Therapeutic multidisciplinary team approaches in addressing learners' executive functioning needs in Cape Town special schools

by

Martha Maria Elizabeth van Niekerk

Submitted in accordance with the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

PSYCHOLOGY OF EDUCATION

at the

University of South Africa (UNISA)

Supervisor: Professor K. Mohangi

PRETORIA

November 2023

DECLARATION

Name: Martha Maria Elizabeth van Niekerk

Student number: 42008360

I declare that **Therapeutic multidisciplinary team approaches in addressing learners' executive functioning needs in Cape Town special schools** is my work and that every source I have utilised or cited has been shown and accredited through comprehensive reference. I further declare that I submitted the thesis to originality-checking software. It is submitted following the requirements for the degree Doctor of Philosophy in Psychology of Education at the University of South Africa, Pretoria. It has not been submitted before for any degree or examination in this or any other university.

November 2023

SIGNATURE   **DATE**

DEDICATION

I dedicate this thesis to my beloved parents, Mac and Joey van Niekerk, who will never read it, but I know they would have been very proud of me.

To my beloved brother, Stefan van Niekerk, for believing in me and for your unwavering encouragement and support on my journey. I would not have been able to accomplish this without you.

ACKNOWLEDGEMENTS

This thesis is the end of a journey. Therefore, I want to express my gratitude and appreciation to the following people who embarked on this journey with me and to those who contributed to making this thesis possible:

Firstly, my Heavenly Father, fulfilling the promise in Isaiah 40:31: "…but those who hope in the Lord will renew their strength. They will soar on wings like eagles…"

Professor Mohangi, my supervisor, whose guidance, support, and encouragement enabled me to broaden my knowledge and understanding of the subject. Your contribution to my success is immense. You have my utmost respect and gratitude.

I want to convey my gratitude to the principals of the special schools who allowed me to conduct fieldwork in the schools and to the participants I had the privilege of meeting and who generously shared their knowledge and expertise with me.

Dale Wileman, thank you for being proud of me.

ABSTRACT

The sparse research and deficient documentation regarding the collaborative multidisciplinary team approach in special schools in South Africa have necessitated the undertaking of this study. This study explored the multidisciplinary team approaches in three different special schools accommodating foundation phase learners' executive function needs. This study employed the interpretivism research paradigm, a qualitative research approach, and a multiple case study design. Non-probability purposive sampling was employed to select the participants, professionals constituting the three multidisciplinary teams, and the three special schools serving as research fields. Data was collected through questionnaires, participant observations, semi-structured interviews, and focus group discussions, supplemented by the reflective journal of the researcher. Thematic content analysis was applied to analyse the data to identify emergent themes related to the participants' lived experiences. The findings reveal that the focus of support and therapy is on the functioning of learners and their needs to succeed in the classroom rather than on a diagnosis. The occupational therapists and speech-language therapists in the multidisciplinary teams collaborate with the foundation phase teachers to incorporate curriculum content with therapeutic goals. This approach enables learners to transfer the knowledge and skills taught in therapy, enabling them to apply it in different contexts. Executive functioning deficits are not exclusive to learners in special schools. This study can contribute to informing ordinary mainstream schools about interventions to address executive functioning needs in foundation phase learners. Further research is required to investigate multidisciplinary team collaboration in other settings, such as private therapists delivering a service in mainstream schools. It is recommended that the approach of the multidisciplinary teams described in this study serve as a guideline for other special schools and private practitioners whose focus is still on deficiencies and individual therapy to work in collaboration and to follow an integrative approach rather than a parallel clinical approach.

Keywords: executive functioning, working memory, planning, inhibition, cognitive flexibility and shift, attention, multidisciplinary teams, special schools, collaboration, inclusive education, middle childhood

OPSOMMING

Die navorsingskaarste en gebrek aan dokumentasie wat betref die wederkerige, multidissiplinêre spanbenadering in spesiale skole in Suid-Afrika was die rede vir die behoefte vir hierdie studie. Die studie het die multidissiplinêre spanbenadering in drie spesiale skole ondersoek om grondslagfase-leerders se uitvoerende funksioneringsbehoeftes te akkommodeer. Die interpretivistiese navorsingsparadigma, 'n kwalitatiewe navorsingsbenadering en 'n veelvuldige gevallestudieontwerp is aangeneem. Doelgerigte niewaarskynlikheidsteekproefneming is gebruik om die deelnemers te kies, naamlik beroepsmense wat die drie multidissiplinêre spanne uitgemaak het, en die drie spesiale skole wat as navorsingsvelde gedien het. Data is ingesamel deur vraelyste, deelnemerwaarnemings, semi-gestruktureerde onderhoude en fokusgroepbesprekings, en dit is aangevul deur die reflektiewe joernaal van die navorser. Tematiese inhoudsontleding is uitgevoer om die data te ontleed om voortspruitende temas te identifiseer wat verband hou met die deelnemers se geleefde ervarings. Die bevindings toon dat die fokus van ondersteuning en terapie op die funksionering van leerders en wat hulle benodig om in die klaskamer suksesvol te wees, moet wees eerder as op 'n diagnose. Die arbeidsterapeute en spraak-taal-terapeute in die multidissiplinêre spanne werk saam met die grondslagfase-onderwysers om kurrikulum-inhoud met terapeutiese doelwitte te kombineer. Hierdie benadering stel leerders in staat om die kennis en vaardighede wat in terapie geleer word oor te dra in verskeie kontekste, en dit daar toe te pas. Uitvoerende funksioneringstekorte is nie beperk tot leerders in spesiale skole nie; hierdie studie het dus die potensiaal om by te dra om hoofstroomskole in te lig oor intervensies wat gerig is op die uitvoerende funksioneringsbehoeftes van grondslagfase-leerders. Verdere navorsing is nodig om multidissiplinêre spansamewerking in ander omgewings te ondersoek, soos die lewering van dienste deur privaat terapeute in hoofstroom-skole. Daar word aanbeveel dat die multidissiplinêre spanboubenadering wat in hierdie studie beskryf is as riglyn moet dien vir ander spesiale skole en privaat praktisyns waar die fokus steeds op gebrekke en individuele terapie is, om hulle aan te moedig om saam te werk en 'n integrerende benadering te volg eerder as 'n parallel kliniese benadering.

