lewenswetenskap te leer. " hoekom doen ons dit so? Wat werk vir jou?. want dis die ander ding. Kinders leer, mense leer verskillend, so om 'n bietjie tyd te neem en net vir hulle te se " jy moet weet wat vir jou werk, want jy kan nie vir 'n ou vra hoe lank het jy geleer nie, want dit is nie 'n maatstaf nie. So ek spandeer tyd daaraan in Graad 10, want jy het dit nodig vir die volgende 3 jaar.

18. R: Beskryf asb. die ideale onderwyserervaring. Hoe beleef u dit nou ?'

T: Die ideale onderwyser is passievol oor sy werk. Hy's lief vir die kinders en hy's lief vir sy vak en hy geniet wat hy doen so hy's gelukkig in sy werk.

19. R: Het u houding teenoor wetenskap, dis nou Naturwetenskap en Lewenswetenskap, afgeneem, toegeneem, of dieselfde gebly gedurende die oorgangsfase van AOO na VOO.

T: Ek dink dit het dieselfde gebly. Ek, ja. Ek dis. Ja, Ek was nog altyd passievol so dit maak nie 'n verskil nie.

20. R: Hoe groot is u graad 9 klas?

T: 35.

21. R: En u graad 10 klas?

T: 37.

22. R: Dink u die klasse is te groot of te klein om u werk te doen?

T: (besin oor antwoord). Jy maak dit werk. So wat jy kry, jy sorg dit werk. Die probleem met 'n groot klas is veral jou kind wat sukkel. Dis moeilik om jou klas wat sukkel om te leer. 'n Groot klas, hulle aandag word maklik afgelei ensoaen, so dan is dit baie moeiliker om hulle gefokus te hou en dan hang dit ook af watter tyd van die dag jy hulle sien jy weet, As jy hulle elke dag laaste periode sien kan jy maar weet, jy het moeielikheid maar as dit 'n bietjie, as die rooster gewissel word en jy het partykeer vroeg die oggend en die ander bietjie later, want dan pas jy jou onderwys daarby

aan, want dan weet jy die dag as jy hulle vroeg het, dan moet jy hom druk, want more as dit laat is, dan moet jy hom - liewers iets gee om te doen. So, dit gaan ook daaroor dat jy moet jou kinders ken, jou klasse ken want jy kan nie, selfs met 2 graad 10 klasse, as ek maar nou dink, die een jaar het ek die top klas en die volgende jaar het ek die set vyf. Ek kan nie vir hulle dieselfde leer nie, so ek moet my kinders ken en ek pas my onderwysstyl daarby aan.

23. R: Is it iets waarna gekyk word as die skoolrooster saamgestel word?

T: Ja, ons vra daarvoor. As ek rooster kry wat ek hulle elke laaste periode het dan gaan sê ek: 'luister, maar dit kan nou nie werk nie'. Dis nie altyd dat jy iets daaraan kan doen nie, maar as dit moontlik is dan sorg jy dat jy by hulle mintens so twee of drie ooggende darem vroeg het net om iets gedoen te kry.

24. R: Hoe vergelyk die klas gee metode tussen die van graad 9 en die van graad 10?

T: (Besin oor antwoord). Dit hang af. My manier van klas gee is baie leerdergesentreerd, maar met Gr. 9's is daar nog meer tyd vir speel. Jy kan nog bietjie meer toepassing op die lewe en bietjie meer gesels en dit geniet, maar graad 10 is die volume werk is baie so dis baie meer gerig op die inhoud.

25. R: En is U tevrede met hoe dit nou gedoen word? Hoe sal u dit doen as u die keuse gegee word?

T: Soos ek sê, ek dink daar moet 'n balans tussen uitkomsgebaseerd en inhoud. Dis hoe ek dit nog doen, of dit nou, maak nie saak wat ander mense sê nie. Ek doen dit soos wat dit vir my sal werk om te doen, want op die ou end is dit vir my belangrik dat as hulle hier uitstap moet hulle voorbereid [wees] vir die lewe daar buite.

