

Learning to Teach in a Full-Service School Through a Self-Study

Researcher: Cebolakhe Zondo

Supervisor: Dr Eunice Nyamupangedengu

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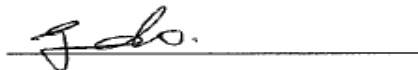
Abstract

This self-study in which I investigated how to teach Natural Sciences and Mathematics in a Full-Service school (FSS) was motivated by the realisation that the Initial Teacher Education training that I received never prepared me for teaching at such a school. The aim of this study was therefore, to document my experiences of teaching at a FSS as a novice educator with the primary goal of sharing what I have come to learn and the kind of knowledge that one requires to teach in a FSS. Being a self-study, I was the main participant. My Grade 4, 6 and 7 learners became participants by being in the classes that I was teaching. In the study, I employed three ways of data collection: journal entries of trigger incidents, transcribed recordings of discussions held with critical friends and my reflections that followed each discussion. All data collected was in text form. Inductive coding was used to create meaning of what I was experiencing. This study produced two key findings about learners and about teaching in a FSS. The first finding is that most learners in Full-Service School are bodily-kinesthetic i.e. they learn best when they use their bodies and through movements. The second finding is that learners in a FSS are very slow to grasp concepts. Therefore, it is very important for the teachers in FSSs to consider the slow pace of the learners, even though CAPS propose specific content and timelines. These two findings highlight two pieces of knowledge about learners and about teaching in a FSS (that I was not aware of as a newly qualified teacher) that any new educator should be aware of and be trained to deal with. This study therefore, recommends that teacher training institutions must incorporate modules in their teacher preparation programs that prepare new educators specifically for teaching in a FSSs. In addition to the findings above, this study demonstrated that self-study is a very good research methodology that can be used to develop effective teaching practices as it can help teachers to make sense of their own teaching practices and how those experiences can be used to promote better teaching and learning in future.

Keywords: Full-Service Schools, barriers to learning, self-study, inclusive education, bodily-kinesthetic, performances, and differentiated instruction.

Declaration

I, Cebolakhe Zondo 443650 declares that, this thesis is my own work. It is being submitted for the degree of Master of Education (Science Education) at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree examination at any university.



Cebolakhe Zondo

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Chapter One: Introduction to the study

“The journey of a thousand miles begins with a single step” Lao Tzu

1.0 Introduction and Aim

The aim of this study was to document my *experiences* of teaching in a Full-Service school (FSS) as a novice educator with the primary goal of sharing what I have come to *learn* from them. The study further aims to investigate the kind of knowledge that one requires to teach in this context (FSS). The aims of this study were achieved through a self-study. I focussed on my experiences of teaching two learning areas of Natural Sciences and Mathematics because they are my academic majors. In addition, I taught both subjects to Grades 4, 6, and 7.

Full-Service schools are defined as "schools and colleges that will be equipped and supported to provide a full range of learning support among all our learners" (Department of Education (DoE) White Paper 6, 2001, p.22). Self-Study is a study of the self by self. It is about researching practices of teachers interested in better understanding and developing their knowledge of the practice (Berry, 2008). The self-study technique involves a critical examination of self-involvement in both personal and professional aspects. Self-study encompasses one's personal teaching experiences, struggles, frustrations, and improvements that arise out of one's own practice (Samaras & Freese, 2006).

1.1 Background to the study

1.1.1 Inclusive education

Prior to 1994, South Africa was characterised by segregation on the grounds of race, ability, or disability (Walton & Bekker, 2016). This was a result of apartheid laws that marginalized other races and deprived human rights to certain learners. This is a situation that changed in 1996 when a new constitution affirmed the rights of all children to education, freedom, and protection from discrimination (Walton & Bekker,

2016). Consequently, South Africa adopted an inclusive education system with the aim of providing justice to the learners who were academically and socially excluded in the past due to their abilities and disabilities (Walton & Bekker, 2016).

Inclusive education is a concept that was initially conceptualized internationally (Walton & Bekker, 2016). South Africa has produced many policy documents focusing on the provision of inclusive education. Phasha (2016) defines inclusive education as a system that accepts and respects that all learners **can learn** and need support founded on the recognition that they learn differently. Inclusive education is the global agenda that aims to maximise educational access, participation and achievement for all learners, especially those who have been previously segregated (Phasha, 2016).

In South Africa, all schools are expected to be inclusive but vary in the extent of additional support that they can get from the DoE. Hence, the schooling system is divided into three categories: mainstream, Full-Service, and special schools. These terms are often used interchangeably because of insufficient knowledge. The mainstream schools are regarded as ordinary schools requiring a low level of support from the DoE. Mainstream schools are regarded as institutions where common teaching and learning strategies are implemented with the understanding that those ‘common teaching strategies’ work for almost every learner. The common teaching strategies include visualization, cooperative learning, and inquiry-based instruction. Full-Service schools are schools that the DoE views as requiring a moderate level of support. These institutions are meant to provide quality education for all learners who have been excluded in mainstream schools due to learning difficulties.

Learning difficulties are neurologically-based processing problems such as dyslexia and dysgraphia (DoE Guidelines to Full Service/Inclusive schools, 2010). These

difficulties cannot be cured. Hence, they are fixed life-long challenges. Learning difficulties can interfere with the learning of basic skills such as reading, writing, listening, viewing, and counting. They can hamper the acquisition of higher-level skills such as thinking, reasoning, organization, time planning, abstract reasoning, long and short-term memory, and attention. Special schools need an extensive level of support because such schools are comprised of learners with various and severe disabilities such as deafness, blindness, albinism, cerebral palsy, autism, mental illness, dyslexia, and intellectual challenges that result in in-depth learning needs (Walton & Bekker, 2016).

This study aims to document my experiences of teaching in an FSS with the goal of using those experiences to learn and to improve my teaching. The study further investigated the kind of knowledge that one requires to teach Mathematics and Natural Sciences in an FSS. As indicated earlier, I focussed on both Mathematics and Science because both subjects are my areas of expertise, and I was teaching both subjects.

1.2 Problem Statement

During my Bachelor of Education (B. Ed) training (2010-2013), I was not trained to teach in a FSS. I was trained in mainstream schools. I never did inclusive education in my entire B. Ed degree and had never heard of a term Full Service School. After qualification, I found myself in an FSS where I soon found out that most of the teaching strategies that I acquired at university seemed not to be working. In my classroom, about half of the learners in the class had been declared as 'having barriers to learning' by the DoE. I found that experience very challenging, and it dawned on me then that, I needed to learn on the job how to teach Natural Sciences and Mathematics in an FSS.

1.3 Research questions

My study was guided by the following research questions:

- (i) What are my experiences of teaching in a Full-Service school as a novice educator?

(ii) What knowledge should I have, to teach in the context of my experiences (FSS?)

(iii) How is my teaching transformed as I examine and reflect on my fifth-year teaching experience?

1.4 My practice-based autobiography

1.4.1 My initial experiences

I am an educator in a FSS situated in Orlando, on the Eastern side of Johannesburg in South Africa. I joined this institution five years ago (2014) after attaining the B.Ed. Degree at Wits University in 2013. When I was employed as an educator, I was unaware that the educational institution was a FSS. The principal had marketed his school in a manner that hugely sparked my interest, not knowing that I was embarking on what I now see as the toughest journey of my life.

When I was employed as a Natural Sciences and Mathematics teacher, I was already enrolled for B.Ed. Honours (Science Education). I came to teach the grade six learners who had no Maths teacher in the previous grade (Grade 5) for nine months. I had to teach both grade five and six's work concurrently. At first, this was not a challenge; after all, I was hired based on outstanding undergraduate results. I felt supreme and proud since it was brought to my attention that I am the first and only teacher to enrol for an Honours degree. I assumed that since I qualified with distinctions, nothing was going to be too hard for me. I did not expect to encounter any major challenges.

From my childhood, I had this burning desire and unwavering passion for teaching. I used to teach stones as representatives for learners and talked to them as if they were alive. I used to be so excited when a teacher missed his/her period because I would use that time to reteach my classmates the concepts that were difficult for them. As a result, my love for teaching and successful teaching experiences (student teaching), I had developed the view that there was no major difference between teaching as a student

teacher and teaching as a qualified teacher. This being the case, I came with my own assumptions that teaching in a township school was easy. I thought I knew what entailed good teaching of Natural Science and Mathematics.

1.4.2 My concern

My main concern in this study was that I found myself teaching in a FSS, although I was not specifically trained for teaching in this context. As a result, when I began my teaching in this context, I was using the teaching strategies that I had acquired as part of my B. Ed degree. The strategies, however, did not work (see evidence of this claim in the data analysis section in Chapter 4). For example, I used to show, tell, and explain concepts not knowing that in FSS, learners needed to move around, act things out, and to perform in class. They learnt well when they do things on their own than when they are told about them. Many times, I would feel like I am a useless teacher and even came to a point where I felt like teaching was not for me.

1.4.3 The dilemma

I started reading about teaching in a FSS. From my reading, I got to know that according to the DoE Guidelines of FSS in White Paper 6 (2001) an educator needs to change methodologies, curricula, and environment to cater for all learners and to minimize barriers to learning something that is referred to as a differentiated pedagogy (Tomlinson, 2005). Several thoughts came to mind: How do I implement a differentiated pedagogy of which I have never heard of? I had been struggling for five full years to devise strategies that would help learners engage with my lessons. The main problem was that learners were extremely slow in grasping content, reading, and writing, and there was no differentiated curriculum. By differentiated curriculum, I mean that there is no specialized curriculum that caters for the needs of these learners. These schools are expected to teach using the CAPS policy document with proposed content and timelines. The most challenging aspect is that the goals and objectives of

FSS are not easily attained in real context because of the lack of alignment between CAPS, FSS guidelines, and what transpires in real teaching contexts. This reality makes inclusive education to be viewed as difficult and not implementable.

As part of my B.Ed. Degree I did eight teaching practices in different schools. All went well because I was well informed with regards to mainstream learners. I tend to be confused about the expectations of the White Paper 6 policy document as it emphasizes that the learners need to be taught in the same way. How can I teach these learners in the same way while they have unequal learning problems? How can I solely devise strategies that will cater for every learner if I was not taught those strategies and if the CAPS curriculum itself is not flexible with time and the amount of content to be covered within a specified time?

Through my experiences, I have come to learn to respect all the learners and wish to see effective teaching and learning taking place, but my observations and teaching experiences tell a different story because of different reasons. Throughout the past five years of teaching, I have realized that to assist my learners in learning; I need to attend to them as individuals. However, in practice, this is difficult. For instance, how it is possible to attend to sixty learners, per class, whose pace is extremely slow in just an hour? How does one teach, for instance, in Mathematics, to convert the units of mass if they can't even understand what mass is? I conducted a self-study on some of the basis. Therefore, in this study, I document my experiences of teaching in an FSS with the aim of learning from those experiences and to investigate the kind of knowledge that one requires to teach effectively in this kind of context.

1.5 Rationale for the study

The findings from this study are expected to better equip me for the future as a FSS teacher in terms of insight gained from my classroom experiences. The findings are also expected to challenge the Department of Education to conduct more research on

FSSs. It will prompt the authorities to think about how differentiated instruction can be better implemented for the benefit of both teachers and learners. It will challenge other researchers to conduct their research studies specifically on FSSs because people generally seem not to understand between special schools and Full-Service schools. This study might provoke other FSS teachers to deepen their knowledge through research in understanding the kind of learners found in FSSs. It may also trigger the education specialist and policymakers to consider incorporating movement and using the body as another way to understand things. There is very limited research in FSS, especially in SA. Therefore, this study might motivate different stakeholders involved in the Department of Education to magnify their lenses a bit and focus on whether justice is done or not to teachers and learners situated in the FSS environment.

1.6 Overview of the study

Chapter 1: Introduction and background

The main purpose of this chapter is to provide the introduction and background of the study, pointing the main problem within which the study is based on. The rationale, research questions, and autobiography are presented.

Chapter 2: Literature review

This chapter presents the relevant literature pertaining to the aims of the study. Full-Service schools and Pedagogical Content Knowledge are the focus areas of this chapter. The history of the development of inclusive education is outlined, as to how it emerged and how it is practised in South Africa; specifically, in one of the FSSs in Orlando East, Soweto.

Chapter 3: Research methodology

In this chapter, the methodology through which the objectives of this research are achieved is discussed together with the design, data collecting methods and data

analysis techniques. Ethical considerations are also provided. Issues of validity and reliability are discussed, as well.

Chapter 4: Data Presentation and findings

The findings of the study are presented in such a way that data analysed from the three sets of data, namely presentation and discussion of journal entries, reflection with critical friends and inductive coding. The two key findings are discussed at the end of the chapter.

Chapter 5: Conclusion and Implications

The main objective of this chapter is to provide a summary of the main findings from the interpreted data and answer the three research questions. Hence it discusses the implications and proposes future recommendations for any further research that may be undertaken.

1.7 Conclusion

In this chapter, I have presented the background, aims, research questions, and the rationale of this study. In the next chapter, I shall present the bodies of literature linked to the aims and the research questions of this study.

Chapter Two: Literature Review and Theoretical Background

“Though the vision tarries, wait for the appointed time! Though it lingers, wait, it shall come to pass at the end” Habakkuk 2:3

2.0 Introduction

The aim of this study is to document my experiences of teaching in a Full-Service school as a novice educator with the primary goal of sharing what I have come to learn from them. The study further aims to investigate the kind of knowledge that one requires to teach in this context (FSS). In this chapter, I review the literature on Full-Service schools, barriers to learning, remedial educators, ethos and principles of FSS and differentiated instruction. I focus on PCK as my theoretical framework that guides my study. My study is guided by the following research questions:

- (a) What are my experiences of teaching in a Full-Service school as a novice educator?
- (b) What knowledge should I have to teach in the context of my experiences in (FSS)?
- (c) How is my teaching transformed as I examine and reflect on my fifth-year teaching experience?

2.1 Full-Service Schools

Full-Service schools are relatively new in South Africa. They were established in 2001, according to White Paper 6 (Department of Education, 2001). These schools have been established with the aim of increasing participation of learners who are regarded as experiencing barriers to learning. FSSs are expected to strive for and achieve access, equity, equality, and social justice among all learners. FSSs are meant to cater to learners who could have failed to qualify for admission in a mainstream school due to their barriers to learning. FSSs tend to address exclusionary practices such as the admission and non-admission of learners based on the nature of the disability. These

schools aim to assist learners who have been excluded in a mainstream school because they are considered as burdens (Walton & Bekker, 2016).

The concept of Full-Service schools (FSSs) involves pulling out learners from the mainstream with the aim of catering for their barriers to learning in various ways. These ways include remedial teaching, slow pace instructional methods, special classes, accommodating learners with different learning styles, and all other practices that might increase learner participation.

The Education White Paper 6, (South Africa, 2001) further defines Full-service schools as schools that will be assisted by the state to develop their capacity to provide for a full range of needs. Special emphasis is placed on the development of flexibility in teaching and learning and the provision of support to learners and educators. A Full-Service school is meant to be one to which everyone belongs like any other mainstream school. A learner at an FSS is expected to be accepted and supported no matter the disability or difference that the learner might have. Full-Service schools are also called inclusive schools because they are expected to include all the learners with or without diverse barriers to learning (DoE 2009, 2010). In FSS schools, whether teachers are trained or not, teaching and learning are expected to continue daily.

According to White Paper 6 (2001), inclusive education in FSS is meant to be fully implemented by 2021 going upwards. During this period of implementation, research is still being done; aimed at yielding information that will hopefully inform and guide Initial Teacher Training Institutions as to how they should go about training teachers for inclusive education in FSSs.

There are many unresolved issues when it comes to teaching and learning in FSSs. The Guidelines of FSS DoE (2010) state that FSSs must have additional support to reduce

class sizes, and there should be additional staff provisioning. If a school has more than 500 learners, it must have a full-time support/remedial teacher who is trained to support the implementation of inclusive education. However; it is very challenging for 500 learners to be supported by only one qualified teacher remedial teacher. In my context, there are two remedial educators and 900 learners. The shortage of qualified remedial educators is a challenge on its own.

FSSs are also expected to reduce classroom sizes so that teachers can be able to attend to each learner. However, this, the objective has not yet been achieved. It still seems to be a very long-term project because of the many factors that will be discussed later. Why can't all FSS teachers be trained as remedial teachers to maximize their abilities to cater to all the learners? The only emphasis that is highlighted in all the FSS policies is that learners with diverse needs ought to be supported, but the 'how' part is not clearly stated. Again, according to DoE (2010), pg. 14

The principals are meant to use a collaborative approach in creating school schedules that support inclusive practices including the provision of common planning time, allocation of resources where needed and constantly search for strategies to ensure that educators provide equal access for all learners.