ISISHWANKATHELO

Ukunqongophala kophando kunye nokushokoxeka kogcino lwamaxwebhu malunga nendlela yeqela lentsebenziswano elivela kwiinkalo ngeenkalo kwizikolo ezineemfuno ezikhethekileyo eMzantsi Afrika kuphakamise imfuneko yolu phando, oluphonononge iindlela zeqela elivela kwiinkalo ngeenkalo kwizikolo ezintathu ezineemfuno ezikhethekileyo ezamkela iimfuno zokusebenza kobuchule bengqondo zabafundi besigaba esisisiseko. Kusetyenziswe indlela yophando yokufumana ubunzulu obungakumbi ngokukhangela amava neengcamango zomxholo othile wezentlalo, indlela yophandontyilazwi, kunye noyilo lwesifundo ngomzekelo esiphindaphindiweyo. Abathathinxaxheba bakhethwe ngokusebenzisa ukhetho lwegcuntswana ledatha ngenjongo yokukhethwa ngokwethuba elilinganayo lokubandakanywa, oko kukuthi iingcali eziphuma kula maqela mathathu avela kwiinkalo ngeenkalo, kunye nezikolo ezintathu ezineemfuno ezikhethekileyo ezisebenze njengeendawo zophando. Idatha iqokelelwe ngokusebenzisa amaxwebhu emibuzo, ukuqwalaselwa kwabathathinxaxheba, udliwanondlebe olucwangciswe mayane kunye neengxoxo zeqela ekugqilwe kulo, yaze yongezelelwa yijenali yeenkumbulo zomphandi. Kwenziwe uhlalutyontyilazwi lomongo ekuhlalutyeni idatha ukwenzela kuchongwe imixholo evelayo enxulumene namava okuphila abathathinxaxheba. Iziphumo zibonisa ukuba ingqwalasela yenkxaso kunye nonyango kufuneka ibe kukusebenza kwabafundi kunye noko bakufunayo ukuze baphumelele kwigumbi lokufundela, kunokuba bafumane ukuxilongwa. Iingcali zonyango ngokwasemsebenzini kunye neengcali zonyango lonxibelelwano kumaqela eenkalo ngeenkalo zisebenzisana nootitshala besigaba esisisiseko ukudibanisa umxholo wekharityhulam kunye neenjongo zonyango. Le ndlela yenza ukuba abafundi bakwazi ukudlulisela ulwazi nezakhono ezifundiswa kunyango kwiimeko ezahlukileyo, baze bazisebenzise kuzo. Iintsilelo zokusebenza kobuchule bengqondo aziphelelanga kubafundi bezikolo ezineemfuno ezikhethekileyo; olu phando ke ngoko lunganako ukuba negalelo ekwaziseni izikolo eziqhelekileyo malunga nokungenelela okujoliswe kwiimfuno zokusebenza kobuchule bengqondo zabafundi besigaba esisisiseko. Luyafuneka uphando olungaphezulu ukuphanda intsebenziswano yeqela elivela kwiinkalo ngeenkalo kwezinye iimeko, ezifana nokunikezwa kweenkonzo ngoogqirha bonyango lwabucala kwizikolo eziqhelekileyo. Kucetyiswa ukuba indlela yeqela elivela kwiinkalo ngeenkalo echazwe kolu phando kufuneka isebenze njengesikhokelo kwezinye izikolo

TABLE OF CONTENTS

Page

CHAPTER THREE

CONCEPTUAL FRAMEWORK...62

CHAPTER FOUR

CHAPTER SIX

LIST OF APPENDICES

Appendix	Title	Page
A	Ethical clearance from the University of South Africa (UNISA)	230
B	Turn-it-in report	231
C	Certificate of language editing	232
D	Declaration of technical editing	233
E	Letter requesting permission from the Western Cape Education Department to conduct research at the three schools	234
F	Letter of approval from the Western Cape Education Department to conduct research at the three schools	237
G	Letter requesting permission from the principals at the three schools	238
H	Letter of consent for the participants	241
I	Letter requesting parental consent for observations	244
J	Questionnaire completed by a participant	246
K	Questionnaire for the participants	249
L	Questions for the interviews	251
M	Focus group discussions	252
N	Observation schedule	253
O	Observation template	254
P	Transcript of a focus group discussion and data analysis	255
Q	Transcript of an interview and data analysis	281

LIST OF TABLES

Table	Title	Page
1.1	Special schools in the Western Cape under the Directorate: Inclusive and Special Education Support	19
2.1	The story of Phineas Gage	32
2.2	The history of executive functions	33
3.1	Comparison between the medical model and social model	70
3.2	Policies pertaining to this study	74
4.1	Research design and methodology of this study	97
4.2	Paradigmatic standpoint	104
4.3	Description of the participants	113
5.1	Outline of the codes used for the excerpts	131
5.2	Participants and data collection methods	131

LIST OF FIGURES

Figure	Title	Page
2.1	Constructs constituting executive function	35
2.2	Prefrontal cortex	47
2.3	Information processing model	58
3.1	Defining different categories of schools	69
3.2	Bronfenbrenner's bio-ecological theory	72
3.3	Referral pathway to special schools based on the SIAS Document	79
3.4	Zone of proximal development	87
4.1	Characteristics of qualitative research	99
4.2	Thematic data analysis process	121
5.1	Overview of emerged sub-themes and categories for Theme 1	134
5.2	Overview of emerged sub-themes for Theme 2	148
5.3	Overview of emerged sub-themes and categories for Theme 3	168
5.4	Overview of emerged sub-themes and categories for Theme 4	178

LIST OF ACRONYMS

ADHD	Attention Deficit Hyperactivity Disorder
ASD	Autism Spectrum Disorder
CAPS	Curriculum Assessment Policy Statement
DBST	District-Based Support Team
EF	Executive Function
EFs	Executive Functions
ERP	Event-Related Potential
FM System	Frequency Modulation System
IEP	Individual Education Plan
IE Team	Inclusive Education Team
IEP	Individual Education Plan
ISP	Individual Support Plan
ISPS	Individual Support Plans
LSEN	Learners with Special Education Needs
SASL	South African Sign Language
SBST	School-Based Support Team
SIAS	Screening, Identification, Assessment, and Support
SLD	Specific Learning Disabilities
UNESCO	The United Nations Educational, Scientific and Cultural Organisation
USA	United States of America
WCED	Western Cape Education Department

CHAPTER ONE

INTRODUCTION TO THE STUDY

Every child deserves a champion: an adult who never gives up on them, who understands the power of connection, and who insists they become the best they can possibly be (Rita Pierson, 2017).