26. R: Hoe sal U die konteks van hierdie skool beskryf?

T: Dis 'n interessante vraag, want ek dink ons gebied wat ons dek is letterlik van Eerste Rivier reg deur tot in Woodstock. So ons kry iets van alles. Ons het hier van die rykste van ryk tot die armste van armes. Ons het kinders vir wie ons toebroodjies skool toe bring bedags omdat dit hul enigste kos is wat hulle kry, maar ons het ook kinders wat baie wel af is.

(Haar selfoon lui).

27. R: Dink U die konteks van die skool het 'n invloed op die houding teenoor onderwys en wetenskap? Sou dit anders wees as U byvoorbeeld by 'n ander tipe konteks skool gegee het?

T: Nee, want ek sou dit maak werk. No excuse.

28. R: (Onduidelik)

R: Hoe vergelyk die houding teenoor die van graad 9 leerders en die van graad 10 leerders?

T: Dit is dieselfde. Dit verskil nie.

29. R: So u hou nie meer van die graad 9's of die graad 10'e nie?

T: Nee.

30. R: Wat verstaan u onder die term leerdergesentreerd?

T: Ek verstaan daar dat hulle baie moet speel, omdat hulle moet ontdek en dat jy baie stadig deur die werk beweeg.

31. R: Dink u die konteks van die skool het die 'n effek op die suksesvolle implimentering van VOO, Verdere onderwysopleiding?

T: Ek dink nie dis die konteks van die skool nie. Ek dink dit gaan oor leierskap.

32. R: Wat bedoel u onder leierskap?

T: Ek dink as jy 'n span het of as jy 'n leier het wat dit laat werk dan sorg jy dat dit werk. So dis keuses wat jy maak. As jy verskonings wil maak gaan jy altyd verskonings kry.

33. R: Graad 9 bestaan uit 75% DASS en 25% toetse en eksamens. daar is mos groot verskil tussen assessering in AOO en VOO. Nou dink U die assessering het 'n invloed op graad 9 en die van die graad 10?

T: Ja, ek dink hulle kom nog steeds in graad 9 baie maklik deur selfs baie makliker deur as graad 10. Ek dink hulle is besig om daarna te kyk, want ek sien met die nuwe (CAPS) praat hulle nou van 65-35 so hulle is besig om dit af te skyf maar ek dink nog steeds. Ek dink jou deurlopende assessering is baie belangrik. Ek dink dis goed en ek dink dis goed dat die kinders deurlopend werk en dat hulle weet dit tel, maar ek dink die eksamen tel te min in graad 9.

34. R: Was u by die opleiding sessie verlede jaar van die (CAPS) dokument?

T: Dit was matriek, ons het nog nie (CAPS) voorbereiding gehad nie, want dit word mos nou eers volgende jaar geimplimenteer. Ja, ek was by graad 12's se opleiding. Ek dink weer hierdie mense het hierdie goed deur gejaag. Die volume inhoud wat hulle verwag is skrikwekkend. Ek dink dis onredelik en mense gaan, kinders gaan die vak los, want dit raak te moeilik.

35. R: Van die ander onderwysers met wie ek gepraat het gese hulle het gevoel die mense was nie voorbereid nie of selfs geweet waarvan hulle praat nie.

T: Waar ek was, was baie goed gewees. Ek het gevoel dit was sinvol, want dit het ons

geforseer om te kyk na wat van ons verwag word hierdie jaar. Om te besin en dis goed om al in Oktober daarna te kyk want dit help jou beplanning. Ons het 'n video link gehad met 'n evolusie lesing wat briljant was. Ek het gedink dat was goed. Vrydag middag was nie 'n baie goeie tyd nie, maar dit was baie goed gewees.

36. R: Die hulpbronne tot u beskikking. Dink U dit het 'n effek op die suksesvolle implimentering van VOO?

T: (lag). Ek dink nie hulpbronne maak verskil aan jou onderwys nie. Ek dink as jy 'n bord en kryt het dan kan jy 'n suksesvolle onderwyser wees en mense maak die fout om te dink as hulle nou al hierdie ander fancy goed het gaan hulle beter uitslae hê. Dis nonsens, want dis tegnologie en dan mors jy jou tyd, omdat jy nie weet hoe die goed werk nie en jy maak ook die fout, Dis goed vir kinders om te sien jy begin hier teken; jy maak daar klaar en juffrou kan dit ook teken. Dit is nie hierdie kunswerke wat vir hulle gegooi word nie. So ja, ek dink, die ou manier van dinge doen het nog definitief sy plek.