The goal of principals working in collaboration with teachers is not yet attained as my experiences imply that the school's management team is as confused as some of the ordinary teachers are. As a result, teachers in FSSs are unlikely to get the help they need if their principals are still not enlightened about teaching inclusively. Additionally, the DoE (2010) states explicitly that in FSSs, teacher assistants need to be appointed with clearly identified roles to support teachers with identifying barriers to learning within the classroom. The teacher assistants' roles include interacting with learners, consulting

therapists, and assessing the impact of teacher interventions with regards to assisting learners. This also has not been attained yet in many FSSs. There are very few schools with teacher assistants, counsellors, therapists; especially in government institutions. As a result, this study aims to document every experience that triggered me as I learnt to teach in an FSS without any previous training with regards to teaching in this context.

2.1.1 What does it entail to teach in a Full-Service school?

While the government has seen the importance of establishing FSSs, which are likely to provide spaces for learners with learning barriers, it has not provided for the training of teachers to specifically teach in these schools (DoE Guidelines for Full-Service/Inclusive schools, 2009). According to White Paper 6 (2001), schools are expected to be fully converted into complete FSSs by 2021. However, the school management, staff members, and governing bodies are yet to be orientated about what exactly is required from them. District-based support teams are yet to be put in place in other schools. Therefore, there are still gaps to be filled for the already established FSSs to be fully and effectively functional.

The policies of FSS from 2001 seem to neglect the importance of teacher training. These policies only stress that teachers need to support learners, but they fail to state that teachers also need support. Additionally, policies such as the DoE (2009) highlight that teachers need to use various methods of teaching to cater for diversity, but those methods are not clearly stated.

The primary goal of any education system is to provide equal educational opportunities for all learners, regardless of their educational levels. All learners deserve a quality education that will equip them for future citizenship. My experience reveals that teachers in FSSs must be qualified remedial educators/specialists. A remedial/support teacher is a teacher who is trained to provide services and programs that ensure that the

educational needs of special needs children and children with learning difficulties are provided for; be it in mainstream or special education contexts (Department of Education, Guidelines for Full-Service school, 2009).

Research reveals that in South Africa, there are no specific courses at Initial Teacher Training institutions that prepare pre-service teachers to be qualified remedial educators (DoE, Guidelines for FSS, 2009). That is why most of the teachers who are teaching in FSSs are not qualified remedial educators although they are expected to fit in FSS classrooms as if they were in a mainstream context where learners need little additional support. As a result, it takes the teacher's interest and needs to upskill themselves by specialising in inclusive education only in postgraduate degrees. Therefore, in this study, I embarked on a journey of documenting my experiences of teaching in an FSS with no background or training with regards to teaching in this context. My study serves the purpose of bringing the challenges that I encountered as a novice teacher at an FSS to the fore, and solutions I used to mitigate them. The study serves as an example of how one can use self-study as a methodology for self-professional development.

2.1.2 What does it entail to be a learner at an FSS?

Parents cannot just decide to send their learners to an FSS; special procedures must be followed. One such procedure the assessment of learner's needs. To determine the barriers experienced by a learner, the school should have systems in place to access learners according to the procedures outlined in the Strategy on Screening, Identification, Assessment, and Support (SIAS, 2009). SIAS is conducted as early as in Grade R. The screening involves recording the learner's family background and struggles and reports from the department of health and other qualified departments to confirm that the learner is living with a certain condition that may be a hindrance or a

barrier to learning. Therefore, this study sought to document my teaching experiences in FSS with the aim of learning from them for the development of self.

2.1.3 Observed limitations of FSSs

I have picked up that there is lack of clarity about the definition of inclusion which has contributed to confusion about FSS, inclusive education and practice as well as to debate about whether inclusion is an educationally sound practice for learners who have been identified as having barriers to learning (Florian & Black-Hawkins, 2011).

From the definition of the term *Full Service*, there are still many ambiguities that still need additional research. Firstly, there is no distinct differentiation between a Full-Service School and an Inclusive School. It was noted earlier in this paper that according to the Education White Paper 6 (2001), FSSs are the schools and colleges that will be equipped and supported to provide for a full range of learning needs among all learners. If there are specific schools that are going to be equipped and supported, one may argue that this is a silent way of perpetuating exclusionary practices. If the SA's education system is adopting the model of inclusive education as the DoE (2010) emphasizes, why then are there FSSs and mainstream schools?

In most of the literature produced, including the very first policy of FSS, which is Education White Paper 6 is documented as 'Full-Service/Inclusive school' guidelines. If these words are the same, what was the need for the name Full-Service because all schools are meant to be inclusive? Secondly, according to the DoE Guidelines for Full-Service/Inclusive schools (2009, 2010), FSSs are expected to strive and achieve access, equity, equality, and social justice for all learners. Doesn't the above statement apply to all schools? Would the school be functional if there is no educational access, equity, equality, and social injustice? Answers to these questions are hard to come by because

there are gaps in the definition of Full-Service school. Research needs to specify the **‘how’** part in all the points stated about Full-Service schools.

According to the Education White Paper 6, learners with barriers to learning which are in mainstream schools are said to be placed there by ‘default’ because they belong to FSSs. Does it mean that mainstream schools are expected not to be inclusive? Does it exclude some learners? Do mainstream schools go against the country's Constitution (South Africa, 1996a), which is grounded in the values of human dignity, the achievement of equality and the advancement of human rights and freedom (South African Schools Act {SASA}, 1996b)?

There are many seductive words provided in the Full-Service guidelines from 2001-2010, but the ‘how’ part is still missing and practicality of the FSSs’ expectations being implemented in practice. The above issues are linked to my study for many reasons:

- Teachers in FSSs have not yet attained full knowledge of what FSS is about and what exactly is required of them in these contexts.
- The policies are not yet final products; research is still being done to direct the department with the go-ahead of implementing inclusive education.
- Many teachers have different views with regards to the approach of inclusive education, and human agency is very important in teaching.
- Learners with barriers to learning are many when compared to available remedial/support teachers that are within the FSSs.

Eighteen years since the publication of Education White Paper 6, South African teachers are still not fully guided as to how they should implement inclusive education correctly and with the support they need.

2.2 Barriers to learning

According to DoE (2010), barriers to learning refer to any difficulty that arises within the education system, the learning site and or with the learner themselves; preventing the access of learning. As a result, FSSs are meant for learners with barriers to learning. Visser (2002) extends the definition of barriers to learning and calls them everything that may prevent a learner from benefiting in education. Barriers to learning can be located within a learner, the school, or the education system itself.

In my context, there are learners who encounter problems such as psychological, intellectual, behavioural, and medical according to their profile records. The psychological problems may include the inability to grasp the content, having a short span of concentration, and grasping concepts very slowly. The intellectual problems may include the inability to read, write, think, and reason. The behavioural problems are likely to be physical, and they include learners displaying a lack of attention or being too active in class; actions that disrupt teaching and learning. Medical problems include genetic problems, visual problems, partial deafness, poor speech development, and many other learning barriers that give rise to special learning needs.

Learning barriers can be external or internal. External barriers may be referred to the factors that arise outside the learner but disturb such a learner from learning. Examples of such factors include physical disabilities, family problems, poverty, and poor living conditions (Lazarus, Daniels, & Engelbrecht, 2007). Internal barriers involve cognitive, health and emotional problems.

It is imperative for teachers in FSSs to understand barriers to learning experienced by the learners so that they may use them as the ladder that will help them plan accommodative lessons. Acknowledging each learner's barrier to learning is also expected to encourage the whole school to be more responsive to diverse learner needs.

According to DoE (2001) teachers in FSSs are expected to identify the factors causing barriers to learning as early as Grade R so that they may be aware of what factors affect learning and how such factors can be minimized. Identifying these barriers early also alerts the districts and the whole education system to provide the additional support required by FSSs.

With regards to my study, the knowledge of barriers to learning allowed me, as a teacher, to be aware of my learners' needs so that I could endeavour to support the learners. There are limitations I have observed with regards to the FSS policy:

- Teachers and schools are expected to cope with large class sizes, deal with learners from diverse linguistic and cultural backgrounds, and deal with diverse unacceptable behaviours such as from some learners who do not have money to afford medication for conditions such as ADHD who tend to behave in an unacceptable manner which is beyond their control. Despite the challenges the teachers face daily, they are still expected to adapt to ever-changing classroom factors.
- According to Du Plessis (2013), inclusive education is not yet a joint responsibility between the districts, schools, and parents.
- The policy is supposed to provide the parameters and directives of the implementation of inclusive education in FSS, but as from 2001 up to 2019, it has not determined the exact course of implementation. Most stakeholders in FSS are eagerly waiting for 2021, but we are not yet close to achieving any of the objectives of the inclusive education in FSSs.
- The Education White Paper (6) commits itself to the establishment of strong educational support systems, but that goal has not yet been attained, and

literature has not revealed any successes of inclusive education; specifically, in FSSs.

- According to Du Plessis (2013), the curriculum is still a critical variable for the effective implementation of inclusive education. This is due to studies revealing that many teachers are not yet able to implement the curriculum effectively. Classroom environments are not enabling the teachers to implement the approach, and there are no changes made in the curriculum to accommodate the learners with barriers to learning (Du Plessis, 2013).

2.2.1. Socio-economic barriers

Learners' needs need to be looked at holistically. Some of the barriers that hinder learners from accessing education effectively are inevitable to them. Poverty, underdevelopment, and lack of basic services are contributors to learning breakdowns. In my case, about half of the school's enrolment is comprised of children who are living at Children's homes. Some were abused at their homes, and some don't have parents at all. Some learners in Orlando East, where my school is situated, have poor living conditions. Most of them are living in informal settlements (shacks); depending only on the school's nutrition scheme for food. Some are on treatments for different conditions, and they need food before they can take their medication. Others come from broken families. Baxen and Breidlid (2004) maintain that the socio-economic factors are a huge threat to the physical and emotional wellbeing and development of learners. I also agree with Baxen and Breidlid (2004) that socio-economic factors play a huge role in the process of teaching and learning. The implications are that teachers of learners with barriers to learning must deal with these diverse family problems because they play a role in how the learners perform academically.

2.2.2. An inflexible curriculum

The DoE (2010), highlights that the curriculum is the most significant barrier to learning. In this case, barriers to learning arise from different aspects such as the content, language or medium of instruction, classroom organization, and methods of teaching, the pace of teaching and the time available to complete the curriculum, the teaching aids, and how learning is assessed. According to White Paper 6 (2001), to address the barriers arising from the curriculum, teaching and learning must be flexible enough to accommodate all different learning needs and styles. The curriculum must be modified across all bands of education; to be accessible to either mainstreamed or FSS learners.

The White Paper 6 (2001) further stipulates that one of the tasks of the districts-based support team will be to assist educators in institutions in creating greater flexibility in their teaching methods and in the assessment of learning. So far, there is no special treatment given to FSS learners when they are writing external examinations; they are tested on the same content and prescribed time as the mainstream learners. This is perceived as being a challenge to many teachers. This means that teachers are faced with the challenge of implementing differentiated pedagogy and moderating the curriculum to be inclusive without being led or shown how to do so.

The department of education seems to neglect the importance of a different curriculum and assessments in FSSs. If there are FSSs and mainstream schools, how come FSS are taught by mainstream educators and they write the same examinations as mainstream learners? What was the initial purpose of differentiating the schools if learners with barriers to learning are not getting the assistance they need? Thorough research still needs to be conducted concerning the curriculum in FSS because the curriculum is a barrier itself.

The White Paper 6 (South Africa, 2001) further extends on curriculum being a barrier and states that the curriculum's inflexible nature leads to a teaching and learning breakdown. Ahuja (2007) asserts that a learning breakdown also occurs through the mechanisms used to assess learning outcomes because sometimes teachers do not know how to assess; especially when it comes to writing activities. For example, in many FSSs contexts, teachers are expected to help learners who are unable to write for themselves informal tests. The teachers are expected to scribe for those learners because most of them can utter their responses verbally. In practice, if 30 out of 52 learners are struggling to read and write how a teacher is expected to cope with writing for 25 learners and still mark the scripts of the 25 learners and the rest of the class?

Since teachers in FSSs are trained for mainstream education, the use of teaching materials tends to benefit the learners in mainstream schools. As a result, learners may experience segregating teaching practices. One may ask what the reason for pulling a child from the mainstream school is if the child in a FSS is still to be taught by a mainstream teacher who is unqualified for FSS because the learner is eventually unlikely to obtain the assistance for which they were moved in the first place. Throughout the implementation of inclusive education, not much difference has not been observed between the mainstream and the FSSs. The only thing that seems to have changed is the name of something like ABC Primary school to ABC FSS.

2.2.3. Language and communication

English is not the mother tongue of many South African learners and teachers. That being the case, communication breakdown tends to occur in the classroom. Such a situation tends to hinder the teacher-learner dialogues and interactions. Ahuja (2007) contends that educators often have trouble in developing appropriate support mechanisms for second language learners. The challenge is that if teachers are

challenged themselves with the language of teaching and learning, they are unlikely to communicate meaningfully to their learners who have diverse linguistic needs.

2.2.4 Limited professional development for teachers

Ntombela and Raymond (2013) argue that most South African teachers have been trained in the deficit model of the mainstream, which has not prepared them to teach a range of abilities. According to the White Paper 6 (2001), a deficit model of mainstream entails getting the learners to *fit into* a system of learning or be integrated to what is perceived as *normal* classroom routine. As a result, teachers come with knowledge of handling learners I will presume with few barriers to learning, not an extensive intervention that they are faced with in FSSs' classrooms. Inadequate teacher training negatively affects the teaching and learning process as teachers feel unprepared to teach all the learners because they are not well informed about FSSs. This was the motivation for this study because I was one of the novice teachers who were not well informed about the FSS.

2.3 Remedial Educators

A remedial educator is a specifically qualified teacher who works in mainstream and special education contexts to provide services and programs, to ensure that the educational needs of special needs children and children with learning difficulties are provided (DoE Guidelines for Full-Service school, 2009). Remedial educators work with children who have external and internal barriers to learning. Such educators may assist learners in overcoming some barriers to learning by modifying the curriculum. They have a one-on-one relationship with learners.

As schools become more inclusive, there is a great demand for remedial educators. According to the DoE (2001), should a school have an enrolment of 500 pupils, the district is supposed to supply that school with one remedial teacher to support the

teachers? My experience is that many FSSs are faced with challenges of overcrowding, yet there is a huge shortage in the provision of remedial educators. If the inclusion was fully successful, remedial educators would have been dominating in FSS schools since they are trained and have a better understanding of teaching learners with different barriers to learning. However, research by the (DoE, 2009) reveals that there are still funds required to fund FSS and special schools to function effectively with qualified staff.

2.4 Differentiated Instruction

With contemporary classrooms becoming diverse, especially in FSSs, teachers are looking to teaching and learning strategies that cater for diversity. Differentiated instruction model might be the answer to teachers and school administrators, provided the whole system of the Department of Education is willing to support it and rethink the structure and content of the classrooms for the benefit of all learners. Tomlinson (2005) defines differentiated instruction as a philosophy of teaching that is based on the premise that students learn best when their teachers accommodate the differences in their readiness levels, interests, and learning profiles. The same scholar further asserts that the main objective of differentiated instruction is to take full advantage of every student's ability to learn. This can be understood to imply that differentiated instruction is not just an instructional strategy nor a recipe for teaching; rather, it is an innovative way of thinking about teaching and learning that is more accommodative.

Hall (2002) argues that to differentiate instruction is to be alert and aware of various students' backgrounds, readiness, and learning profiles. Although it is not as easy as it sounds; teachers have to try to be innovative to assist learners. Furthermore, differentiated instruction sees learning experience as social and collaborative. The definition of differentiated instruction reflects Vygotsky's sociocultural theory. The

theory sees differentiated instruction as being dependent on the social and interactional relationship between a student-student, teacher-student, and teacher-teacher.

If learners are paired and if there is a collaboration between teachers, districts, and parents, I propose that there can be much progress observed and learners' variances could be addressed better. The differentiated instruction also avoids the pitfall of the one size fits all curriculum (McBride, 2004). One size is unlikely to fit all the learners in FSSs because of the huge diversity that exists amongst learners. This kind of instruction also supports multiple intelligences and varied learning styles (Gardner, 1999). Hence as a teacher, I need to be well informed about different bits of intelligence, to learn which ones are most dominating in my learners. Such knowledge will assist me in planning lessons that will have meaning for my learners.