1.1   INTRODUCTION

In the past, a multidisciplinary team approach to supporting learners who experienced barriers to learning was based on the medical model. This entailed those professionals with specific, specialised knowledge and expertise in different disciplines, such as psychologists, speech-language therapists, occupational therapists, and physiotherapists, working independently with the learner and communicating to share and complement their interventions. With the introduction of Education White Paper 6 (DoE, 2001), the focus of the multidisciplinary team approach shifted to a more transdisciplinary collaborative approach. This approach entails that all role players, including the health professionals, teachers, parents, and in some cases, the learners, interactively share their knowledge and expertise to support one another and work collectively towards providing the most appropriate support for the learner (Nel & Grosser, 2016). The multidisciplinary team members are open to imparting their knowledge and skills; in fact, they renounce their unique assertions of expert status and expertise to meet the requirements of learners (Barbra & Mutswanga, 2015).

Special schools have a particular role to play in an inclusive education system. Some of the primary functions are to promote inclusion and participation of all learners in all academic and social activities at school, to involve parents in the service of the school, and to ensure the support of learners regarding their needs in the classroom. The specific guideline that pertains to this study and which is a fundamental aspect of the multidisciplinary approach at the special school intended as the research site for this study is the emphasis that is placed on the support of learners in the classroom rather than the withdrawal of learners from the classroom for individual specialised interventions. Learners with high support needs are withdrawn from the classroom for therapeutic purposes to re-integrate them for classroom interventions (DoE, 2007). According to guidelines to ensure quality education and support

in special schools and special school resource centres (DoE, 2007), if a learner's mainstream school cannot provide adequate support, placement to a special school should be considered a last resort. The specific needs of learners must coincide with the specialisation offered by the particular special school (DoE, 2007). As the intended research site for this study, the special school admits learners with, among others, neurodevelopmental disorders, hearing impairment, and physical disabilities and follows the Curriculum Assessment Policy Statement (CAPS), the national curriculum followed by all public schools.

The multidimensional nature of executive functions (EFs) includes attention control, working memory, impulse control, and inhibition. EFs play an important role in determining successful cognitive, academic, and social functioning (Watson, Michalek & Gable, 2016). Various studies indicate a positive association between EFs and academic achievement (Bailey et al., 2018). In the classroom, optimal executive functioning ensures regulation of emotions, sustained attention, time management, planning, problem-solving, self-monitoring, and storing information across situations and for various activities, and enables learners to be mentally and behaviourally flexible (Watson et al., 2016). Working memory, cognitive flexibility, attentional control, and planning are just a few more advanced cognitive abilities and mental processes Karbach and Unger (2014) define as EF. The development of a child's cognitive abilities depends on their EFs, which are used in learning and daily activities (Fogel et al., 2020). The neurodevelopmental process of executive functioning starts during the first year of life and continues until early adulthood. Genetics are important in determining executive functioning quality (nature), but the environment (nurture) must provide optimal opportunity for neuro-maturation to take place in the developmental process of executive capacities. In this nature vs. nurture argument, it is important to keep in mind that EF capacities stem primarily from neurological factors. Effective support of executive functioning needs in a classroom should include systematic academic interventions and methods to develop academic, social, and behavioural functioning (Kaufman, 2010). According to Varvara et al. (2014, p. 1), EF needs can be associated with several neurodevelopmental disorders, such as learning disabilities in reading and written expression, also in learners "diagnosed with Attention Deficit Hyperactivity Disorder and Autism Spectrum Disorder".

Typical development of EF is observed in an individual's ability to adapt behaviour according to changing environments. However, if executive functioning is not optimal, it causes cognitive, social, and academic developmental delays. EF challenges can be seen in learners

with and without a diagnosis of neurodevelopmental disorders who experience difficulty in their daily functioning, as well as in the school environment (Fogel et al., 2020).

The sparse research and deficient documentation regarding the collaborative multidisciplinary team approach in special schools in South Africa have necessitated the undertaking of this study. This research study intends to explore the multidisciplinary team approaches to accommodating foundation phase learners in three special schools in terms of their executive functioning needs.

1.2   ANALYSIS OF THE PROBLEM

1.2.1   Initial awareness

As a learning support educator in the special education context since 1997 and educational psychologist for the past seven years, I became acutely aware of the important role the multidisciplinary team plays in the special school context. I am dedicated to and have a special interest in the field of special education and learners who experience barriers to learning. I am an educational psychologist in an Inclusive Education Team (IE Team) with an occupational therapist and a learning support educator. The IE Team is based at a public special school, a Learners with Special Education Needs (LSEN) school, in the northern suburbs of Cape Town. The IE Team is part of the resource centre of the special school, offering support to learners who require a high level of intensive educational support in mainstream schools within the same education district. The work of the IE Team is in accordance with the stipulations of Education White Paper 6 (DoE, 2001), explaining the role of special schools providing specialised support to neighbouring schools as part of the District-Based Support Team (DBST).

Learners are placed at the special school by the Western Cape Education Department (WCED) based on their specific needs and the high level of support needed, which makes it impossible for them to remain in a mainstream school. Before being considered for placement, the learners referred to special schools should have undertaken a screening and assessment procedure using the National Policy for Screening, Identification, Assessment, and Support (SIAS) as the baseline instrument (DoE, 2007). Many learners at special schools are on a waiting list because of a shortage of space. While they wait for openings at special schools, the IE Team helps these learners (as well as their teachers) in mainstream schools.