37. R: Is u gelukkig met u klaskamer?

T: Ek is mal oor my klaskamer.

38. R: Watter sukses het u ervaar met die implimentering van VOO?

T: Ek dink net die groot ding vir my is dat ons graad 8's en 9's is voorbereid as hulle in graad 10 kom. Hulle weet hulle kan. Jy kan vir hulle vra vir hulle variables. Hulle ken hulle variables. Hulle kan 'n grafiek trek. Hulle weet hoe om 'n tabel te trek. Hulle weet hoe om 'n skets te doen. So die basiese skills wat jy nodig het kan hulle doen en ek weet daar is nou weer 'n syllabus, maar byvoorbeeld ons spandeer baie tyd aan chemie so dat hulle 'n goeie basis het as hulle aangaan met fisiesewetenskap. Baie tyd op elektrisiteit, sodat hulle kan weet waarvoor vir hulle in laat. Vir Biologie kyk ons spesifiek baie nogal na die sel en ook Ekologie dat as hulle in graad 10 kom het hulle reeds 'n basis hulle weet waaroor die vak gaan en hulle kan. Hulle is voorbereid.

39. R: Nou wat dink U doen U anders by hierdie skool as by ander skole?

T: Ons kyk na wat hulle nodig en ons sorg dat hulle dit kan doen en ons worry nie te veel oor wat die kurrikulum en die papiere en die boeke en goed sê nie, want op die ou en gaan dit oor die kind moet voorbereid moet wees.

40. R: Wat was vir U lekker met die implementering van die VOO in graad 10?

T: Dat ek, ek is meer lief vir die Lewenswetenskap as vir die Fisiesewetenskap so as ek moet kies dan is dit wat ek geniet en dit is waar my algemene kennis lê so dit is ook waar ek meer, ek voel meer, ek dink die woord is 'empowered' because I know my subject.

41. R: Die opleiding wat U ontvang het. Dis nou professioneel die kwalifikasies en natuurlik al die ander opleidings sessies wat u byggewoon het. Dink u dit was voldoende om die Nasionale Curriculum Statement te implimenteer?

T: Ek dink in terme van plantkunde en dierkunde ja, die inhoud wat ons gedoen het definitief alles gedek en ek dink ons is op 'n goeie vlak voorberei. Ek dink nie Universiteit berei jou voor vir die klaskamer nie. Ek dink hulle mors hulle tyd. Ek dink nie hulle bereik enigsins [iets] daarby nie. Ek dink die praktyk berei jou voor vir die klaskamer, maar die vak kennis dink ek my graad het my goed voorberei.

42. R: Dink U die tipe onderwysers wat nou uit die Universiteit uit is beter of is hulle eintlik 'n bietjie swakker as die ouergaardes?

T: Hulle is baie swakker, want hulle vak kennis is, want hulle het nie ordentlike vak kennis nie. Hulle doen vakkies soos science of hulle doen goed soos biokinetics en dan word daar vir hulle gese "julle kan nou wetenskap gee tot op die graad 9" en dan het hulle nog nooit 'n stroombaan gesien of enige chemie gedoen nie so hulle is nie voorberei selfs nie eers vir graad 7,8 en 9 nie. En daar word nie genoeg druk op hulle geplaas nie. Die studentjies kom en dan wil hulle een periode 'n dag gee of dan is hulle 'n bietjie op hulle senuwees of hulle seker is nie en dan moet ons hulle help. Ja, nee, ek is bevrees. Ek dink daar was 'n groot leemte daar.