Tomlinson (1999, 2000) maintains that differentiated instruction aims to motivate and empower teachers to shift their thinking from completing the curriculum and moves them closer to catering for individual learners' needs. It also allows teachers to be flexible with time and create an atmosphere of collaboration in the classroom. The limit of differentiated instruction is that some schools, especially management, still perceive it as foreign to them because teachers are still pressurized to complete the syllabus and that does not fully benefit the learners because it does not help to proceed to new concepts before the earlier ones have been grasped (Tomlinson 1999, 2000).

2.4.1. Central tenets of differentiated instruction

Tomlinson (2000a) proposed two central tenets of differentiation: student engagement; and catering for interest, profiles, and readiness. The same author argues that to increase participation in FSSs, teachers must engage with students and abilities to connect to their lives and motivate them that they all have the potential to learn. The knowledge

of the learners is very crucial in any school, particularly in an FSS. It helps one to understand how to deal with each learner individually. Tomlinson (2001a) asserts that the students' interest varies. Therefore, the variance can become an essential tool to support learning in a differentiated classroom. Teachers could take advantage of such diversity to motivate learners to accept themselves. The teachers can help learners to understand that diversity makes the world a better place as human differences mean different strengths (Tomlinson, 2001a). Differentiated instruction might be a new model, but since it puts its emphasis on flexible curriculum, slow pacing, collaborative learning, and expanding opportunities for learners, I suggest it is worth being adopted in all schools; not only in FSSs.

2.4.2 Bodily-kinesthetic intelligence

Gardner (2005 p. 8) defines bodily-kinesthetic intelligence as “the capacity to learn through movement and to solve problems or fashion products using your whole body, or parts of your body like hands and mouth”. Learners with this kind of intelligence understand things better when they are physically involved rather than when listening or reading about them. The prominent characteristics of bodily-kinesthetic intelligence include good dancing skills, excellence in sports, and any other activities that involve the movement of the body. Bodily-kinesthetic learners have excellent physical coordination; they love to move around and rarely seen sitting still. These learners want to touch objects, perform actions, and handle objects physically and experiment with them. They are very creative with their hands and love outdoor education. Bodily-kinesthetic learners have a strong connection between the body and mind and they learn best with movements. This kind of intelligence is possessed by many professional sportspeople, dancers, architects, and gymnasts (Gardner, 2005). Accommodating this kind of intelligence can be one part of the solution in FSSs.

2.5 Theoretical Framework

Simon & Goes (2011) assert that there are two spheres in research: theory and observation. The theory is described as that which a researcher is thinking about, whereas observation is what transpires in the real context. Wilkinson (1991) defines a theoretical framework as an explanation of a trend or an abstract overview that scientifically explains phenomena for the purposes of predicting and controlling such phenomena. A theoretical framework consists of theories that appear to be interrelated. It guides research and is used to evaluate whether questions are structured in agreement with the theory or not (Chong & Druckman, 2007).

Ravitch and Riggon (2012) define the theoretical framework as follows: a series of organised and logical purposes which tend to convince a reader about the importance of the study. In a nutshell, conceptual frameworks highlight the rationale of the study that one may wish to conduct. The conceptual framework should provide a sound argument of the research questions, data to be collected and provide an analytic approach that allows a researcher to respond to the research questions effectively. Developing a conceptual framework constrains a researcher to be knowledge selective and to discern specific relationships within the study.

The purpose of a conceptual framework is to learn from the experience of other scholars and cultivate one's own knowledge about different perspectives. Therefore, the purpose of my study was to document my own experiences of teaching in an FSS without any previous training and how I have come to learn from them. I wanted and still, want to be a better, equipped FSS teacher. FSSs, like any other institution, require teachers with knowledge of teaching. Moore & Muller (2010) defines knowledge as something constructed by an individual through experience and learning, which results from interaction and interests within social groups. In a classroom, the significance of the

knowledge of teaching and learning cannot be compromised. Pedagogical Content Knowledge might be the kind of knowledge required in the context of FSS. This is because PCK represents the professional base for teaching the subject matter (Shulman, 1987). The construct of PCK is significant in assisting the teachers in understanding how the knowledge of teaching a subject is different from the knowledge of the subject itself. For one to teach in an FSS, one needs a different PCK.

2.5.1 Pedagogical Content Knowledge

PCK was conceptualized by Shulman (1986:1987). Shulman defined PCK as an academic construct that is rooted in the belief that teaching is more than delivering subject content knowledge of lessons but is concerned with how to deliver lessons in a manner that is accessible to learners. PCK generally develops over time and through experience about how to teach content knowledge to the degree that leads to students' maximum participation. Shulman (1987) further viewed PCK as comprising of the most useful forms of presentations, the most powerful analogies and examples to present content in different forms. PCK is the blend between what is taught and how it is taught in an accessible manner. Although I attained PCK from student teaching experiences, it was not the relevant PCK required in an FSS.

Shulman went on to extend the definition of PCK and describes it as a form of knowledge that is germane for teachers; knowledge that makes teaching unique from other professions. Shulman further described PCK as the knowledge that goes beyond the teacher's knowledge of the subject but something that includes *what* to teach and *how* to teach it in an accessible manner. It is a special knowledge that is a combination of content and pedagogy required for teaching the subject. He further asserted that PCK, in terms of the most regularly taught topics in one's area, includes: the most useful forms of representations of those ideas; the most powerful analogies; illustrations;

examples; explanations; and demonstrations and other means of representing and formulating the subject that makes it understandable to self and others. Pedagogical content knowledge also includes an understanding of what makes the learning of specific topics easy or difficult: the conceptions and preconceptions that students of different ages and backgrounds bring with them to the learning of those most frequently taught topics and lessons (Shulman, 1987).

Shulman's reconceptualization of PCK research reveals that PCK was functional but had its flaws and limitations (Kind, 2009). Various scholars made a closer inspection towards Shulman's proposals of PCK and spotted some loopholes of the theory. Following Shulman's school of thought, different scholars have been presenting different PCK models to fill some loopholes of his original concept of PCK. Different scholars have identified PCK as a special knowledge used by the teachers to transform their knowledge of content and knowledge of pedagogy for the benefit of the learners. Therefore, this study aimed to investigate the kind of PCK that teachers may consider developing to teach in a FSS effectively. The knowledge of how to teach is very fundamental in all the schools, but my concern is that the PCK that one may need in a mainstream school might be different from the one needed in a FSS. In this study, I tried to figure out the kind of PCK that one may need to teach in the FSS setting successfully.

The modified PCK model by Davidowitz and Rollnick (2011) was more relevant for my self-study. This model is divided into three sections: upper; middle; lower sections. These sections shall be discussed below. What is of interest in this model is that it highlights the importance of knowledge of the students, context, representations, explanation, and beliefs. I note that in FSSs, it is very important for one to understand

the context and to have the knowledge of learners (their strengths and learning disabilities). The knowledge of learners helps teachers to align their lessons with the level of their learners and to cater for different learning needs. Figure 1 below shows the PCK modified model of Davidowitz & Rollnick (2011).

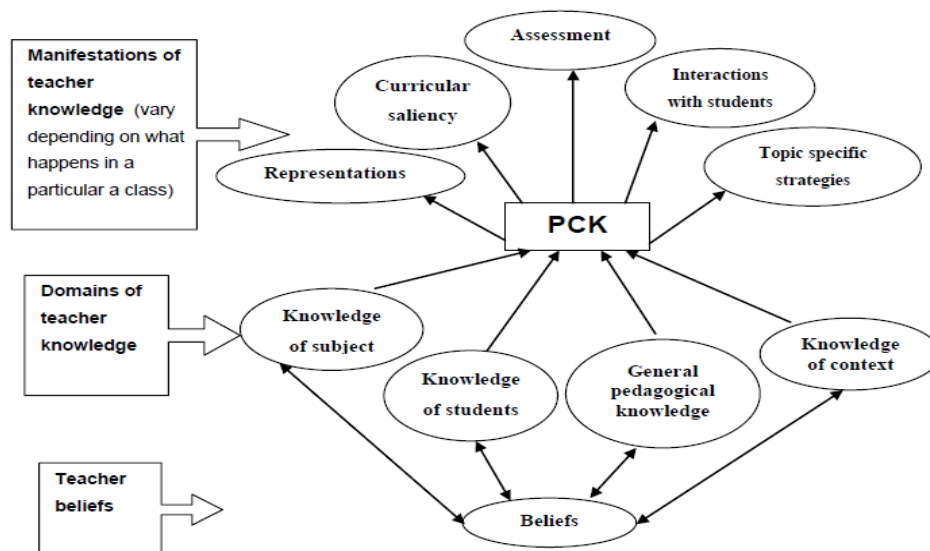


Figure 1: Modified model Davidowitz & Rollnick (2011) the model is extracted from Nyamupangedengu (2015) thesis (pg. 59)

2.5.2 The domains of teacher knowledge

Knowledge of subject matter: (Rollnick et al. 2008, p. 1384) defined knowledge of the subject matter as "the teacher's raw, untransformed subject matter." This is the knowledge that a teacher owns in his or her mind about a certain subject. Any teacher, whether in the mainstream or FSS, is required to have knowledge of the subject matter as it is the knowledge that they are expected to teach.

General pedagogical knowledge: This is the knowledge of how to teach it in a manner that will enable learners to have a full understanding of what the teacher intends to

deliver in a lesson. Such knowledge serves as a guide when a teacher prepares lessons (Rollnick et al. 2008). For example, in a FSS, when planning, the teacher needs to know what strategy they will implement for those learners who can't sit still, and those who cannot read or write but are very good with listening, performances and movements.

Knowledge of students: Rollnick et al. (2008) argue that the knowledge of students includes the learners' prior knowledge, diverse needs, struggles, strengths, their learning styles, linguistic abilities, the pace with which they grasp, and their interests. As the beginner teacher in a Full-Service school, I observed that getting to know learners' learning styles and their struggles are key to effective teaching.

Knowledge of context: The context includes all the factors that may influence teaching and learning. In my case, the lack of training as a remedial teacher was the major factor that contributed many challenges that I have experienced from 2014. The other factors include a class size of about 60 learners, with a very slow pace in class, no expert of inclusive education in the entire school, no differentiated curriculum, lack of parental involvement, and students' challenging socio-economic backgrounds.

2.5.3 Manifestations of teacher knowledge

Representations: Shulman (1986) defines representations as illustrations, explanations, demonstrations, examples or metaphors used by teachers to enhance an understanding of subject matter. In FSSs, teachers are expected to be selective of the representatives used in class to cater to the specific learning styles of learners in this context.

Curricular Saliency: Rollnick et al. (2008) define curricular saliency as the teacher's insights into the context of the topic in the curriculum and the rationale for teaching it.

These insights are manifested in the classroom through the teacher's ability to be selective when presenting and sequencing the content knowledge.

Assessment: Rollnick et al., (2008) define assessments as choices made by the teachers when testing for understanding in both formative (e.g. classwork) and summative (e.g. formal test) assessments. The assessment guidelines and expectations in FSSs and inflexible curriculum are still debatable issues because of different learning styles and abilities of learners in FSSs. Researchers like Nel, Tlale, and Engelbrecht (2016) conclude that there are still gaps of knowledge regarding the assistance and support offered to teachers in FSSs to handle assessments. Teachers are unable to provide effective learning support to learners such flexible assessments that cater their learning needs because they are not fully supported themselves by the Department of Education (Nel, Tlale, and Engelbrecht, 2016).

Interaction with students: The interactions between teachers and learners usually take place during teacher-learner dialogues/whole-class discussions/debates/question and answer/ one on one conversation. Teachers are expected to respond to these interactions with constructive feedback that supports and enhance learning.

Topic-specific instructional strategies: These are teaching methods used by teachers to help learners better understand specific concepts. These teaching methods may vary from context to context. They may include role-plays, demonstrations, performances, use of visuals, use of concrete objects, illustrations etc.

2.5.4 Teacher Beliefs

Davidowitz and Rollnick (2011) define teacher beliefs as a crucial factor which tends to influence the teachers' domains of knowledge to develop PCK further. The way one perceives inclusive education and the approach of learners with barriers to learning

tends to enable or hinder one from delivering meaningful and transformed content knowledge in different teaching strategies. According to my observations, the teachers' opinions, beliefs, reactions, and attitudes, tend to have a great influence on the way teaching and learning is conducted in Full-Service schools.

2.6 Conclusion

In this chapter, I have reviewed the literature on FSSs; including what they are and the factors that impact teaching and learning in these schools. I also presented my conceptual framework for the study, which was PCK as conceptualised by Davidowitz and Rollnick (2011). In the next chapter, I outline and discuss the research design for this study.

Chapter Three: Research design and methodology

“Trust the process. We always end up right where we are meant to be, right when we are meant to be there” Unknown author.

3.0 Introduction

In this chapter, I described my research methodology, approaches, research practices, and methods of data collection. I also explain how I analysed the collected data. I have also described the research context, participants, and ethical considerations.

3.1 Methodology

The methodology of my research was a self-study where I was both a researcher and the participant. Buck, Akerson, and Gilles (2016) define a self-study as a critical enquiry in which teachers and teacher-educators research their own theoretical notions of teaching and how they are informed by their own teaching experiences within the classroom. Self-study enables teachers to explore their practices in a reflective manner. A self-study is further described as a process of learning from experience; embedded within a teacher’s objective of creating new of him/herself for the benefit of the learners.

Loughran and Northfield (1998) define self-study as recognizing that there is a relationship between beliefs and practice. It is also described as the main participant's study of experience, a practical enquiry that may help in improving the practice and studying or voicing one's own teaching experiences to express oneself better in practice. Since my study is a self-study, I researched my own teaching with the aim of learning from my classroom encounters or trigger incidents. By trigger incidents, I am referring to the incidents that occurred during my teaching that either sparked my interest, evoked my emotions, or challenged me to pose a question mark on a certain strategy and modified it for the benefit of my learners (Nyamupangedengu, 2015). Taking a critical

look at my own teaching was likely to offer me, rich examples of experience that enabled me to continue the journey of teaching better than before.

Conducting a self-study influenced me, as the main participant, because it enhanced the perception of self thus enabled me to become a rich resource for myself as well as for other teachers.

My self-study research has been influenced by three approaches: action research; reflective practice; and teacher enquiry (Samaras & Freese, 2006). There are many similarities between these three approaches. However, I have explained each one of them in its own section below to demonstrate their differences.

3.1.1 Action research

Action research is a form of practitioner research that can be used to help one improves their professional practices in many different types of workplaces. Kemmis and McTaggart (1982) define action research as one of the methods of trying out ideas in practice as a means of improvement and increasing knowledge. For teachers, that is where they study their practices to improve them for their own benefit and to improve the levels of their students' learning. Lomax 1990b p. 10 defines action research as follows:

Action research is a way of defining and implementing relevant professional development. It can harness the form of collaboration and participation that are part of our professional rhetoric but are rarely effective in practice. It starts small with a single committed person focusing on his or her practice. It gains momentum through the involvement of others as collaborators. It spreads as individuals reflect on the nature of the participation, and the principle of shared ownership of practice is established. It can result in the formation of a self-critical community: extended professionals in the best sense of the term.

On the other hand, McKernan (1991) defines action research as the reflective process whereby in a given problem area, the objective is to improve practice, or personal or group understanding. The inquiry is carried out by the practitioner to (1) define the problem; (2) to specify a plan of action; (3) allow participants to reflect upon, explain developments, and communicate these results to the community of action researchers. It is imperative that one understands that the aim of both action research and self-study is to improve one's teaching practices through stages of critical reflections. In a self-study, a researcher looks at their ideas, conceptions, and engagements as well as practices that they often. It is self-focused on an individual and how an individual becomes aware of their practices and how they can improve such practices. In addition, Samaras (2010) asserts that in self-study, the most important aspect is the *self* in which the goal is to understand the role of the self in improving others. Therefore, the focus of my study is attaining a better understanding of my teaching practice in an FSS with reference to understanding critical friends' opinions and ideas about my teaching.

McNiff, Lomax and Whitehead (1996) believe that well-conducted action research can lead to:

- One's personal development;
- Better professional practice;
- Improvements in the institutions in which one works;
- One is contributing to the order of society.