Special schools have a diverse learner population in terms of race, gender, and specific needs. The learners have average cognitive abilities, allowing them to follow the national CAPS curriculum. All the learners attending the school have a diagnosis that was made by a medical specialist and/or health care professional, e.g., paediatrician, psychologist, psychiatrist, or neurologist. Learners with the following diagnoses are included:

- Specific learning disabilities (SLD) in reading, written expression, and mathematics, based on the diagnostic criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5).
- Attention Deficit Hyperactivity Disorder (ADHD): Inattentive type/Hyperactive and Impulsive type/Combined type
- Physical disabilities
- Chronic medical conditions
- Hearing impairment
- Vision impairment
- Epilepsy
- Generalised anxiety disorder
- Autism spectrum disorder, high functioning (according to the DSM-5 criteria)

Learners are accommodated in terms of their diverse needs by the multidisciplinary teams at the school. The focus of support and therapy is on the functioning of learners and their needs to succeed in the classroom rather than on a diagnosis.

1.3 RATIONALE OF THE STUDY

1.3.1 Study rationale based on policy

The National Policy on SIAS (DoBE, 2014) describes special schools as schools that provide specialised education to learners needing full-time or part-time access to highly rigorous educational and other support. Public special schools must abide by all regulations and laws established by the National Education Policy Act (1995) as well as the policy framework for Inclusive Education as explained in Education White Paper 6 (DoE, 2001), the National Policy on SIAS (2014), and the Guidelines for Inclusive Teaching and Learning (DoBE, 2010). Teaching and learning are determined by the CAPS and any appropriate adaptions to enable learners to access the curriculum (DoE, 2007). According to the Department of Education

(DoE) (DoE, 2001), it is imperative to determine the root causes of learners' learning challenges in order to build on their strengths and empower them to thoughtfully and actively engage in the learning process. Providing quality education for all learners and addressing barriers to learning are consistent with a systemic and developmental approach.

In special schools, the multidisciplinary team fulfils the School-Based Support Team (SBST) function in public mainstream schools. The DoE (2001) stipulates the responsibility of the SBST, and for the purpose of this study, the role of multidisciplinary teams in special schools as being responsible for the provision of specialised professional support in curriculum, assessment, and instruction. The multidisciplinary team's primary purpose is to establish appropriately integrated learner and educator support services that will aid in teaching and learning by identifying and meeting institutional, learner, and educator needs (DoE, 2001).

1.3.2 Based on research and practice

Learners admitted to special schools face learning barriers, as described in the section above, and they need intensive interventions for educational support. Barriers to learning include difficulty with reading, written expression, and/or mathematics. These learning difficulties have onset during early childhood and do not conform to the learner's intellectual ability. There are many causes for barriers to learning, of which the following are relevant to this study: the interaction between environmental factors, educational factors, genetics, and the involvement of brain functions related to receiving and responding to information. EFs include mental processes, organisational skills, working memory, attention, problem-solving, verbal reasoning, cognitive flexibility, planning and initiation, as well as activity monitoring. Prefrontal brain regions and other neural pathways are associated with efficient EF, such as the execution of targeted behaviours that should be flexible, relevant, scheduled, and appropriate. Learners who experience barriers to learning have a predisposition to executive functioning challenges such as:

- Planning – a complex and dynamic action responsible for designing, controlling, measuring, and improving consecutive actions.
- Response inhibition – the ability to inhibit inappropriate responses, impulses or interfering information.

- Attention – one of the most important cognitive aspects and is generally known as focus and awareness. Attention has four subcategories: sustained attention, selective attention, divided attention, and shifting attention. Selective attention tends to be the most challenging for learners who experience barriers to learning, as it requires deliberate selection of targeted stimuli and simultaneously disregarding unrelated stimuli.

- Working memory is related to keeping information in the working memory and retrieving information from the long-term memory (Bierman & Torres, 2016; Deng et al., 2022; Fadaei et al., 2017).

1.3.3   Statement of the problem

Many of the problems experienced by the foundation phase learners in the special school can be attributed to their inability to control impulses, solve problems, regulate and manage emotions, shift their attention from one activity to the next, and poor organisation skills. These problems negatively influence their social- and academic functioning in the classroom. The literature review shows that many of these named difficulties experienced are all components of EFs. The professional specialist support staff at special schools is part of multidisciplinary teams with educators to provide specialist support to the learners. In this case study, the collaborative multidisciplinary team approach in terms of the executive functioning needs of learners in the foundation phase is explored.

1.4   RESEARCH AIM, QUESTIONS, AND OBJECTIVES

1.4.1   Aim of the study

This research delves into the approaches and strategies employed by multidisciplinary teams that work collaboratively to address the executive functioning requirements of foundation phase learners. Such an approach aims to enhance accessibility to the curriculum and overcome impediments to effective learning.

1.4.2   Primary research question

How do collaborative multidisciplinary teams approach therapy and support to address the executive functioning needs of foundation phase learners in special schools?

1.4.3   Secondary research questions

1.   What collaborative multidisciplinary team approaches are employed in the foundation phase in special schools?
2.   What are the executive functioning needs of foundation phase learners in special schools?
3.   What methods are used by multidisciplinary teams to develop executive functioning skills of foundation phase learners in special schools?
4.   How do multidisciplinary teams collaborate in rendering a therapeutic service in special schools?

1.4.4   Research objectives

1.   To explore the different collaborative multidisciplinary team approaches in the foundation phase of special schools.
2.   To determine the executive function needs (manifestations) of foundation phase learners in special schools.
3.   To determine the methods multidisciplinary teams use to develop executive functioning skills of foundation phase learners in special schools.
4.   To explore the collaboration of multidisciplinary teams in rendering a therapeutic service in special schools.

1.5   PREVIEW OF LITERATURE

In a literature review, pertinent research on the research subject is synthesised and analysed. Literature reviews advance information, highlight the importance of the research problem, help define the research design, and link the final results to existing knowledge (McMillan & Schumacher, 2006).

1.5.1   Executive function

"Executive functioning" as an umbrella term includes processes such as goal-setting, planning, behaviour monitoring, problem-solving, response inhibition, sustained attention, cognitive flexibility, and working memory. The prefrontal cortex, responsible for the response and integration of information, is the neurological basis for EF (Fernández et al., 2014).