43. R: Nou wat dink U maak die goeie onderwyser?

T: Dis jou passie. Jy moet 'n punt daarvan maak om die kennis op jou vakgebied te wees. Kinders voel gemaklik met iemand wat... You must be confident that you are in control of your situation en as jy onseker is as jou vakkennis beperk is dan gaan jy nie daai uitstraal nie en dan gaan jy nie, by die kinders, hulle gaan jou nie vertrou as iemand wat weet wat jy doen nie.

44. R: Dink U die WKOD het U ondersteun hierdie jaar?

T: Ekskuus.

T: Nie vir die juniors nie. Ons het nooit hierdie jaar 'n vakvergadering gehad nie. So as ek saam met my span onderwysers besluit kom ons doen nou iets nie. Ek het nooit die kurrikulumadviseur of iemand gesien vir die junior grade nie en vir die senior grade sien ons hulle ook nie en hulle se maar net vir ons, 'nee, julle uitslae is goed ons hoef nie met julle te werk nie'. So ek dink as ons hulle twee maal per jaar en dan is dit so bietjie inligting sessie, maar ek dink nie hulle ondersteun ons nie.

45. R: Watter leiding kan die WKOD vir u gee sodat u voel u word geondersteun?

T: Weereens, ek dink nie daar moet meer... Tyd is 'n beperking in die onderwys so jy kan nie mense se tyd mors en vir hulle goetjies gee en vir hulle lees nie. Jy moet sorg dat jy die

vakadviseurs moet ook kennis op hulle veld wees en hulle moet uitstraal dat hulle in beheer van die situasie is en dat hulle weet wat aangaan. En dan moet hulle self 'n bietjie werk doen, want wat hulle nou van ons vra. Ons moet as vir hulle email vir hulle om te gebruik omdat hulle te lui is om hulle eie werk te doen. Of dit is my siening daaroor en dan as hulle ons goed...as ons nou ons portefeuljies in gee om te check dan wag ons 'n maand vir 'n verslag of ons kry glad nie 'n verslag nie. Ja, nee ek dink nie hulle werk hulle dood nie. En dan die ander ding is die WKOD verskaf vir ons handboeke nou met al hierdie nuwe kurrikulums, maar daar is soveel politiek daarby betrokke. En nie van die handboeke, veral in die junior grade dek die inhoud nie, maar nou omdat daar geld by betrokke is nou om almal gelukkig te hou word al die boeke op die lys gesit, maar nie een van die boeke is voldoende vir wat in die kurrikulum verwag word nie, so miljoene rande word gemors en ons koop nou maar boeke, want dis ten minste nie iets wat ons betaal nie, maar ons gebruik skaars die boeke, want hulle is nie voldoende nie.

46. R: So watter handboeke gebruik u nou?

T: Ek dink ek het "Study and Master", maar ek bedoel ek het op 'n stadium 'n kurrikulumadviseur gebel toe sê ek vir hom: "Luister julle het nou vir my 'n lys van een en twintig boeke gestuur wat ek nou 'n handboek moet kies maar volgens die inhoud wat julle vir my gestuur het dek nie een van die sillabus wat julle vir my gegee het nie so hoe moet ek besluit watter boek om te gebruik?", nee maar hulle kan nou nie vir my sê nie want daars geld by betrokke en dis 'n politieke besluit. En dis vir my onaanvaarbaar, want dis op die ou end my belasting wat gemors word en dit is miljoene rande en op die oomblik verander ons elke drie jaar kurrikulum. So elke drie jaar koop die staat nuwe boeke.

47. R: Tot 2015 is dit...

T: Ja, nee, dis nou ... En baie mense word ryk.

48. R: Nou wat stop u om nie 'n handboek self saam te stel nie.

T: Ek is te besig. Ek is heeltemal te besig daarvoor.

49. R: Maar u kan lekker geld maak.

T: Dit gaan nie vir my oor die geld nie ek sal my siel moet verkoop daarvoor want dan sal ek nie my werk ordentlik kan doen nie. Ek het die tyd om dit te doen en my werk ordentlik te doen en my gesin te versorg nie. So nee, ek het nie tyd daarvoor nie.

50. R: U het eintlik alreeds my ander vrae beantwoord

T: Ek maak in elk geval my eie notas anyway

-Einde-