On the other hand, Buck, Valarie, and Gilles (2016) argue that the main objective of the self-study should allow us to:

- Foster meaningful discussions on the complexities in science teacher education and how as professionals we are confronting those complexities;

- Encourage the construction and reconstruction of our identities as science educators;
- Provide understanding, encouragement, and support for science educators as they refine, question, and advance their professional knowledge.

The above definition by McKernan (1991) gives us four basic aspects of action research which were described by Kemmis and McTaggart (1992): plan, act, observe and reflect. To do action research is to use whatever comes out of these processes as a source of improvement and knowledge. In both action research and self-study, researchers enquire into problems related to their practice with a goal of improving practice. Researchers in this type of study are participants who are involved in a reflective process. In self-study, inputs from other participants are interpreted in terms of the self.

My study is a form of action research where I sought inputs from Mbali and Zaza as critical friends. My supervisor Eunice indirectly became my third critical friend as the feedback she was giving me throughout the study also helped me to interrogate my thinking and my perspectives. Unlike in action research, where the other participants may be involved in the planning and the action, in self-study the role of the other participants is to observe and help the self to understand the personal practice. Such a study does not always solve a given problem, as would be the case in action research.

3.1.2 Reflective practices

Samaras and Freese (2006) argue that reflective practice occurs when teachers study their own teaching experiences to gain an understanding of their reflections. Such practice involves looking back on certain incidents of teaching and learning from one's own personal encounters. Therefore, in this study, I reflect on my teaching experiences as a novice teacher and examine how my experiences have come to shape my teaching

journey as a teacher with five years' experience. Ball (2000) proposes that reflective practice does not need a specific procedure to be followed but aims to assist teachers to evaluate and critique themselves about their work. I have been reflecting on some of my teaching experiences since 2014. As the concept self-study was introduced to me in 2018, I have been able to plan on what to reflect on and observed the rationale of structured reflections.

3.1.3 Teacher inquiry

Narrative enquiry entails retelling our teaching stories as teachers. In education, a narrative enquiry has been used extensively for conceptualizing and explaining personal and professional development (Amin, 2012). The teacher inquiry involves questions posed by the teachers about their own teaching. Teacher inquiry tends to focus on the concerns of teachers and engages teachers in the research design, data collection, and interpretation. Self-Study is a form of teacher inquiry in which the self is the main investigator. Teachers inquire about their practices and struggles, their knowledge of subjects, knowledge of teaching, knowledge of the learners, knowledge of the context, and their transition from student teaching to qualified novice teaching and to design instruction that will cater for diverse needs of learners. I have been using the inquiry approach unconsciously before I knew the concept of self-study.

3.2 Research design

This study employed a qualitative research design method. Marshall and Rossman (2006, p.2), define qualitative research as "a broad approach to the study of social phenomena." The same authors add that "its various genres are naturalistic, interpretive, and increasingly critical, and they draw on multiple methods inquiry". The qualitative research design method provided me as the researcher with an opportunity to gain a detailed understanding of the problem: teaching in a FSS without any background or

training. In this study, different trigger incidents were used, and journal entries were analysed by self and critical friends.

3.3 Critical Friends

The main critical friend was my supervisor Eunice whom I have presented my journal entries to. The two critical friends were Mbali and Zaza (not their real names). They were both remedial educators at my school. Zaza and Mbali both have 20 years of teaching experience and have spent half of their years of experience as remedial educators. They were the only qualified remedial educators out of 25 teaching staff members. Their roles were to listen to my presentations of trigger incidents, critique, and share their inputs as to how I should have taught the lesson better or what else I could try on the next lesson. They were fully engaged from my inception of the study until the end. These were trusted colleagues who aimed to support me as the researcher through monitoring of the whole research process. They helped me gain new perspectives/insights into my own research.

Critical friends are expected to help educators see beyond their own world views of teaching but to broaden their perspectives in situations in more meaningful ways. According to Adams-Legge (2006), critical friends also nurture a researcher through their commitment to inquiry and ongoing support throughout the research process. Therefore in this study; I share the insight gained from my own teaching practice, with and through the help of critical friends as they validated the collected data.

In their findings, Dalmau and Gudjonsdottir (2002) highlight that working with teachers in an ongoing professional development project showed how collaboration through a self-study was prominent in their learning about the practice. They report that they came to understand that self-studies were powerful ways of encouraging change and professional growth through learning from self. Through their ongoing discussions and

explorations of beliefs, they learnt how to recognise what they were really doing in their teaching, as opposed to what they were doing. As a result, self-studies are expected to reveal insights into one's teaching practice. Working with critical friends also helped me understand different aspects of practice that may not have been so apparent if I had been conducted the work alone. Though the two remedial teachers were not Natural Science and Maths specialists, their inputs and suggestions benefitted my study.

Table 1: Summary of critical friends' demographics

Critical Friend's Name	Teaching years of Experience	Qualifications	Subject taught
Zaza	20 years	Higher Diploma in Education. Diploma in Remedial Education	Mathematics, English, IsiZulu and Arts & Culture
Mbali	20 years	Diploma in Remedial Education and Special needs	Mathematics, English, Natural Sciences, Social Sciences and IsiZulu

3.4 Research instruments

As summarized in the above table, my study employed various methods of data collection, and all of them were in a text form. An autobiography was one of them. An autobiography is an account of a person's life. I presented the events of my life that motivated me to become a Science and Mathematics teacher. I narrated the main

purpose that motivated me to conduct a self-study and how my personal encounters served as a good resource of data for this study. Journal entries, transcribed audiotapes, and my documented reflections were other data sources that were employed in this study. A journal was used as a tool that recorded my thoughts and the successes and failures of my daily teaching practices. King and LaRocco (2006) define a journal as a tool that enables one to capture thoughts, experiences, and ideas in the form of writing. In this study, a journal was the main method of capturing both primary and secondary data.

3.5 Summary of the data collection methods employed in this study

I employed a few methods for collecting data in my study. Below is a table which shows the methods of collecting data in a similar form used by Nyamupangedengu (2015).

Table 2: Summary of the methods used for data collection

Method of data collection	Time employed
Presentation of trigger incidents to my supervisor Eunice, Zaza, and Mbali.	Three months in 2018
Audio-recording and transcription of discussions held with critical friends	After each presentation with Eunice, then the inputs of my critical friends were audio-recorded and transcribed.
Journaling my reflections	After each meeting and discussions held with critical friends, my reflection and lessons learnt were documented in a journal

Autobiography	Presented in Chapter One
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3.6 Participants

In a self-study, the researcher (self) is both a participant and the researched. The other participants were Grade 4; 6; and 7 learners. Eunice, Zaza, and Mbali were critical friends that have contributed highly in this study. The learners were not direct participants in the study, but they are only participating because the minute a researcher steps into the classroom, they become participants automatically (Wits Research Ethics, 2010). I also had one collaborator, a professor who is a specialist for inclusive education. She contributed to my study by challenging my thoughts about FSSs. I treated her guidance as feedback from one of my critical friends, and she supplied me with rich literature to refer to.

3.7 Data collection process

My data was collected in three-set; all in the form of text. The first entailed the presentation of trigger incidents to my supervisor Eunice and my two critical friends, Zaza and Mbali. The discussions and dialogues from my critical friends were audio-recorded, transcribed, and lastly, I recorded my reflections in the form of journal entries. Below are examples of the data that I collected. 1) Journal entry (2). Excerpt of a transcribed discussion with Eunice after the presentation of a trigger incident 3) Journal entry of my reflections.

Journal entry

My intentions were to teach the grade six learners about the topic fermentation. Normally, demonstrations help me a lot when I am teaching. I planned to define the term fermentation, after which I would then demonstrate how fermentation occurs.

Execution of the lesson: I started the lesson by asking learners to say the word fermentation aloud. Half of the class could not pronounce it Coding-learners prompted me to think of an alternative way to help them pronounce the word. I then decided to break the word into different syllables that is fer-me-nta-ti-on. It worked. I showed the learners pictures of a mother making a dough and explained how that links to fermentation. I also added that the fat cakes and umqombothi (traditional beer) are examples of substances that are fermented. A minority of learners were getting it, but the rest were totally lost. I could tell from their unconvincing looks. Coding- facial expression signalling something. (See appendix – for the full details of this incident)

Excerpt of a transcribed discussion with Eunice after the presentation of a trigger incident

Eunice: *Why do you think it was not easy for learners to understand an example of umqombothi? What does this tell you about the way the learners make a connection with knowledge? What does the learners' facial expression tell you, and how do you react from them?*

Journal entry of my reflections

My reflection on the incident *Observations and lessons learnt: My first observation in this lesson was that learners struggled to pronounce the word fermentation. Breaking the long word into syllables while pronouncing the word slowly helped learners to learn the pronunciation even to write it down. I showed them pictures of dough preparation using yeast and other ingredients to make fat cakes. Many seemed to be following from my lesson, and they were able to see how fermentation occurred. The second observation was that learners failed to list the ingredients for umqombothi but were able to list the ingredients for dumpling and fat cakes. After showing the learners the*

pictures of a mother making fat cakes, I used question and answer approach. I asked them the following questions: Which is the main ingredient that raises the dough. What was the reason for mixing the flour and yeast with warm water specifically? Why not cold water? What is the reason for closing a container with dough? The question and answer session seemed to be working in my classroom, but I reflected, next time I am teaching this lesson learners will do experiments of dough in groups so that each learner may have a personal experience of what happens from the beginning till the end where the raw dough has been converted to a fat cake or a dumpling. They will need to observe each stage of the dough rising

3.8 Data analysis

The first data set (primary data) was in the form of journal entries of my classroom experiences or encounters with the learners. These classroom encounters were recorded as trigger incidents in my journal. I captured trigger incidents in my journal over a 3-month teaching period. The process of analysis, which happened concurrently with data collection, consisted of three steps. The first step entailed the presentation and discussion of my journal entries (trigger incidents) to my supervisor Eunice and my critical friends Zaza and Mbali. The presentations and discussions were audio-recorded and transcribed; making a second data set (secondary data) for the study. The second step was my reflection on the presented trigger incidents in light of my critical friends' inputs. I captured my reflections as journal entries, and these entries formed a third data set (secondary data as well). All three data sets were in text form. The third step was inductive coding of the three data sets. After coding of the journal entries, I was able to extract key themes which I then presented and discussed as my findings. Below is an example of a coded extract of a journal entry.

Journal entry 1 (22-01-2018) Today, I was in grade 4 teaching Math and needed them to focus on halving and doubling two-three digit numbers, e.g. double 22 or double 146. It is the stuff I was not that worried about because it was meant to have been covered in the foundation phase (Coding-assumption). So, with confidence, I asked them a question: What is half of 2? To my surprise, there was no response (Coding-silence- triggers my sensitivity). I then quickly decided to change the question (Coding-I was prompted to change the question by the silence), what is the double of 2? Still, there was no answer (Coding-silence). I began to wonder about what was happening, and I was silently asking myself "Am I speaking appropriate English? Is the language I am speaking foreign to my learners? (Coding-Silence prompted me to ask myself questions in silence) I started moving around the classroom, wondering when my learners were going to answer me. As I was walking around the classroom confused, an idea to demonstrate the concept came into my mind (Coding-silence triggered me to think of a different teaching approach) ...I asked four learners to stand up, and those were two boys and two girls and began my demo. Then I started, I have two boys, and I add two girls to these boys that means I have doubled the number of learners. And if I remove two learners from these four, that means I have halved. I asked again, what's half of 2? They go like 1. What if I double 1? Then it's 2, teacher! Oh finally! My question has been answered! (Coding-I used learners to demonstrate concept/ Silence is broken as learners respond)

3.9 Validity and reliability

Validity and reliability are terms that are often used interchangeably because it is difficult to differentiate between these two terms. Opie and Scaife (2004) argue that validity is expected to demonstrate links between claims and the results of the data gathering process. In a self-study, validity refers to trustworthiness and usefulness of

the claims validated by discussions, dialogues, critiques from critical friends, and other researchers. Even Though research cannot be totally valid; the usefulness and honesty of claims, with supporting evidence, make research studies to be seen as having an acceptable level of validity and reliability.

Feldman (2003) indicates that it is challenging to maintain validity in a self-study because when we reflect as teachers and researchers, we do not know if what we see in the mirror is the accurate picture or the distorted view provided by our beliefs and experiences however, we can attempt to do the following to achieve validity:

- Provide a clear description of how we collect data and reasons for that specific procedure
- Have multiple developers to help us construct meanings from our data. For example, in my study, I also held some conversations with other experienced teachers who are PhD candidates to get them to read my work. I also conversed with one of the specialists in inclusive education at Wits.

On the other hand, Scaife (2004) defines reliability as the manner to which a process of data gathering tends to produce similar results in similar conditions. In the self-study, the main purpose of validity and reliability is to affirm that the claims from a study are not biased but trustworthy.

3.10 Ethical Consideration

When conducting a study, it is imperative that a researcher becomes sensitive to the participants' rights. Opie (2004a) presents two principles which are fundamental to ethical research. The first one deals with protection and sensitivity of participants. The second highlights the importance of the individual's rights to privacy. Therefore, ethics seek to promote the application of moral principles to prevent harming others

intentionally or unintentionally. To avoid endangering the participants of this study, I applied for the ethics clearance from the Ethics Committee in Education of the Faculty of Humanities, at the University of the Witwatersrand, and I was granted ethics clearance with an ethics number. I was granted permission to conduct my study in a GDE school after my application was approved (refer to appendices). I was given consent by all the participants who were involved in my research. Taylor (2013) proposes that informed consent includes three aspects: understanding of the research; the choice to participate; the choice to withdraw after consenting to participate without having to provide a reason. This implies that all the research participants, such as critical friends needed to be respected and be informed about a research purpose and that their research participation is of great value but not mandatory. Therefore, they can withdraw at any time should they feel they need to do so. I have also protected the anonymity of the school and other relevant information that includes the invasion of learner and colleagues' privacy.

In this chapter, I have discussed the methodology, research instruments, and ethical issues. I have explained the approaches that influenced my study and explained how they relate to my study conducted in an FSS. In the next chapter, I will present my data analysis and findings.

Chapter Four: Data Analysis and findings

“Now faith is the substance of things hoped for, the evidence of the things not seen”

Hebrews 11:1

4.0 Introduction

In this chapter, I present data analysis and findings. In self-studies, data collection and data analysis are not separated processes. Therefore, as I collected data, I was also analysing it at the same time, using Rollnick and Davidowitz (2011) PCK model as an analytical tool. Before presenting the results and findings, I first describe how the analysis process occurred. This is then followed by the presentation and discussion of the findings.

4.1 The data analysis process

4.1.1 Description of the collected data

As described in chapter 3, the first data set was in the form of journal entries of my classroom experiences or encounters with the learners. The second data set was the transcribed recordings of my discussions with my critical friends. The third data set was my reflections that followed each discussion.

Processing of collected data

I read through all the entries in my journal and categorised them into three broad categories, namely trigger incidents, discussions with critical friends, and reflections. I explained the meaning of the term trigger incident in Chapter 3.

Data analysis

The process of analysis, which happened concurrently with data collection, consisted of three steps. The first step entailed the presentation and discussion of my journal entries (trigger incidents) to my supervisor Eunice and my critical friends Zaza and Mbali (see details in Chapter 3). There were eight trigger incidents in my journal, which

I captured over a period of three months. Here I however chose and presented five of these trigger incidents to bring out what I have come to know and learn about teaching learners in a FSS. The presentations and discussions were audio-recorded and transcribed; creating the second data set for the study. The second step was me reflecting on the presented trigger incidents in light of my critical friends' inputs. I captured my reflections as journal entries. These entries formed a third data set. All three data sets were in text form. Below I present the five trigger incidents as my results. Three trigger incidents focused on teaching and learning strategies, while two were behavioural. The presentation of a trigger incident is followed by a discussion which brings out what I have come to learn and understand from those trigger incidents

Below I present an example of the three-step process of data analysis that I employed throughout this study to show how I arrived at the findings that I discussed later in this chapter. I presented this excerpt in Chapter 3 to show how I had done the analysis. I, however, present it again here as I want to show the whole analysis process in a continuous manner.

Step One: Presentation and discussion of journal entry/trigger incident to my Critical Friends

Below is one journal entry that I presented to my Critical Friends

Trigger Incident 1: The halving and doubling incident (This incident was Journal entry 1 (22-01-2018))

Today I was in grade 4 teaching Math and needed them to focus on halving and doubling two-three-digit numbers, e.g. half 22 or double 146. It is the stuff I was not that worried about because it was meant to have been covered in the foundation phase (Coding-assumption). So, with confidence, I asked them a question: What is half of 2?