EFs are essential for learning and academic performance but are also intimately linked to emotional, behavioural, and social functioning (Anderson & Reidy, 2012; Baggetta & Alexander, 2016). According to what is known about EFs and their critical influence on acquiring knowledge, everyday tasks, and behaviour, it may be most pertinent to understand why some children with neurodevelopmental disorders perform better or worse than others in terms of their ability to participate in activities (Fogel et al., 2020).

EFs have been reported to expand across childhood and improve with maturity. Working memory, inhibition, and task switching (shift) significantly improve between the ages of 7 and 11 (Brydges et al., 2014). The first EF skill to develop is sustained attention, followed by working memory, inhibition, and attention shifting (Kapa & Plante, 2015).

In the past, EFs were considered merely for their cognitive components. The roles of emotion and motivation were ignored. More recent research indicates that the various manifestations of EFs depend on specific contexts. The importance of emotional regulation emphasises the affective aspects of EFs. The traditional construct of EF, which consists of cognitive flexibility, inhibition, working memory, planning, and categorisation, is now described as cool EF. The cool components require a substantial amount of logic and critical analysis. Hot EF includes affective cognitive abilities such as motivation, effective decision-making, and delaying instant gratification in favour of long-term rewards (Poon, 2018). Eric Peterson and Marilyn Welsh, as cited by Goldstein and Naglieri (2014), discussed recent research being done by Romine and Reynolds (2005), indicating that cool EFs rapidly develop between five and eight years, moderately between eight and fourteen years, and slow down during adolescence. Contemporary researchers studying hot- and cool EF development agree that development coincides with maturation, facilitating performance in more emotionally challenging contexts (Goldstein & Naglieri, 2014).

1.5.2   Middle childhood

The developmental stage between the ages of six and twelve is known as middle childhood. During middle childhood, children must develop their cognitive, social-emotional, and self-concept skills to better understand the world around them. Balanced development, as provided by their environment, parents, friends, and school, is critical to equip them for the challenges of adolescence. The development of the frontal lobes is significant during middle childhood. Evaluation, behavioural control, planning, reasoning, emotions, memory, and

problem-solving are all functions of the frontal lobes, which are referred to as the essence of our being. During middle childhood, increasing brain connections enable the mastering and performing more complex cognitive tasks (Louw & Louw, 2014).

1.5.2.1 Cognitive development

Significant cognitive changes take place during middle childhood due to rapid cognitive development. This can be observed in their quicker information processing and extended memory capacity (Karbach & Unger, 2014; Louw & Louw, 2014).

1.5.2.1.1 Theories of cognitive development

The main theories pertaining to this study are Piaget's theory, Vygotsky's theory, and the Information processing theory. These theories are discussed in detail in Chapter 2.

1.5.2.1.1.1 Piaget's theory of cognitive development

The third stage of cognitive development is generally between ages 7 to 12. This stage is known as the concrete operations stage. At this stage, children can think analytically and use cognitive processes to solve practical difficulties. Although they are able to take into account several facets of a circumstance, their judgment is still constrained to actual circumstances. Children better comprehend spatial concepts, cause and effect, classification, preservation, and numbers in the concrete operations stage. During the cognitive operations stage, children's thinking shifts from rigid and illogical to flexible and logical thinking. This advancement, however, depends on neurological development and experience in adapting to the environment (Papalia et al., 2006). Louw and Louw (2014) expand on this and explain the applicability of Piaget's theory from a current South African perspective. Research findings indicate that, in general, the achievement of South African children and children from elsewhere in Africa is congruent with the sequence of achievement of Piaget's Swiss subjects. There are, however, some ethnic groups who achieved some of the skills at a later stage. Factors that play a role are schooling, familiarity with the materials being manipulated, and the education level of parents.

School affects every aspect of the child's development and is, therefore, a major formative experience. Positive associations with achievement are interest, attention, and active participation. School-age children develop a growing capacity for selective attention due to

neurological maturation, which is why memory improves during middle childhood. As their language abilities continue to develop, they are better equipped to understand and interpret oral and written communication. A growing vocabulary enables them to convey comprehensive messages. A major area of linguistic development "is in pragmatics – the practical use of language to communicate" (Papalia et al. 2006, pp. 357-358).

1.5.2.1.1.2   *Vygotsky's theory of cognitive development*

It is crucial to consider language as a component of cognitive development in the context of this case study, which was conducted at three public special schools for learners with certain learning difficulties. Language is essential for cognitive growth because it enables the expression of thoughts and observations and can be thought of as the means of thought. Development of thinking depends on the child's social and cultural interactions as well as speech (as a form of thinking. Furthermore, Vygotsky opines that private communication is crucial for the growth of organising, supervising, and directing thought and problem-solving. Additionally, Vygotsky asserts that language is crucial for processing more complex cognitive abilities (Galotti, 2017; McGonigle-Chalmers, 2015; Woolfolk, 2010).

1.5.2.1.1.3   *Information processing theory*

How and why people develop cognitive abilities can be used to explain cognitive growth. Piaget's hypothesis is crucial for explaining why development occurs. According to his theory, cognitive development happens as the brain adjusts to its surroundings. The opposing view holds that cognitive development happens naturally and concurrently with brain development. The information-processing hypothesis, which incorporates Piaget's theory as well as general memory processes, describes cognitive developmental changes brought on by problem-solving (and adaptability). This approach strongly emphasises a child's ability to assimilate information at a given age. Processing speed and attention mechanisms are also involved. Robert Kail conducted research in 1991 in which he observed youngsters performing particular cognitive tasks. He discovered that information processing accelerated and is more efficient due to maturation (Galotti, 2017; McGonigle-Chalmers, 2015).

1.5.2.2 Psychosocial development

By middle childhood, children become aware of their emotions and expressions thereof. Emotion regulation, which involves control of emotions, attention, and behaviour, affects learners' school adjustment (Papalia et al., 2006). Erikson's psychosocial theory refers to the developmental stage of middle childhood as the industry versus inferiority stage with the virtue of competence. Children become competent by effectively adapting to their environment. A sense of competence develops as they adapt to school, develop peer relationships, follow the rules, and succeed academically (Louw & Louw, 2014).

During middle childhood, children are less dependent on their parents, and they want more opportunities to make their own decisions. Parents need to set boundaries with patience and teach age-appropriate behaviour regulation following a calm and positive approach (Louw & Louw, 2014).

1.5.2.3 Sociocultural perspective on child development

It is a well-known fact and accepted by psychologists that culture shapes cognitive development, determining what and how the child will learn about the world. This is the premise of Lev Vygotsky's sociocultural theory. Vygotsky believed that interaction with others creates our cognitive structures and thought processes. In Vygotsky's view, development occurs when socially shared actions become internalised processes. The child and others jointly construct higher cognitive abilities, such as attention and thinking, through shared activities and social interaction. According to Vygotsky, social interaction is the basis for advanced cognitive functions like problem-solving (Woolfolk, 2010). The developing child needs adult guidance in the form of structure, support with strategies to improve memory, and encouragement to find solutions and persevere. Vygotsky identified the "Zone of proximal development", which is described as the range of development that a child could reach with adult supervision or by working with classmates who are more advanced than them, as measured by their ability to solve issues independently (Woolfolk, 2010, p. 47).

In this study, the role of the multidisciplinary team members is explored as they guide the learners through their "zone of proximal development", addressing their executive functioning needs.

1.6   CONCEPTUAL FRAMEWORK

The main concepts constituting the conceptual framework of this study are inclusive education, special education, constructivism in education, collaboration in education, and multidisciplinary teams.

1.6.1   Inclusive education in South Africa

In October 1996, the Ministry of Education appointed the National Commission on Special Needs in Education and Training and the National Committee on Education Support Services. These commissions were to investigate all aspects of special needs and support services in education and training in South Africa. Through White Paper 6, special needs education was introduced as a non-racial and integrated component of the education system (DoE, 2001). Inclusive education was defined as:

- Recognising that every child and adolescent is capable of learning and that they all require help.
- Enabling educational institutions, procedures, and teaching methods to accommodate all learners' needs.
- Understanding and valuing learners' differences, whether brought on by age, gender, ethnicity, language, class, or a disability, as well as those caused by HIV or other transmissible illnesses.
- Including more than just formal education and taking into account the fact that learning can take place in both formal and informal contexts, including at home and in the wider society.
- Fulfilling the needs of all learners, adjusting attitudes, conduct, instructional strategies, curricula, and the surrounding environment.
- Increasing the involvement of every learner in the educational environment and curriculum, as well as identifying and removing barriers to learning (DoE, 2001).

1.6.2   Special education: International practices

In 1993, Mexico established the first official mandate for special education. Article 41, as part of the General Law of Special Education, promotes the integration of minors with disabilities into general education classrooms. The fulfilment of fundamental learning requirements for

independent social and productive coexistence is the provision for those who do not achieve inclusion. Guidance to parents or guardians, as well as teachers and staff of regular basic education schools that integrate students with special education needs, are provided (Hammer, 2020).

Services are rendered to learners with special education needs through three modalities: Units of Support Services, Centres for Students with Multiple Disabilities, and Information Centres. Units of Support Services address learning concerns within the context of the general education classroom, with the primary responsibility of conducting evaluations, facilitating interventions, and evaluating progress. Learners receive small group interventions in resource classrooms overseen by special education support teams consisting of school psychologists, resource teachers, social workers, principals, and communication specialists. These named professionals serve as multidisciplinary teams. The second modality is Centres for Students with Multiple Disabilities, which supports students whose needs cannot be met within the general education setting. Special education teachers provide instruction to students grouped by age and ability. Teams assisting at these centres consist of one or two school psychologists per centre, a nurse, and a speech therapist. The recommended class size is six to eight students per class, attending from age three to twenty-two. The curriculum is significantly modified and adapted. The third modality is Information Centres, which focus on providing resources and information about inclusive education and support strategies for students with disabilities to school personnel and families. The primary service is to offer guidance on the use of various assessments and academic materials to ensure educational access (Hammer, 2020, p. 28-30).

In terms of the general direction of inclusive education, Mexico has moved in tandem with the United States of America (USA), where local public schools educate over 95 percent of students with disabilities. Students who do not respond to general education instruction receive individualised, tailored support. Multidisciplinary teams conduct assessments for students suspected of having disabilities in special education services (Hammer, 2020, p. 38-39).

1.6.3   Multidisciplinary teams in special schools in South Africa

The multidisciplinary team must have an asset-based approach focusing on strengths, capacities, assets, and resources rather than deficiencies and problems. The collaborative

multidisciplinary approach is "a shift from professional dominance to collaboration" and engagement (Burgers, 2018, p. 24). A collaborative multidisciplinary team approach promotes cohesion and integration in creating a framework for an in-depth understanding of the learner who experiences barriers to learning and developing effective individual support plans (DoBE, 2010, p. 23-26).

1.6.4 Multidisciplinary teams in special education: International practices

District members, educational psychologists, specialised education educators, ordinary school educators, parents, and individuals who analyse assessment data constitute multidisciplinary teams in the USA. The composition of the multidisciplinary team depends on a learner's suspected disability and may include speech-language therapists, occupational therapists, school counsellors, and/or physical therapists (Hammer, 2020). There are many similarities in the functioning of the multidisciplinary teams in Mexico and the USA compared to the DBSTs and multidisciplinary teams in special schools in South Africa, as described in Chapter 4, section 4.1. The DBST responds to requests from the SBST for assistance. The DBST (consisting of "psychologists, speech-language therapists, occupational therapists, and social workers") gather additional information by conducting relevant assessments and providing guidelines in terms of assessment accommodations, additional support strategies, and programmes, such as individual support plans, and identify learners for placement into specialised settings, e.g., special schools (DoBE, 2014, p. 16).