To my surprise, there was no response (Coding-silence signals something). I then quickly decided to change the question (Coding-I was prompted to change the question by the silence), what is the double of 2? Still, there was no answer (Coding-silence). I began to wonder about what was happening, and I was silently asking myself "Am I speaking appropriate English? Is the language I am speaking foreign to my learners? (Coding-Silence prompts me to ask myself questions in silence) I started moving around the classroom, wondering when my learners were going to answer me. As I was walking around the classroom confused, an idea to demonstrate the concept came into my mind (Coding-silence triggered me to think of a different teaching approach). I asked four learners to stand up, and those were two boys and two girls and began my demo. Then I started, I have two boys, and I add two girls to these boys that means I have doubled the number of learners. And if I remove two learners from these four, that means I have halved. I asked again, what's half of 2? They go like 1. What if I double 1? Then its 2, teacher. Oh finally! My question has been answered! (Coding-I used learners to demonstrate concept/ Silence is broken as learners respond)

Discussion with critical friends

The discussions took the form of questions from critical friends and responses from me. I present the discussion that followed the presentation of the trigger incident above next.

Eunice: You seemed to be assuming in your planning as reflected by your journal entry that the learners knew. Are you sure that these concepts were covered in the previous grades or you are assuming that since the curriculum expects them to be taught these concepts in the foundation phase level (Coding-Eunice immediately picks up from my presentation the issue of assumptions)

My response: No, I was not sure. I never thought that a grade four learner could struggle to half and simple double numbers such one and 2. (Coding-my assumptions about the learners' knowledge standing verbalised).

Zaza: Why didn't you start by asking them what it is that they understood by the concepts of halving? Why did you assume? Coding-assumption. If you were to teach this lesson again, what would you do differently? How often do you use different teaching and learning methodologies?

My response: Being in the 4th grade, I thought the concept was too easy (coding-assumption). Therefore, my aim was not to reteach the concept but recapping on prior knowledge to introduce a new lesson. I assumed because I had no idea about the kind of learners I had (learners with barriers to learning or learners that have additional learning needs) (Coding-new awareness of who my learners were). And now I know that the **audience and context** that one has is very important. I did not know that no matter how easy topics teachers may perceive but with FSS learners, additional support is always significant (Coding-knowledge of learners gained) and guidance (knowledge gained) from the beginning of the lesson till the end.

Zaza: Was the language of the instruction or the language of the subject (discourse) a problem?

My response: The language of teaching and learning was not the problem in this case because the learners were not able to answer as even though I tried to ask the question in IsiZulu.

Mbali: *Do you think it is important for teachers to recap the prior knowledge from the previous grades? What are the dangers of assuming that learners have done the work previously? How did you feel when learners were not answering your question?*

My response: *It is very important to recap prior knowledge whether in a mainstream or FSS. The danger of posing assumptions to learners is that the time is wasted, and the learners get more confused. I had no choice other than to think of the strategy that will break the learners' silence.*

Step Two: My reflections

Knowledge domain: Knowledge of the students

Manifestations of teacher knowledge: Representations

*One of the PCK knowledge domains that teachers require is the knowledge of students. By having this knowledge, they get to appreciate the students' prior knowledge, how they learn, their linguistic abilities, interests and aspirations. It's evident that I have **no knowledge of the learners** I am teaching and knowledge of what makes topics easy or difficult for them to learn. Now Shulman's argument (1986, 1987) that the knowledge of the students and their context should shape how teachers structure their teaching makes sense. Until now, I had never understood Heacox's assertion (2012) that learners have individual learning preferences, backgrounds and needs. Learners only started to respond when I was using them as resources to demonstrate the concepts. The **subject matter representation** is the ability to produce effective representations and link them to the target knowledge. In this lesson, **the PCK manifestation of teacher knowledge** employed was a demonstration. It was through a demonstration that I was*

able to connect the lesson with learners. Without a demonstration, learners would not have gained an understanding of what I meant by doubling and halving.

Step Three: Inductive coding of the texts in step 1 and 2

The coding is shown in both Steps 1 and 2 above. I did this coding as a way of making meaning of what I was experiencing. After coding each trigger incident, I would extract the codes, make a list and then reflect further using those codes as triggers of my reflections. Below is a list of the codes from trigger Incident 1

1. Assumption:
2. Silence signals something
3. I was prompted to change the question by the silence
4. Silence prompts me to ask myself questions
5. Silence triggered me to think of different teaching approaches
6. Eunice picks up an issue of assumption
7. A new awareness of who my learners were
8. Knowledge of the learners gained

I then further reflected on Trigger Incident 1 using the listed codes above as triggers. Below is a discussion of the understanding and learning that developed from this further reflection.

The learners' silence, facial expressions and body gestures triggered me to think of another way that will help them learn to halve and to double faster. Code-switching never helped me. The silence triggered me to change from recapping to re-teaching the concept. Enabling the learners to be the part of the halving and doubling demonstration captured their attention, stimulated their interest and got them answering a question and more questions about halving and doubling. No one told me

about using the learners as part of a demonstration instead of other concrete objects; the idea just popped into my mind. As learners were part of the lesson, their level of participation seemed to have accelerated fairly. I never knew what the learners' learning needs were; it was just by trial and error to find out that they like acting out things. No wonder Florian and Black-Hawkins (2011) stress that though teachers may have an assumption that they are lacking specialist and skills required to teach learners who have been identified as having additional learning needs but seeking and trying out new ways of working to support the learning of all children might be a part of the unknown solution (if there is any).

Below I present the rest of the trigger incidents as my results

4.2 Presentation of results

Trigger Incident 2: The fermentation incident

My intentions were to teach the grade six learners about the topic fermentation. Normally, demonstrations help me a lot when I am teaching. I planned to define the term fermentation, after which I would then demonstrate how fermentation occurs. Execution of the lesson: I started the lesson by asking learners to say the word fermentation aloud. Half of the class could not pronounce it. I then decided to break the word into different syllables that is fer-me-nta-ti-on. It worked. I showed the learners pictures of a mother making a dough and explained how that links to fermentation. I also added that the fat cakes and umqombothi (traditional beer) are examples of substances that are fermented. A minority of learners were getting it, but the rest were totally lost. I could tell from their unconvincing looks.

My reflection on Trigger Incident 2: *My first observation in this lesson was that learners struggled to pronounce the word fermentation. They are breaking the long*

word into syllables while pronouncing the word slowly helped learners to learn the pronunciation even to write it down. I showed them pictures of dough preparation using yeast and other ingredients to make fat cakes. Many seemed to be following from my lesson, and they were able to see how fermentation occurred. The second observation was that learners failed to list the ingredients for umqombothi but were able to list the ingredients for dumpling and fat cakes. After showing the learners the pictures of a mother making fat cakes, I used question and answer approach. I asked them the following questions: Which is the main ingredient that raises the dough. What was the reason for mixing the flour and yeast with warm water specifically? Why not cold water? What is the reason for closing a container with dough? The question and answer session seemed to be working in my classroom, but I reflected, next time I am teaching this lesson learners will do experiments of dough in groups so that each learner may have a personal experience of what happens from the beginning till the end where the raw dough has been converted to a fat cake or a dumpling. They will need to observe each stage of the dough rising.

Insights from the discussion of Trigger Incident 2 with critical friends

From my discussion with Eunice, I got to understand that familiarity with a concept is not enough for one to understand it. Personal relevance and involvement are necessary for the FSS context, and this tells me that everything I teach needs not to be abstract to the learners, but it should involve them personally. I came to this understanding when Eunice asked me this question:

Eunice: *Why do you think it was not easy for learners to understand an example of umqombothi? What does this tell you about the way the learners make a connection with knowledge?*

My response: *Umqombothi does not relate to them personally, but the fat cakes and dumplings do. Though I have assumed that since umqombothi is sold in townships might be a familiar concept since they also live in a township, I have realized the learners never made connections with it.*

From my discussion with Zaza, I learnt that there is no single way of teaching. Although demonstrations were the most effective teaching strategies in my previous lessons, it didn't mean that they would always be effective. I learnt that there is no single recipe for teaching learners in FSSs. This is in the same way as patients react differently to prescribed medication. Doctors are always willing to prescribe new medication to check if the reaction is going to be the same or not. I came to this understanding when Zaza posed the following questions and suggestions:

Zaza: *Considering that you know that your learners need additional support, why didn't you show them a video so that they will be clear on how fermentation occurs before introducing the word fermentation. Again, a practical task would have been nice in this lesson.*

My response: *I would have loved to play the learners a video, but the school does not have the projector and the laptop that will enable me to play the video. Also, previously demonstration has been the most effective learning method for my learners only to find out that today it never worked. I believe with the next class tomorrow a practical will make a difference.*

Zaza: *I think you should have written the word on the board and asked the learners what they understood about fermentation instead of if they might not know it. Again, you should have asked the questions such as why you use warm water in making dough*

while you were showing them the demonstration instead of asking the questions in isolation and that would have connected to the students' experiences

My response:

Zaza, you suggested that I should have written the word on the chalkboard and asked them who knew the word instead of assuming they do not know it and explaining it first before asking them. My response to your question is that I knew how much science vocabulary my learners had and as for the word fermentation, it was too complex and unfamiliar for them, and it would be uneasy about making progress. As a result, I knew the areas of my learners' difficulties, and I sort of knew which ideas my students were likely to bring in class. Now I understand what Magnusson et al. 1999) meant when he talked about the knowledge of the students of understanding science vocabulary, not asking them about fermentation first was an indication that I knew how much science vocab they had.

Knowledge domain: General pedagogical knowledge

Manifestations of teacher knowledge: Representations

From my experience in teacher education at Wits, I understood what counted as good teaching, the best teaching approaches in a given mainstream context, and I was well informed of the knowledge of applicable learning theories. In short, I had general pedagogical knowledge which was never applicable in my new context teaching in an FSS. Initially, I thought learners would be happy for the lesson since it was more practical. However, I found that as much as they were happy, the reading to learn and pronunciation methodology was not well scaffolded in the previous grades.

To cater to the learners' needs, I had to start by teaching them to pronounce scientific words correctly. In future, I would implement my supervisor Eunice's suggestion of learning to pronounce words. She advised that in a setting where learners struggle to pronounce the word again, I should, or they can collect some cans of cold drinks such as Coke; the popular one. Learners can write their names on a paper and stick it on the can and practice the word by mimicking what happens on the Coke advert on TV that involves practising to pronounce peoples' names that are written on Coke cans. I believe this can be a fun introduction that can relate to the learners personally as each will be carrying a can and practising to pronounce the word at their own pace. Breaking the words into syllables indirectly accommodated the learners who have limited linguistic/verbal intelligence, and this falls under representations in teacher manifestation of knowledge. Despite the struggle to help the learners pronounce the word, realizing that umqombothi example did not relate to them, I paused and thought of how I can help the learners relate to fermentation.

Trigger Incident 3: The integer incident

I introduced integers in Grade 7. I explained what integers were, negative numbers and positive numbers. I showed my learners the number line of integers that had negative numbers on the left-hand side and zero in the middle and positive numbers at the right-hand side. The problem began when they saw zero in the middle; that was the conceptual change issue. I recorded as follows in my journal

Today I have just introduced the positive (+) and the negative (-) numbers to my grade 7s. They seemed to follow as some were nodding their heads, some were just looking either outside, and some are just drawing on their workbooks but when I asked them questions such as $-4 + 2 = ?$ Some said six some just looked at

me. Before the lesson, I could not think of an example that would be relevant to them since I have experienced that in each lesson they have to be used as an example to understand but during the lesson I paused and thought of something. What if I use "what has been taken away from you and what you have" or profit and loss? I gave them a problem to test if my profit and loss are going to work, so I narrated $-4+5=$ Four oranges have been taken away from as I had five of them, how much I am left with? The learners were able to answer me correctly. Again, I gave them another problem, $2-8=$ this meant that I had 2 apples, but 8 were taken away, the learners were able to give me the correct answer again so easily. I also recalled that learners are likely to get the concept better if they are part of the resources in class. The very number line that was from the board I changed to the demonstration. Five learners represented the negative numbers, one learner represented zero which is neither a positive nor negative number the other five learners represented the positive numbers, I then gave them simple sums to solve, and they all solved them very fast and the facial expressions and wide opening of the mouths and nodding of their heads showed me that they gave finally came to their aha moment.

Insights from the discussion of Critical Incident 3 with Critical Friends

Manifestation of teacher knowledge: Representations

The more I interacted with my students, the more I was able to use different representations to deliver content knowledge. When I began using the profit and loss example, and oranges, to explain integers, students' prior knowledge was drawn, and they were able to solve the presented integer problems. From the discussions held with Mbali and Zaza, I came to understand that in FSSs, specifically, personal meaning is

very important to the learners. By personal meaning, I mean that every topic taught to these learners should connect to their individual lives, and they should relate to it. When a teacher plans his/her lessons, the instructional strategies have to be topic-specific and also be specifically related to students. Unless learning relates to the learners' personal lives, then there will be no progress in one's lessons. As a teacher, Mbali's comment motivated me to keep on discovering the kind of learners I had in the FSS and to try without ceasing. Again, her comments challenged me to revisit what Howard Garner (1999) proposed as multiple intelligences. Knowing the dominating form of intelligence in my classroom might assist in planning the lessons along those lines. As I read more about different learning styles, I gained a new awareness of who my learners were. I have gained this understanding from the following conversation:

Zaza: *Why did you not make use of the number line loops to demonstrate to them how integers work?*

My response: *I did the number line with them at the beginning of the lesson. The problem started when they saw the zero in the middle and negative numbers. Learners did not seem to relate to the number line until I asked each learner to represent each number on the number line in the form of a demonstration.*

Mbali: *To simplify even further, you may use the money because learners are familiar with it. For example; the zero in the middle means one has no money at all. If we may use R10 as an example; positive R10 that one has R10 while negative R10 means you owe someone R10. You should also do the concept reinforcement and ask them to compare the integers for example; what are the first three numbers that are below zero and the first three numbers that are above zero just to get them to play around numbers and this could link to the degrees of cold and hot temperatures too. But I am so happy*

that you thought of using them in a demonstration so fast and you were able to compromise the whole planned lesson for the unplanned one of re-teaching the lesson. You were patient enough to try from X, Y then Z. The only way of knowing is to try. Otherwise, you will never know.

My response: *This is the simplest method ever that has personal meaning to the learners, and it is not abstract. I do not think they will ever forget if I were to teach them this way. Though not all of them have access to money, everyday money is more relevant to them.*

Trigger Incident 4: The reading and writing incident

As discussed in Chapter 2, the learners' ability to read and write in FSSs is a great challenge to both teachers and learners. Teachers must figure out strategies to help learners understand the content and write assessments. Some of those strategies include scribing for the learners, reading each question for them before they can answer it, asking them to orally present answers, and many more. I have encountered a similar incident with two Grade 6 learners who were unable to read and write, and I was only able to help them do well in assessments after trying for a long time to figure ways to help them, and I reflected as follows:

Today I decided to use my scientific skills, and I did an experiment with two grade six learners who are struggling to read and write, and they perform very poorly in their tests. The aim was to help them find a strategy that will help them do better in their formal assessments. It is so hard to scribe for them because there is plenty of them who cannot read and write it is three-quarters of the whole class. I experimented Reamogetswe (not real name), but she writes her name as Remogest because she is dyslexic. Another one is Siphiwokuhle (not real name) he cannot write at all. He just

writes something one never understands, e.g. "umxvvha" for example when asked to summarize the process of photosynthesis. Today I was assessing them as usual but thought of trying new things while I was at home. I had an idea of drawing in my mind. Reamogetswe couldn't write a summary of photosynthesis but was able to represent it in a drawing perfectly (see the work on the appendix). On the other hand, Siphiwokuhle could not write the summary nor draw the whole process. But he orally presented it very nicely. I was like finally! Finally! That will be the way to go for both as from today! Both had inabilities to read and write at their expected levels, but that triggered me to think of another assessment style that might work for them by fate it worked indeed.