1.6.5 Multidisciplinary teams in private special schools in Cape Town

The three public special schools that served as the research sites of this study's fieldwork are located in Cape Town's northern suburbs. Both public and private special schools that use the CAPS curriculum have the same admission requirements for learners with special educational needs. The capacity of public special schools cannot keep up with the demand for special education. Private special schools play a crucial role in providing quality education for learners with special needs who are unable to enrol in public special schools. Since the majority of tuition money goes towards paying teachers' salaries, private schools cannot afford to employ therapists like psychologists, occupational therapists, and speech-language therapists. Psychologists and therapists are available as consultants to teachers and parents at private special schools. These professionals offer learners private therapy on the premises

of the schools. They perform the same function as multidisciplinary teams at public special schools along with the teachers.

1.6.6   Public special schools in South Africa

The responsibility for providing quality education to learners who require an extensive amount of support rests with public special schools. Special schools provide a variety of speciality programmes and may only enrol learners who need assistance in the particular specialisations the school offers. Only learners whose support requirements have been established by the National Policy on SIAS process may be accepted to special schools. Admission to a special school should be the final resort when acceptable accommodations in mainstream schools are not practicable. The placement of learners at special schools depends on the approval of the Provincial Education Department and District Offices (DoE, 2007).

An individual support plan must be compiled for each learner by using the SIAS document and considering the following aspects:

- Specialised learning needs are required by the learner.
- Differentiation in teaching the curriculum in terms of subject matter and methods guarantees that learners obtain the skills necessary for academic achievement and cognitive growth.
- The appropriate educational and instructional materials to support learners adequately.
- Required and applicable accommodations for assessments (DoE, 2007).

1.6.7   Constructivism in education

According to Fernando and Marikar (2017) and Thomas et al. (2014), the constructivist theory encourages an interactive teaching style in which learners actively participate in learning. Constructivism views learning as a process in which people give meaning to their experiences in order to achieve understanding. Constructivism, therefore, clarifies how thinking and learning occur. According to the constructivist educational philosophy, teachers should be aware of learners' past knowledge before building on it and allow them to put their knowledge into practice. Learners who apply their knowledge show a deeper understanding

of the material than those who only memorise facts (Amineh & Asl, 2015; Bada, 2015; Donald et al., 2014).

Piaget's personal constructivism and Vygotsky's social constructivism are two of the most significant subtypes of educational constructivism. Piaget suggested that the most significant and crucial element of learning is discovery. In contrast, Vygotsky thought that cognitive growth is influenced by external variables such as culture and social interaction rather than being a product of an individual's creation.

The complex and varied constructivist perspectives on learning yielded two key mutual principles: first, that learners' prior knowledge serves as the basis for learning new information, and second, that learning is a dynamic process in which students construct their own understanding in the context of their experiences in novel learning circumstances. The constructivist approach to teaching strongly emphasises the necessity of learners' active participation and independent endeavours to build their own conceptual frameworks (Amineh & Asl, 2015; Donald et al., 2014).

1.6.8   Collaboration in education

The emphasis on collaboration as a limited assistive strategy for educators who must address a wide range of various learner requirements is a global trend in inclusive education. Including learners with disabilities or those who face learning challenges in a regular classroom with their peers does not necessarily achieve inclusive education. Inclusion relies on all team members to work together to address barriers to learning that may be encountered (Hernandez, 2013; Khairuddin, Dally, & Foggett, 2016).

1.7   RESEARCH METHODOLOGY AND DESIGN

The research process is methodical and deliberate, outlining the steps the researcher must take with reference to the collection and analysis of data to look into a certain research topic (McMillan & Schumacher, 2010).

1.7.1   Research approach

For the purpose of this study, a qualitative research approach was used. According to Creswell and Clark (2011), qualitative research involves the study of research questions that

explore the meaning that individuals or groups assign to a societal or humanistic scenario as well as presumptions, a perspective, the potential use of a conceptual or theoretical framework, and the examination of research problems. As a methodical scientific investigation, qualitative research employs a comprehensive narrative account to further knowledge of a societal or cultural phenomenon. Interviews, observations, and document reviews are used to conduct qualitative research. The interaction of elements in a natural environment is crucial for qualitative research (Creswell & Clark, 2011; Creswell, 2014; Scotland, 2012). The three special schools where the foundation phase learners' particular needs, including those related to executive functioning, were addressed by multidisciplinary teams served as this study's natural environment.

1.7.2   Research paradigm

An interpretivist viewpoint underlies a qualitative research approach, which means that the researcher is interested in how the phenomena of interest are perceived, comprehended, experienced, generated, and constructed (Astalin, 2013). An interpretive research paradigm focuses on the details of a situation, the reality behind the details, and the subjective meanings and motivations for actions. The researcher's premise is subjective because of active participant interaction and dialogue. The researcher learns about the social environment through the encounters and arbitrary interpretations people make of it (Wahyuni, 2012). Ponelis (2015) explains further that an important characteristic of the interpretive research paradigm is to form an understanding of the world from the subjective frame of reference of the participant rather than from an objective observer of the action. In this study, the detail of the situation was the executive functioning of foundation phase learners in special school settings, and the reality behind the detail is their executive functioning needs. This study intended to contribute to understanding the experience and approach of multidisciplinary teams addressing executive functioning needs (Ponelis, 2015).

1.7.3   Research design

A multiple case study design aims to show the phenomenon under investigation from many angles. The study's goal necessitates the choice of numerous research venues, programmes, participants, and groups (Creswell, 2013). In this study, three multidisciplinary teams were specifically chosen at three distinct special schools, where the inquiry processes were reproduced to gather extensive data to address the study's research questions and

objectives. Multiple case study designs are more difficult to carry out than single case study designs but give the results more credibility (Yin, 2012).

1.7.4 Population and sampling

Based on his or her understanding of the population, the researcher decides which individuals would yield the most useful data for achieving the goal of the study (McMillan & Schumacher, 2010). The samples (schools, therapists, and teachers, as multidisciplinary team members) were chosen purposefully because they were deemed knowledgeable and informative regarding the research phenomena.

1.7.4.1 Purposive sampling

Non-probability purposive sampling was the approach adopted for this research study's sampling strategy. Based on their qualifications, experiences, and personal traits, the researcher purposefully selected particular participants who would best suit the needs of the phenomenon under investigation. In order to ensure representation, focus on certain unique circumstances or cases, and create theory through the collecting of data from multiple resources, purposeful sampling is used (Cohen et al., 2018).