Insights gained from reflecting on Critical Incident 4

Manifestations of teacher knowledge: Assessment

Rollnick et al., (2008) define assessments as choices made by the teachers when testing for understanding in both formative (e.g. classwork) and summative (e.g. formal test) assessments. The assessment guidelines and expectations in FSSs and inflexible curriculum are still debatable issues because of different learning styles and abilities of learners in FSSs. After I critically reflected from my lesson, I learnt that the curriculum is not flexible enough to suit the needs of FSSs. CAPS emphasize that assessments must be administered in written form. This then disadvantages learners in FSSs because most of them struggle to read and write at their expected level. This lack of reading and writing skills tend to disadvantage them and affect their level of performance. I gained an understanding that though learners may be unable to read and write, they are good with performances, orals and drawing. They just need teachers who will support them and cater to their differences. I have come to understand that content can be assessed in different formats other than text format.

Trigger Incidents 4: The sweeping incident

In the middle of my lesson about ecosystems, the learner just revealed a new behaviour as he stood up and swept the floor. I reflected as follows:

Temptations are just everywhere! Asi's (learner's name not a real one) audacity!!! To stand up, take a broom and sweep while I am busy? Was I that boring? Was the concept of ecosystem totally a foreign concept to him? What must I do to keep him focused? What an embarrassment!!! I am just relieved he was able to sit when I reprimanded him. However; why were the learners not shocked by his actions? Why didn't the class take offence of his action and why did they say "U- Asi esimaziyo ke lowo mam ungamnaki" which means that is the Asi we know teacher, please do not take any offence or just ignore him. I then wondered what the learners meant with their saying. This incident actually triggered me to (1) change the facial expression in order to demonstrate my firmness towards Asi (2) Motivated me to continue with the lesson as if nothing has happened since the learners also were not that disturbed (3) to enquire about Asi's learning needs and possible reasons that might have contributed to his behaviour (4) I was also triggered to make a research about each learner I taught in order to understand not only their academic needs but behaviours as well.

Insights gained from discussing trigger incident 4 with critical friends

Knowledge domain: Knowledge of the context

The knowledge of the context refers to all contextual variables influencing the teaching and learning. These may include learners' behaviours, availability of resources, class sizes, student socio-economic background, curriculum, classroom conditions, and time available for teaching and learning. These may be one of the factors that contributed to

Asi's incident of sweeping despite his condition of being ADHD. From my conversation with Zaza, I have learnt to examine the learners' behaviours and look at the motive behind every behaviour. Sometimes it is not about you as a teacher, but it is about the context you are in. I also learnt that behaviour might be one factor which is a barrier to learning, and it should be catered for when one plans for lessons. Examples include avoiding reprimanding the same learners in every lesson, using enrichment educational games such as chess and Sudoku in class, and giving the learners a minute to move around since they learn best with movements. I came to this understanding after the following conversation:

Zaza: *I'm so glad you were not furious about Asi's behaviour and how he disturbed teaching and learning. Just a piece of advice, you might need to visit Asi's profile you will then be able to find the reason behind his behaviour because it seems the learners seem to know more about Azi that you do not know.*

My response: *Had not Asi swept in my lesson, I would not have known that he had a medical condition of hyperactivity called ADHD. ADHD has defined as the attention deficit hyperactivity disorder that affects the child's level of concentration, learning and sitting still. In a nutshell, had Asi's incident not challenged me, I would not have known about other learners who are in a similar situation.*

Trigger Incident 5: The tears incident

My intentions were to introduce diabetes as one of the deficiency diseases in a Grade 6 Natural science lesson.

Execution of the lesson: I firstly recapped learners' prior knowledge about diabetes. Learners seemed to think that diabetes was linked to one's overconsumption of foods

with high amounts of sugar. I explained Type One and Type Two diabetes and further highlighted that diabetes is not always linked to diet. I could see by the nodding of heads that learners were following in my lesson. As I was geared in the lesson, enjoying my presentation of diabetes, one learner just frowned at me and started crying. I was confused and reflected as follows:

There may have been many reasons for the learner to frown and cry during my lesson. She might have been irritated by the lesson or confused, or the lesson was unclear. Was I insensitive when I taught diabetes? But I remember doing self-reflection on how I have explained how one may prevent diabetes. I did indicate that diabetes can be genetic besides diet or did I not? Maybe I offended a learner somehow! I just felt guilty at the end of the lesson asking myself a lot of questions about the learner that cried. These tears shifted my entire focus on the lesson. I went to the learner and asked her to come with me to discuss the tears incident outside the class. Meanwhile, I gave the rest of the class activity to discuss their knowledge of diabetes for example; discuss with their partners if they knew someone with diabetes, how is the diet of that person, what kind of diabetes it is etc. I know that tears led me to compromise with my teaching time but hey what choice did I have?

Insights gained from discussing trigger incident 5 with critical friends

Manifestations of teacher knowledge: Curricular Saliency

Now I understand what Rollnick et al. (2008) meant when she argued that curricular saliency as the teacher's insights of the context of the topic in the curriculum and the rationale for teaching it. These insights are manifested in the classroom through the teacher's ability to be selective when presenting and sequencing the content knowledge. From this incident, I learnt that since one of the barriers of learning is emotional

problems, especially in FSSs, teachers are encouraged to be mindful of topics they teach and the manner and the extent of which they teach these topics. It may be a mandate to teach diabetes as part of diseases under the topic of diseases related to nutrition, but sensitivity is encouraged.

From discussing with Mbali, I learnt that diversity is real, and as teachers, we must be very responsive and sensitive towards learners' needs and differences. When a learner cried, my focus was on that incident; I neglected how learners were grasping the concept of diabetes. My focus was on what triggered the tears from a learner, and I just blamed myself. Mbali's comments made me make sense of Subban's (2006) assertion regarding being sensitive to the learners' needs and to understand their level of readiness. Though it might not be an easy task to detect which topic is going to have more personal meaning and trigger emotions from the learners, being sensitive to diversity is recommended for a teacher. Some learners are not emotionally and cognitively ready to learn about certain topics because of the pace of cognitive development. I have gained these insights as Mbali said:

Mbali: *You were brave to teach such sensitive topics because indeed, they are societal issues. And having to teach them in an environment where there are many possibilities that diabetes might be a barrier to learning to a certain learner. And jah! It was great that this incident triggered you to shift from your bias about diabetes and its effect quickly. Just approach the kid nicely to find the reason behind the action.*

4.3 Presentation of findings

Various insights emerged from this study as I analysed the data. I presented them in this section and later deduced two key findings that sum up all those insights gained. When I began my teaching career at an FSS, my confidence as a novice educator was challenged. I lacked one of the domains of teacher knowledge, which is the knowledge

of students, and that made me feel as if I was not a qualified teacher. Although I could see that my learners were struggling to write, I would continue giving them plenty of written tasks as it is what is prescribed by the CAPS document and the school expected that too. This means that as a novice teacher, I lacked the manifestation of accommodative assessment that catered for the needs of my FSS learners. Giving them many written tasks confused and demotivated them more because most of them are naturally good performers; very good with arts and sports. I could not believe some of the things I was observing. For example, I could not make sense of a Grade 4 learner who did not know which side to write on the workbook. This frustrated me because I had no knowledge of the context. Having such knowledge could have eased my frustrations as I wouldn't be blaming myself. I always made assumptions about their prior knowledge and their abilities until I learnt not to assume anymore. This lack of understanding of my learners was a challenge for me for a long time as a novice educator because every time I thought I had planned a good lesson, I would end up having to reteach it in a bodily-kinesthetic manner, which is what suits most of the learners' learning styles.

As indicated earlier, silence and facial expressions such as frowning were always triggered incidents in my classroom. In the beginning, there was a time when I thought that the learners did not like me. I was struggling to stimulate their interest to participate in my lessons until I became aware that a bodily-kinesthetic component must be incorporated in all lessons. Even now, I cannot say with confidence that I understand who FSS learners are and their preferred learning styles. However, I have obviously transcended from where I was five years ago as a novice educator, and I know that movements and using the body parts help the learners to learn better. The insights that

I got from my experiences, described above, are as follows: It is very important for teachers in FSSs to:

- Understand that learners in FSSs are bodily-kinesthetic or have bodily-kinesthetic intelligence. Learners may have more than one type of intelligence, but my experiences confirm that this kind of intelligence is the dominating one.
- Understand that differentiated instruction is one part of the solution of teaching in FSSs and teachers are expected to extend on their current/known teaching strategies in the manner that cater the learning needs of the learners in FSSs.
- Understand the nature of their learners and their learning needs
- Understand that learners need intense support to enable learning. Therefore, teachers must not assume about learners' prior knowledge, no matter how easy topics may be perceived by the teachers
- Consider the slow pace of the learners. In as much as CAPS proposes time and content to be taught, but the learners' pacing should always be taken into consideration.

I discuss these insights below:

4.3.1 Bodily-Kinesthetic Learners

Ay, Mansi, Al-Taieb, Ermeley, Bayyat and Aburjai (2018) describe bodily-kinesthetic intelligence as the capacity that allows learners to use their complete bodies in expressing feelings and emotions. This kind of intelligence is possessed by actors, athletes, swimmers, divers, artists, and dancers. It enables one to control and interpret body movements and to form harmony between the body and the mind. Ay et al. (2018)

further assert that people with this kind of intelligence can play sport successfully, and they are naturally skilled performers.

My findings revealed that learners in an FSS might not be able to read and write, but they communicate using their body movements, and they excelled in arts and sports. As a result, to cater for their learning needs, one needs to be informed that in a lesson plan, movement activities, drawing, and sports need to be incorporated because learners use some parts of the body to solve problems they are presented with. Howard Gardner (1993; pg. 9) describes bodily-kinesthetic intelligence as 'the ability to solve problems or to fashion products using one's whole body, or parts of the body.' The same author suggests that this type of intelligence prepares learners for future careers such as performers, translators, dancers, actors, artists, athletes, surgeons, and craftspeople. The insights gained from this study brought a realization that these kinds of learners have been overshadowed by auditory and visual learners. Myers (1998) also argues that bodily-kinaesthetic intelligence is ignored and not considered as an important learning style, like other teaching and learning styles such as visualization. Learning by doing has always been recommended as a learning strategy, but to support learners who are bodily-kinesthetic, learning must occur through physical movement. The physical movements are expected to help learners to process information using their own bodies which later becomes the lesson that is taught through physical language. In this study, I have picked up that a human body is a profound vehicle of communication. I was always signalled by the learners' facial expressions, body gestures, and physical postures that I needed to change the teaching strategy, or the learners were not following in my lessons. Below I will summarize this key finding.

- Learners in FSSs are natural performers, and all lessons should be planned along the lines of arts, performances, movements, and role-plays. For example, after teaching about photosynthesis, they might need to role play it.
- Incorporating movement and using the body, maybe another language of helping the learners understand, just the same as reading and writing. For example, instead of writing summaries, they can either present that information orally or present in drawing.
- If the body component has not been added to the lesson, that lesson is likely to be unsuccessful. For example, when teaching them about the angles, they have got to use their fingers to show you different angles or the whole body.
- All lessons must have a connection to the real world/ have personal meaning to each learner. For example, introduce integers in Math using money.
- Learners in FSS schools get distracted by traditional forms of teaching and modelling behaviour such as the fact that learners may be expected to write notes while sitting on a chair but in an FSS a learner may be comfortable writing notes while lying on the floor or moving around. The image of a "well-behaved learner that sits still and listens in the classroom" may need to be deconstructed in FSSs. Learners might not sit still but still behave.
- Learners in these contexts learn best by doing things not by receiving verbal instructions. For example, instead of teaching them about fermentation as a concept, allow them to make a mixture of dough in class so that they will discover for themselves how fermentation occurs.

4.3.2 Differentiated Instruction

Tomlinson (2005) defines differentiated instruction as a philosophy of teaching that is based on the premise that students learn best when their teachers accommodate the

differences in their readiness levels, interests and learning profiles. Tomlinson further asserts that the main objective of differentiated instruction is to take full advantage of every student's ability to learn. In addition, differentiated instruction is not just an instructional strategy, nor it is a recipe for teaching, rather it is an innovative way of thinking about teaching and learning in a more accommodative manner.

Teachers can differentiate using the three key elements of differentiation as a guide (Tomlinson, 2005): content; process; product. The content may include the knowledge, understanding, and skills that teachers want their learners to learn while the process focuses on how learners make sense of what they have come to learn. The product focusses on how learners demonstrate what they have come to know, understand, and are able to do after an extended period of learning. To differentiate is to acknowledge that all learners can learn, and they have their own preferred learning styles that need to be catered for. Differentiation instruction is another way of acknowledging that the one size fits all strategy is not effective in real diverse classrooms.

4.3.3 Understand the nature of their learners and their learning needs

With contemporary classrooms becoming diverse, especially in FSSs, teachers may need to have knowledge of diverse learners and understand their learning styles. Throughout this study, I have discussed that learners in FSSs are declared as having barriers to learning which hinder them from learning at their full potentials. To cater for these barriers, teachers may need to have knowledge of the diverse learners. Rahman, Scaife, Yahya, and Jalil (2010) argue that the knowledge of the learners is divided into two elements: empirical and cognitive. Empirical knowledge is the social knowledge of what learners of a certain age range are like, their behaviour, their challenges, and interests. While cognitive knowledge involves theories of child development, which involve practice and context-bound knowledge that involves

learners' prior knowledge, strengths, abilities, weaknesses, and their preferred learning styles. To understand the type of learners, one has in an FSS, and their preferred learning styles is key as it guides teachers on how best they should plan their lessons to cater for diversity.

4.3.4 Understand that learners need intense support to enable learning.

Therefore, it is not advisable for teachers to assume about learners' prior knowledge, no matter how easy topics may be perceived by the teachers

The aim of inclusion in schools is to cater for diversity and to offer support to all learners regardless of their differences (Phasha, 2016). Support may be perceived as scaffolding by some educationist. Hence, Wood et al. (1976, p. 90) define scaffolding as a process "that enables a child or novice to solve a task or achieve a goal that would be beyond his unassisted efforts." In an FSS, teacher assistance is very important to the learners as it helps them to reach their full potential. For example, a learner who cannot read and write may not be able to respond the test questions, but through the teacher's support through scribing for the learner, reading for the learner, or even considering a verbal assessment other than the written one may be a form of support that will help a learner to respond to a given test. Again, a learner who may be very slow in writing needs support from the teacher through providing extra time to complete tasks. Assistance or support from teachers to learners should be a way of being responsive and sensitive to learners' diverse needs to enable learning for all.

4.3.5 Consider the slow pace of the learners. In as much as CAPS proposes time and content to be taught, but the learners' pacing should always be taken into consideration.

Goldsmith (2009) defines pacing as the rhythm and timing of classroom activities or lessons, which includes the way time is allocated to each classroom component and the process regarding how one decides that it is the right moment to change from one activity to another or from one lesson to another. Though CAPS prescribe the content

and specific timelines, teachers are still expected to be flexible in their instruction to cater to the learners' slow pace. My findings confirmed that learners in FSSs might be extremely slow with understanding concepts and even to read and write some words. Therefore, understanding their pacing is another way of being inclusive and being responsive to their learning needs.

4.5 Conclusion

In this chapter, I have analysed all the data collected. Five findings emerged. I have discussed each finding in detail and backed it up with relevant literature. The main key finding was that learners in FSSs are bodily-kinesthetic. Such learners prefer to learn using their bodies.

Chapter Five: Conclusion and Implications

“There is time for everything” Ecclesiastes 3

5.1 Introduction

The purpose of this study was to document my experiences of teaching in an FSS with the primary goal of sharing what I have come to learn from them. The second aim of the study was to investigate the kind of knowledge that one requires to teach in an FSS. My motivation for conducting this research was to become a better-equipped educator and to learn how to create a classroom that is supportive of diverse learning needs. In this chapter, I have answered the three research questions that guided this study, shared my journey and lessons learnt from conducting a self-study. Lastly, I discussed the implications and proposed recommendations for future studies.

5.2 Answering of three research questions

5.2.1 Research question one: What are my experiences of teaching in an FSS as a novice educator?

My experiences include moments of shock/disbelief. I was shocked when at the beginning, I realised that some learners could not spell their names correctly in the 6th grade, and some learners could not halve or double simple numbers in Grade 4. I also experienced moments of frustrations and despair which were followed by moments of delight and contentment when I would figure out some of the learners learning styles and the endless love I receive from my learners. I experienced stress and misery but also moments of success and joy. I faced many dilemmas and experienced failure. However, through this study, when I look back, I realise that I experience intense feelings of a true sense of accomplishment and purpose. When I reflect through this study journey, I realise that the negative experiences that almost drove me out of teaching could have been avoided if my university had prepared me for teaching in an

FSS. The negative experiences could also have been avoided if there were induction programs for novice educators, especially for teaching in challenging contexts like FSS.

5.2.1 Research Question Two: What knowledge should I have to teach in the context of my experiences (FSS)?

Just as with the teaching in a mainstream school, Pedagogical Content Knowledge is the required knowledge in FSSs, but one needs another kind of PCK that will be summarized in the next subheading 5.2.2.1. In my context, I was expected to have knowledge of:

- Selecting teaching strategies that specifically match the learners' learning styles;
- Learners' profiles;
- FSSs policies;
- The context and knowledge of the learners.

Drawing from my findings, I still need training on how to teach and support learners with bodily-kinesthetic intelligence. I also need training on how I can implement differentiated instruction for the benefit of self and the learners. Below, I summarize 'another kind PCK' and the knowledge gained from teaching in an FSS teacher using the knowledge domains as subheadings because they capture my understanding of the kind of knowledge that I required to teach in this context.

5.2.2.1 Another kind of PCK

Teachers in FSSs still need Pedagogical Content Knowledge, as proposed by Shulman (1986, 1987). The only difference is that the PCK in an FSS needs not to be general, but it must accommodate or align with the needs of the learners in an FSS. The lesson I have learnt from my teaching experiences is that I did not invent a new teaching strategy other than the known ones. However, I used the very same teaching strategies

and modified them in a manner that catered for the needs of the learners in an FSS. I have presented an example of demonstrations below to support the view that we need to think about another kind of PCK.

Demonstration

Demonstrations are normally done to accommodate visual learners that prefer to create mental pictures and learn best when the learning material is visually presented (Awla, 2014). The same demonstration can be extended in FSSs to accommodate the learners with bodily-kinaesthetic intelligence. Learners may be given instruction for a demonstration, but they can be performers of that demonstration. Again, instead of the teacher giving learners a worksheet, with different mathematical angles, for example, the teacher could give the learners a chance to make their own angles or each learner to represent each angle and discuss its properties (e.g. I'm a straight-line angle; I am 180 degrees etc.). That is why Awla (2014) highlights that it appears impossible to change the learning style of each student in the classroom, but teachers need to learn how their learners learn best and modify their teaching style to match their learners' preferred learning styles.

The concept of using demonstration as a teaching strategy is still as important as it may be in a mainstream school, but in an FSS, the same demonstration is implemented differently to suit the different context. From engaging with White Paper 6 (2001) and other inclusive education policies, I do not see the SA's curriculum being categorized into the mainstream or FSSs because, in that way, the curriculum will be an exclusionary practice. Therefore, teachers in FSSs are expected to implement the very same teaching strategies acquired in their various Teacher Training Institutes to cater to this type of bodily-kinaesthetic intelligence which is found to be dominant in FSSs.

5.2.2.2 Knowledge domains as they capture my understanding of the knowledge, I required to teach in an FSS

Knowledge of the context: According to Rollnick, Bennett, Rhemtula, Dharsey, and Ndlovu (2008), the knowledge of the context includes all the factors that might influence teaching and learning. These factors are contextual variables such as the availability of resources, class sizes, learners' socioeconomic backgrounds, curriculum, classroom conditions, and time available for teaching and learning. The contextual variables that influenced my teaching were:

- Overcrowded classrooms as I was teaching about 60 learners in each of the five classes which equal to 300 learners a day;
- Poor economic backgrounds of learners, some of whom were living in the children's home near the school hence had emotional and behavioural challenges;
- Small classrooms where the environment did not accommodate the learning styles of the learners.

These factors challenged my role as a teacher because I taught and handled the learners the way I was prepared at university, not knowing that the context was totally different. The knowledge of the context has taught me that the one size fits all strategy is not effective in real diverse classrooms. I have learnt to consider learners diverse contextual factors when planning my lessons and respond to those factors appropriately.

Knowledge of the learners: Rollnick et al. (2008) describe the knowledge of the learners as that which involves the way they learn: prior knowledge; linguistic backgrounds; reading and writing abilities; interests. My experiences revealed that I was not always aware of the nature of my learners and their challenges. These challenges include:

- Home backgrounds which are not well established
- Linguistics challenges
- Specific learning styles (e.g. performances and using body parts)
- Short concentration spans
- Medical and cognitive conditions
- Unawareness of learner profiles
- Slow pace
- Inability to read and write
- Strengths in performances, arts and sports
- Being easily forgetful and unable to complete tasks on time.

Lacking such key knowledge about the learners made me assume and expect the opposite of what my learners were capable of. The knowledge of the learners has impacted my teaching role as I have learnt to teach my learners considering many aspects such as sports, arts, drawing, and performances as these aspects match the FSSs learning styles.

General Pedagogical Knowledge: As narrated in my practice-based autobiography in Chapter One, I always loved teaching, and my successful student teaching experiences convinced me that I was ready for the full-time teaching job. I knew what good teaching demanded, but the knowledge of good teaching I had was applicable to a mainstream school; not in my context. Initially, all of my lessons were unsuccessful, and I did not understand why. I started becoming observant and documented each experience I had on each day hoping to write a book one day because the self-study research was not yet introduced to me till 2017. I did trial and error every day to support my learners, but

nothing seemed to be successful until I started reading literature on different learning styles, I was then able to deduce that my learners were bodily-kinesthetic.

Table 2: Summarizes how my knowledge of teaching in an FSS has changed over a period of five years in an FSS.

At the beginning	Now
1. I had no idea of the teaching strategies that cater for FSS learners.	I have a repertoire of novel bodily-kinesthetic strategies to cater for learners.
2. I focussed on teaching strategies that catered for visual and auditory learners only in my lessons.	My focus is now geared more towards bodily-kinesthetic learners because they are the majority in my class.
3. I used mainly concrete objects and demonstrations to enhance learning.	I always incorporate a 'body' component in all lessons. Use movements and learn by doing activities.
4. I used to do demonstrations in front of the class.	I now allow learners to be part of the demonstrations.
5. I used to show, tell, and explain for the whole class.	I now use show, tell, and explain for the whole class and allow the same lesson to be done by learners to their peers.
6. I used to ask learners to fold their arms/sit still and listen when I was teaching.	I have learnt to be flexible. I allow learners to sit comfortably, lie down and move around quietly if they feel so.

	Because classrooms are overcrowded, I many times go and teach outside in a spacious environment where learners can sit or lie down freely.
7. I misjudged learners by what I considered to be unacceptable behaviour.	I have learnt the importance of engaging with a learner's profile to understand them holistically before judging or making decisions about the learner's behaviour. I now understand diversity; some learners can't sit still naturally, not because they are disrespectful.
8. I believed in written work as stipulated in CAPS guidelines for assessments.	I now believe in content learnt being represented and assessed in different forms that support learners' needs.
9. I was strict on content to be covered and timelines.	I use CAPS guidelines but am flexible with the pace of the learners.
10. I was desperate for teacher training on FSSs generally.	I still need training, but more on how teachers can be supported to teach learners with bodily-kinesthetic intelligence.

11. I could not interpret learners' body language	I am familiar with the learners' body language signals.
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5.2.1 Research Question Three: How has my teaching transformed as I examine and reflect on my fifth-year teaching experience?

In my attempt to answer the third research question, I divided the response into two sections. The first section focused on teaching and learning strategies, while the second one outlined the external factors that influenced my teaching.

5.2.1.1 Teaching Strategies

The way I think and what I think about in terms of teaching strategies has changed since I embarked on this study. My thinking motto is now: *Incorporating a 'body component' in my lessons and learners' activities*

I now understand what Ay et al. (2018) meant by asserting that for bodily-kinesthetic learners unless a body component has been added to learning, learners easily lose interest and motivation because they learn best when they use their bodies. The use of a *body* in the lesson tends to help the learners find a connection between learning and their personal lives. As a novice educator, my focus used to be teaching strategies that included the use of concrete objects, visuals, and demonstrations. I soon realised that in a FSS, these strategies were not successful because of the context. Now, because of this study, my focus has changed to how the lesson will enable the learners to use their bodies to gain an understanding. When I plan, I now focus on how learners can be the resources in class. This is because the learners learn best when they do things on their own, and not by being told. The learners are naturally good performers. The key

question that I now ask myself when planning is: What performance aspect, what sports aspect, what orals and drawings can link to the lesson? This is because this study confirmed that these are the learners' preferred learning styles in an FSS context.

Learning by doing

Reese's (2011) asserts that learning by doing has been common teaching and learning strategy. Behaviourists such as BF Skinner also conducted studies on learning by doing. However, when I reflect on my novice teaching years, I now realize that I misunderstood what counted as 'learning by doing'. As I mentioned in Chapter Four, I believed in demonstrations. I demonstrated experiments and other resources because I believed that as I *do things*, learners will *learn from my doing*. Even though watching, reading, observing are actions, the kind of doing referred to as learning by doing is about learning from one's own experiences. My teaching has transformed as I no longer demonstrate, show, and tell in my lessons as much as I used to. I understand that my learners learn by doing things themselves not by being told about things. This is evident in the excerpts of journal entries discussed in Chapter Four.

I have picked up that the curriculum itself focuses on the attention of teachers on successful teaching of visual and auditory learners and neglects the bodily-kinesthetic learners (see the CAPS extract on the appendix). The Natural Science Grade 4-6 CAPS document does not limit but recommends teachers to use some teaching strategies that accommodate some learners' needs over others. For example; under the topic of food processing, the document suggests the use of pictures and information about how food is processed. In my lessons, these suggestions were not successful. I had to revert to getting the learners in my class to use their hands to perform food preservation activities. For example, they had to do boiling, salting, and drying. Many activities do

not make sense to them if they have not used their bodies to do them and if they have not done them themselves.

Assessment activities

Through this study, I have learnt that writing tends to be very difficult and demotivating for learners in FSSs. This is because learners are artistic and sport-oriented. I am now sensitive to how I structure the learners' activities. Content cannot be assessed in one form of assessment; writing. Because learners are likely to perform better if assessed through practical work, verbally, role plays, drawings and performances, I now consider these activities in my assessment programmes.

Ascertaining prior learner knowledge is key

As a novice teacher, I used to plan lessons which were grade-appropriate as per the CAPS guidelines. Through experience, I learnt to understand that remembering what was taught in the previous grades was a challenge for the learners in my classes. Therefore, I soon realised that before I introduce the current grade's content, I might need to reteach or do a thorough recap of the previous grade's content. I gained an understanding that my learners need intense support from the beginning of the lesson until the end. Their learning needs demand a simplified version of the concepts; even ones which may be perceived as the easiest by the teacher. It is the duty of all teachers to simplify concepts for their learners so that knowledge can be transformed as Shulman says. However, in a FSS, simplification may mean teaching a Grade 6 learner as if you were teaching a Grade 4 learner.

Understanding learners' pace

Many learners in an FSS struggle to read and write. Therefore, to support their pace, I limit writing tasks.

Understanding their body language

At the beginning of my teaching at a FSS, when learners would frown at me, my emotions used to be triggered negatively. Now I have come to understand their body language because I have been observing them consistently and reflectively throughout this study. I now know that bodily-kinesthetic learners use their bodies to signal messages to the teacher, whether such messages are positive or negative. Therefore, being attentive and responsive to their body language now prompts me, as a teacher, to respond positively instead of negatively, by thinking of an alternative teaching strategy or activity that they can relate to.

5.2.1.2 External factors that influenced my teaching *Perceptions*

As a novice educator, I had negative perceptions of inclusive education. I believed that learners with barriers to learning were a burden to me as a 22-year old. I had a perception that old teachers were meant to be in FSSs and special schools because most of them were parents hence they could be patient enough to relate to and understand learners whose pace was very slow, and they seemed to understand nothing from the lessons. Through attaining experience and familiarizing myself with literature about FSSs, my perceptions have been transformed. I now understand that learners in FSSs are also capable of learning, and they are smart. What is important is to realise that they learn differently from most learners in mainstreams who are capable of learning through visual and auditory instruction.

Anxiety

My inability to teach learners successfully stressed me a lot like a novice educator. I remember, at some point that I was so stressed that I was told by my doctor that I was

at risk of developing migraines and I was booked off work for the whole week. It was so difficult to teach Mathematics to my learners; this was a totally foreign subject to them. I started hating teaching and slowly detached everything that was connected to teaching as I was not ready to battle with my health because of the stressful profession. I even thought of studying aviation since I had good grades in my matric. By coincidence one of the learners wrote as follows (though the spelling and grammar were difficult to read): *“Thank you for teaching me Maths, I know you are trying, I am going to pray that the headache leaves you alone. As you teach me, please do understand that I am slow, I am slow, I am slow, I am slow, I am slow! But I try. Please get better”*. That letter taught me resilience. I learnt to bounce back from failure and struggles through that learner. I was less prone to anxiety and migraines because of the new positive mindset. I was adopting the attitude that I had to try no matter what.

Personal belief in Jesus Christ changed my attitude

I knew that teaching was supposed to be a calling, but I never understood what that meant. My attitude was that I was called to teach some learners; specifically, mainstream learners. I was an A & B student since I started formal school; hence, I could not relate to the learners' difficulties in learning. As I grew spiritually, I learnt to understand that in whatever places God has placed us as believers, heaven has trusted us with those souls, and we remain accountable for them. This transformed my mindset and attitude towards my learners. I understood that teaching these learners were part of my earthly assignment from God, and if my attitude did not change that will mean I have failed to fulfil the purpose God has entrusted me with. This revelation about fulfilling God's purpose kept me going till today.

5.3 Reflections on my journey and joys of conducting a self-study

5.3.1 Introduction of self-study to me.

The areas of the research proposed by the Wits academic supervisors did not relate to what I wanted to do in research and my experiences in a FSS. I just selected to do research for the sake of meeting my requirements for the Master's, but I was never interested in research about Indigenous Knowledge that I initially selected. During my frustrations, Eunice came into my mind. I trusted her because she taught me from the first year up to a Master's level. I was not planning to be supervised by her because I was not interested in disciplinary knowledge and genetics that she specialized in. I just wanted an advice from her. I told her that I wanted to talk about me and my experiences in the study, but I did not know if that was permissible in research. By coincidence, she also did a self-study, and I had no idea about what that meant. She said it was a doable thing as she had done it in her PhD study. Finally, I got the solution. After a week, I was already assigned to the supervisor whose field of research was in Indigenous Knowledge. He had already contacted me and shown great willingness to assist me. Unfortunately, the plans had changed, and self-study was the answer I had been looking for.

5.2.1 Lessons learnt from conducting a self-study

Face to face interaction: In this study, I got to understand that critical friendship may be more successful when it includes face-to-face interaction as well. I used to send Eunice, Mbali, and Zaza, the samples of my journal entries via email but Eunice, would always insist on our meeting to discuss. I found the face-to-face dialogues more fruitful as I was able to relate to what each critical friend meant as opposed to just reading their comments.

Accepting criticism constructively: This study taught me that self-study was deeper than how I perceived it. Without the inputs from my critical friends and myself being

humble enough to listen, I would not have reached the key insights that emerged from my study. This study has taught me that a given problem may not always have a solution but there might be valuable insights gained from experiencing that problem (e.g. I may not have all understanding of how to teach in FSS and the learning styles of the learners, but I have learnt “on the job” how to teach in an FSS without any training or background of inclusive education).

5.4 Implications and recommendations for future research

It is evident that Teacher Training Institutions do not fully prepare teachers for teaching in FSSs. It takes a teacher's interest to pursue post-graduate studies in inclusive education. Therefore, research still needs to be facilitated on the significance of this training and the importance of student teachers being exposed to FSSs as part of their degree requirement. Mokala (2017) highlights that teachers experience various contextual variables that influence their teaching (e.g. learners with severe barriers to learning, behavioural problems, large class sizes, etc.). In that way, they struggle to support learners because the teachers themselves also need support. As a result, it may be necessary that future studies are conducted on how to support teachers in FSSs because some might suffer from anxiety as I also did.

The availability of teacher and student counselling is recommended because some learners are labelled as "slow" from their homes and schools, and that creates negative identities to them. Tomlinson (2005) proposed differentiated instruction (explained in Section 2.5 of Chapter Two) and pedagogy as one part of the solution in inclusive schools, but more research is still required on how differentiated instruction can be implemented appropriately for the benefit of both teachers and learners.

The learning styles of learners in FSSs need to be researched in broader contexts. Bodily-kinesthetic intelligence is known but somehow not well incorporated in the

CAPS curriculum. Teacher Training Institutions seem to be less informed about it. Bodily-kinesthetic teaching and learning are key in FSSs. Therefore, more research from the DoE should be done to see how the curriculum can be accommodative to both FSSs and mainstreams.

The CAPS guidelines of assessments are the same across the FSSs and mainstream. As argued in Chapter Two, the main barrier of learners in FSSs is that most learners are unable to read and write. However, they are still expected to write both formative and summative assessments. Workbooks could serve as evidence. Research needs to be conducted on how to assess learners in FSSs because such learners learn differently from the mainstream and in that way, they should be assessed differently in a manner that suits their learning styles.

In conclusion, all teachers are expected to create classrooms that are supportive and conducive enough to enable learners to learn. This study revealed that teachers in an FSS should focus on nurturing the bodily kinaesthetic intelligence and allow learners to learn best using their bodies and performances. This study has inspired me to continue expanding my knowledge of discovering other preferred learning styles of learners in FSSs. I will continue to try new things and seek the support of how best I can support learners with bodily kinaesthetic intelligence. This study has been a long journey with dilemmas and concerns about my first learning experience of teaching in a FSS. My problem has not been solved yet, but I have transcended from where I was five years ago.

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Appendix 1 Principal Consent Letter

Marang Centre for Mathematics and Science

University of the Witwatersrand

Private bag 3

Wits 2050

May 2018

The Principal

6565 Mooki Street

Orlando East

1803

Dear Mrs Mtimkhulu

Re: PERMISSION TO CONDUCT A RESEARCH IN YOUR SCHOOL

My name is Cebolakhe Zondo I am a Master of Education (Science Education) student in the School of Education at the University of the Witwatersrand. My study focuses on my own experiences of **learning to teach in a Full-Service school through a self-study**. I am the main participant in my study. I would like to invite two of your remedial educators to do at least two-four classroom observations in my classroom. I am hoping that the remedial educators will assist me in validating my data and perhaps help me to better my teaching styles into more inclusive ones as they are qualified inclusive education specialist. I reckon that their impacts in my study will help me in the betterment of my own teaching. The learners are the participants of the study by the virtue that they are present when I teach but

they have no specific role in my study except being present in my class and be taught. They are included because according to the GDE policies, the minute a researcher steps into the classroom learners are involved in that study whether directly or indirectly. The purpose of this research is to learn from my own teaching practices and to investigate the kind(s) of knowledge that one requires to teach in a FSS. I am requesting your permission to conduct my study in your school just for 15-30 minutes during school hours. The reason why I have chosen your school is because I am currently employed in your school therefore obtaining data would be convenient. I want my research findings to benefit the school.

I am inviting your school to participate in this research because I wish to collaborate with other teachers to understand what we ought to do when teaching in Full-Service schools.

The research participants will not be advantaged or disadvantaged in any way. They will be reassured that they can withdraw their permission at any time during this project without any penalty. There are no foreseeable risks in participating in this study. The participants will not be paid for this study.

The names of the research participants and identity of the school will always be kept confidential and in all academic writing about the study. Your individual privacy will be maintained in all published and written data resulting from the study.

All research data will be destroyed between 3-5 years after completion of the project.

Please let me know if you require any further information. I look forward to your response as soon as is convenient.

Yours sincerely,

Miss Cebolakhe Zondo

Email: 443650@students.wits.ac.za / Cell no. 078 270 3409

Appendix 2 Learner Consent Letter

Date: May 2018

Dear Learner

My name is Cebolakhe Zondo I am a Master of Education (Science Education) student in the School of Education at the University of the Witwatersrand.

I am doing research on **learning to teach in a Full-Service school through a self-study**. My research involves asking two remedial educators to do at least four classroom observations. I am asking your permission to have more than one teacher in your classroom. The two remedial educators will not be in the classroom for you as learners, but they will be in the classroom to help me teach you better. I know that visitors may change the dynamic in the classroom, but I am humbly asking you to totally ignore them and focus on me as your teacher. The purpose of this research is to learn from my own teaching practices and to learn from the comments of my critical friends. In future when the need arises, I am requesting to take few of your work samples. Confidentiality and anonymity will be maintained as your names, age, gender will not be disclosed.

Remember, this is not a test, it is not for marks and it is voluntary, which means that you don't have to do it. Also, if you decide that your work samples may not be used for research purposes, this is completely your choice and will not affect you negatively in any way.

I will not be using your own names, but I will make sure that no one can identify you. All information about you will be kept confidential in all my writing about the study. Also, all collected information will be stored safely and destroyed between 3-5 years after I have completed my project.

Your parents have also been given an information sheet and consent form, but at the end of the day it is your decision to join us in the study. I look forward to working with you!

Please feel free to contact me if you have any questions. Thank you

Miss Cebolakhe Zondo

Learner Consent Form

Please fill in the reply slip below if you agree to participate in my study called: Learning to teach in a FSS through a self-study

My name is: _____

Permission to review/collect documents/artefacts

Circle one

I agree that a questionnaire can be used for this study only.

YES/NO

Permission to observe you in class

I agree to be observed in class.

YES/NO

Informed Consent

I understand that:

- My name and information will be kept confidential and safe and that my name and the name of my school will not be revealed.
- I do not have to answer every question and can withdraw from the study at any time.
- I can ask not to be audiotaped, photographed and/or videotape
- All the data collected during this study will be destroyed within 3-5 years after completion of my project.

Sign_____ Date_____

Appendix 3 Parent Consent letter

May 2018

Dear Parent

My name is Cebolakhe Zondo. I am a Master of Education (Science Education) student in the School of Education at the University of the Witwatersrand.

I am doing research on **learning to teach in a Full-Service school through a self-study**. I would like to conduct my research in the classroom where your learner is currently situated in. Your child is not directly involved in my study, but I might quote, or take a sample of his/her work only if there is a need. The purpose of this research is to learn from my own teaching practices and to learn from the constructive feedback from my critical friends. Any information concerning your child will be kept confidential.

The reason why I have chosen your child's class is because I am teaching the grade 6 and my findings of this study shall then benefit them indirectly.

Your child will not be advantaged or disadvantaged in any way. S/he will be reassured that s/he can withdraw her/his permission at any time during this project without any penalty. There are no foreseeable risks in participating and your child will not be paid for this study.

Your child's name and identity will always be kept confidential and in all academic writing about the study. His/her individual privacy will be maintained in all published and written data resulting from the study.

All research data will be destroyed between 3-5 years after completion of the project.

Please let me know if you require any further information.

Thank you very much for your help.

Yours sincerely,

Miss Cebolakhe Zondo

Parent's Consent Form

Please fill in and return the reply slip below indicating your willingness to allow your child to participate in the research project called:

I, _____ the parent of _____

Permission to review/collect documents/artefacts

Circle one

I agree that my child can be used for this study only.

YES/NO

Permission to observe my child in class

I agree that my child may be observed in class.

YES/NO

Informed Consent

I understand that:

- My child's name and information will be kept confidential and safe and that my name and the name of my school will not be revealed.
- He/she does not have to answer every question and can withdraw from the study at any time.
- he/she can ask not to be audiotaped, photographed and/or videotape
- All the data collected during this study will be destroyed within 3-5 years after completion of my project.

Sign_____ Date_____

Appendix 4 Remedial Educator Consent

Date: May 2018

Dear Remedial Educator

My name is Cebolakhe Zondo I am a Master of Education (Science Education) student in the School of Education at the University of the Witwatersrand.

I am doing research on **learning to teach in a Full-Service school through a self-study**.

I was wondering whether you would mind if I ask 15 minutes-20 of your time in two to three months just to allow me to present my journal entries to you and present my reflections to you. I would like your inputs regarding my teaching styles, dilemmas and questions. I would like feedback on my teaching strategies whether they are inclusive or not as that will help me understand my practice better. I would like to do much better on my teaching and I believe as professionals of learner inclusivity you might be able to assist me especially in validating my data. I will also request that you fill in the lesson observation template after each observation. If you are willing, I will also ask you to audio record all that will be written in the lesson observation template. This will serve as the evidence that classroom observations did take place and there is valid evidence provided.

Your name and identity will always be kept confidential and in all academic writing about the study. Your individual privacy will be maintained in all published and written data resulting from the study.

All research data will be destroyed between 3-5 years after completion of the project.

You will not be advantaged or disadvantaged in any way. Your participation is voluntary, so you can withdraw your permission at any time during this project without any penalty. There are no foreseeable risks in participating and you will not be paid for this study.

Please let me know if you require any further information. Thank you very much for your help.

Yours sincerely,

Miss Cebolakhe Zondo 078 270 3409

Teacher's Consent Form

Please fill in and return the reply slip below indicating your willingness to be a participant in my voluntary research project called:

I, _____ give my consent for the following:

Permission to observe you in class

I agree to be observed in class.

YES/NO

Permission to be audiotaped

I agree to be audiotaped during the interview or observation lesson

YES/NO

I know that the audiotapes will be used for this project only

YES/NO

Informed Consent

I understand that:

- My name and information will be kept confidential and safe and that my name and the name of my school will not be revealed.
- I do not have to answer every question and can withdraw from the study at any time.
- I can ask not to be audiotaped, photographed and/or videotape
- All the data collected during this study will be destroyed within 3-5 years after completion of my project.

Sign_____ Date_____

Appendix 5 GDE Approval Letter



GAUTENG PROVINCE

Department of Education
REPUBLIC OF SOUTH AFRICA

8/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	11 April 2018
Validity of Research Approval:	05 February 2018 – 28 September 2018 2018/21
Name of Researcher:	Zondo C.
Address of Researcher:	Gemsbok Street Block 1145 unit A8 Pennyville 1804
Telephone Number:	011 935 1089 078 270 3409
Email address:	443650@students.wits.ac.za
Research Topic:	Learning to teach in a Full-Service school through a self-study
Type of Degree:	Masters of Education
Number and type of schools:	One Primary School
District/HO	Johannesburg North

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District-Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

Handwritten signature and date: 11/04/2018

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

1

Making education a societal priority

Office of the Director: Education Research and Knowledge Management

2nd Floor, 17 Simmonds Street, Johannesburg, 2001

Tel: (011) 305 0488

Email: Faith.Tshabalala@gauteng.gov.za

Website: www.education.ggp.gov.za

1. The District/Head Office Senior Managers concerned must be presented with a copy of this letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.
2. The District/Head Office Senior Managers must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.
3. A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.
4. A letter / document that outline the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and district/offices concerned, respectively.
5. The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.
6. Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.
7. Research may only commence from the second week of February and must be concluded before the beginning of the first quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.
8. Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.
9. It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.
10. The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.
11. The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.
12. On completion of the study the researcher/s must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.
13. The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.
14. Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards



Ms Faith Tshabalala
CES: Education Research and Knowledge Management

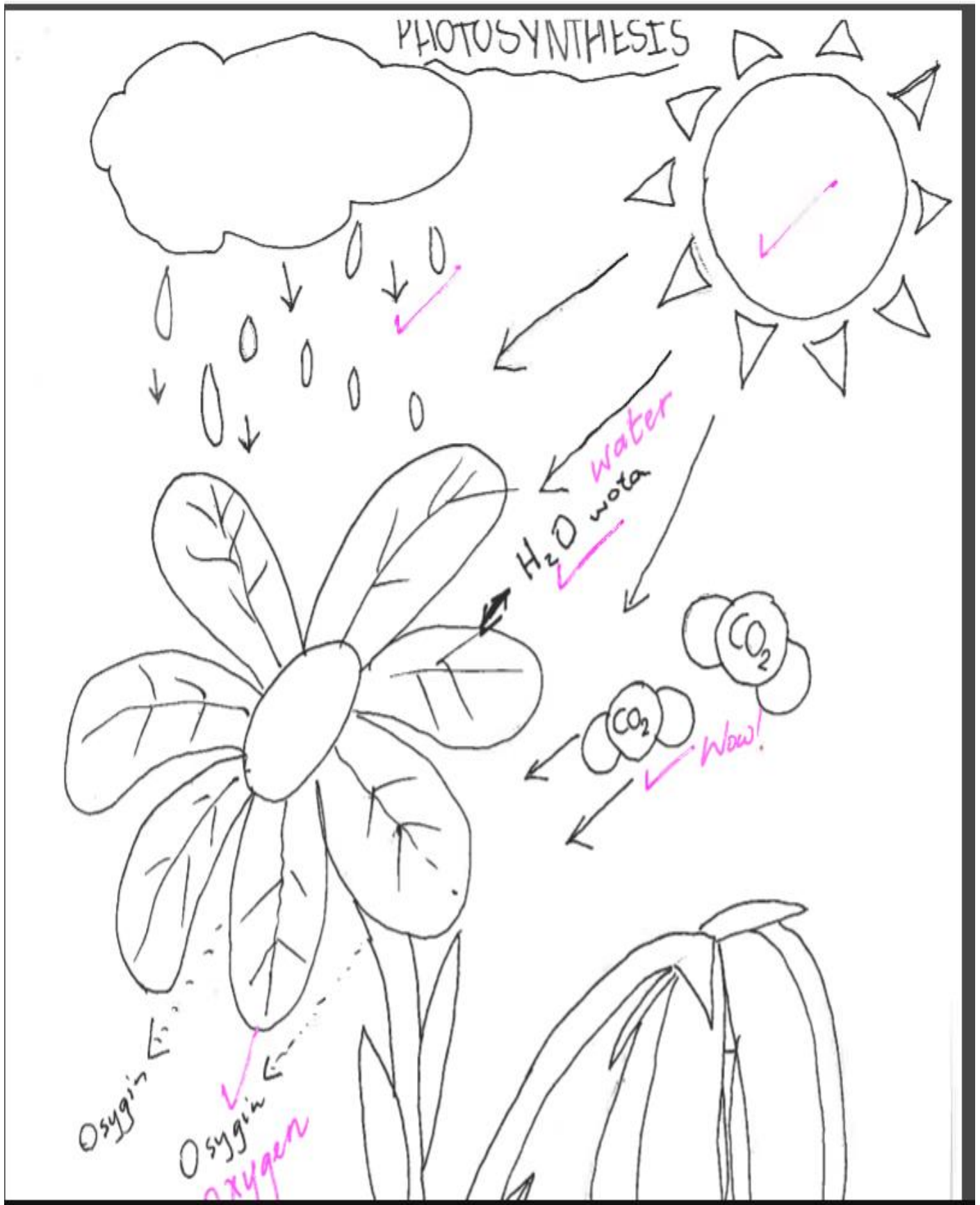
DATE 11/04/2018

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UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG

cc Supervisor - Dr Eunice Nyamupangedengu

Appendix 7 Learner's Drawing



Appendix 8 NS CAPS Extract Grade 4-6

NATURAL SCIENCES AND TECHNOLOGY GRADES 4-6

GRADE 6 TERM 1				
STRANDS: NATURAL SCIENCES: LIFE & LIVING TECHNOLOGY: PROCESSING				
Time	Topic	Content & Concepts	Suggested Activities: investigations, practical work, and demonstrations	Equipment and Resources
1 ½ weeks (5 % hours)	Nutrition	Balanced diets - a diet refers to the selection of foods we eat everyday (a balanced diet contains sufficient quantities of food from all four nutrient groups, as well as water and fibre.) <i>This should be real stuff</i> - some diseases can be related to diet. This can be related to people they know with Need for processing food <i>some diseases</i> - food is processed to: - make it edible (preparing, cooking) - make it last longer (preserving) - improve its nutrient value (fermenting) <i>Display</i> - during processing many foods may lose some of their nutrients Methods for processing food - there are many different methods (ways) to process food <i>[These should be done in class with real food]</i>	- evaluating a given diet to determine if it contains food from all nutrient groups <i>[real diet not pictures for FSS]</i> <i>These does not cater for bodily-kineshetic learners</i> - finding out about a disease that could be diet related, such as tooth decay, obesity, diabetes or deficiency diseases	<i>Let's eat</i> - Lists of different diets - Pictures and information about food-related illnesses <i>give benefit</i>
2 ½ weeks (8 % hours)	Food processing <i>Learners prepared their own design of a dumpling</i>	Food processing - food is processed to: - make it edible (preparing, cooking) - make it last longer (preserving) - improve its nutrient value (fermenting) <i>Display</i> - during processing many foods may lose some of their nutrients Methods for processing food - there are many different methods (ways) to process food <i>[These should be done in class with real food]</i>	- researching how to process food (raw material) by cooking, freezing, pickling, fermenting, drying and selling to make a product, including indigenous ways of processing of food in different communities - choosing a food and processing it in some way <i>yes</i> <i>this is relevant to a FSS.</i>	- Pictures and information about how food is processed - Foods for processing

In FSS Learners should experiment the whole procedure & process of processing food.