1.7.4.2 Sampling of the participants

Creswell and Poth (2018) advise against using more than four or five cases in multiple-case research. I deliberately chose three cases, each with a multidisciplinary team of five people, for this multiple-case study. The participants included three occupational therapists, three speech-language therapists, three teachers of Grade 1, three teachers of Grades 2 and three Grade 3 teachers. Thus, there were three cases (multidisciplinary teams) and a total of 15 participants. Before participants decided to participate in the study, they were informed of the research goals and what to expect. The team members were carefully chosen since they have experience in counselling, education, and teaching.

1.7.4.3 Sampling of the research sites (three schools)

The natural setting for qualitative research tends to be in the field at the site where the participants and research problem under study are (Creswell, 2014). This research study was undertaken at three public special schools for learners with SLD in the Metropole East- and

North Education Districts of the Western Cape. The researcher works and resides in one of the named districts, which was convenient in terms of distance. The special schools were chosen because the learner population is similar in that they are all diagnosed with neurodevelopmental disorders and follow the same CAPS curriculum. Table 1.1 below shows the population (number) of special schools in the Western Cape under the Directorate: Inclusive and Specialised Education Support.

Table 1.1: Special schools in the Western Cape under the Directorate: Inclusive and Specialised Education Support (WCED, 2023)

Type of special school	Number of special schools in Metropole East Education District	Number of special schools in the Western Cape
Physically disabled and cerebral palsy	1	6
Specific learning disabilities (SLD)	1	3
Blind	0	2
Deaf	1	8
Autism Spectrum Disorder (ASD)	3	12
Hospital schools	0	7

1.8 DATA COLLECTION

While analysing the research problem, a multiple case study research method is versatile and adaptive, allowing for one or more ways of data collection. A wide variety of data collection methods can be used, such as direct participant observations and interviews (Ponelis, 2015). For the purpose of this study, data were collected through participant observations, semi-structured interviews, questionnaires, and focus group discussions. Qualitative data analysis starts with an inductive process, building on themes, categories, and patterns from the bottom up, and then deductively to determine whether more evidence is required to support each theme or if additional information is needed (Creswell, 2014). Qualitative data collection is often conducted in its natural environment, which is the location where the participants encounter the problem being studied. The major characteristic of qualitative research is that the researcher can talk directly to the participants and observe their actions and behaviour in their context (Creswell, 2014). In the case of this study, data collection took place at three special schools.

By examining information collected through different methods, the researcher can corroborate findings across data sets and reduce the impact of potential biases that could exist, ensuring the validity and trustworthiness of the findings. This is affirmed by Kaman and Othman (2016), stating that the use of multiple methods will enhance credibility and dependability as well as the diverse construction of realities. The researcher combined data from interviews, multidisciplinary team case discussions, class observations, and document analysis to examine the research problem in this research study.

1.8.1   Semi-structured interviews and focus group discussions

Face-to-face interviews with individual participants or focus groups performed by the researcher are considered qualitative interviews. The questions are typically open-ended and unstructured to elicit the participants' ideas and opinions (Creswell, 2014).

In this study, the researcher conducted semi-structured interviews with the multidisciplinary team members, consisting of occupational therapists, speech-language therapists, and foundation phase teachers, as well as focus group discussions with the distinct multidisciplinary teams. The interviews involved open-ended inquiries to gather the participants' perspectives and opinions. The meetings took place at a time convenient to all the participants. The researcher obtained the permission of the participants to make audio recordings of the interviews and focus group discussions. At the end of the interviews and focus group discussions, the researcher reflected by making notes in a reflective journal (Creswell, 2014). The advantages of the focus group discussion are that much information can be obtained relatively quickly, and the group elicits more ideas as the participants engage (Fourie, 2017).

1.8.2   Participant observations

The researcher conducts qualitative observations while making field notes about the actions and behaviours of people at the research site. Observing participants can greatly enhance the usefulness of the study, and some benefits include personal knowledge and the ability to capture information on unusual or unexpected incidents as they happen (Creswell, 2014).

For the purpose of this study, the researcher observed one therapy session of a class group, small group, and individual therapy done by the occupational therapists and speech-language

therapists of Grade 1, Grade 2, and Grade 3 learners with executive functioning needs, as well as one lesson from each Grades 1, 2, and 3 teachers. Field notes were made in the researcher's reflective journal, specifically indicating the therapeutic interventions regarding executive functioning needs. Written consent was obtained from the therapists to record the therapy sessions as a reference to the field notes. Special care was taken to delete the recordings once the information was copied to the field notes.

1.8.3   Qualitative questionnaires

Completion of questionnaires is one of many techniques used to obtain information from participants. Questionnaires are relatively economical, and the same questions or statements are posed to all the participants (McMillan & Schumacher, 2006). For this study, the researcher used one questionnaire to gather information regarding the research questions, including structured, semi-structured, and unstructured questions. The participants' biographical information, their responses to structured, semi-structured, and unstructured questions about their experiences in multidisciplinary teams, their approaches as therapists and teachers working with students who have special educational needs in the foundation stage of a special school, as well as their approaches to meet the needs of students' executive functioning, therapeutic interventions, and the use of curricula, were all solicited.

1.9   DATA ANALYSIS AND INTERPRETATION

Regarding data analysis, the qualitative researcher interprets the phenomena by making use of the meaning that participants ascribe to it. Data collection and analysis should be explicit, notwithstanding the data analysis method, whether content analysis, constant comparison, and/or pattern matching (Ponelis, 2015). Data collection, analysis, and interpretation accompany the written documentation of the findings (Creswell, 2014).

Identifying, analysing, and reporting recurring patterns in all the data gathered by various instruments are steps in the thematic analysis approach of qualitative data analysis. Coding data, discovering and honing themes, and summarising the results are all aspects of thematic analysis. Because it is adaptable, thematic analysis can be used to address a variety of research topics for various research designs, methodologies, and paradigms, as well as sample sizes. Thematic analysis facilitates knowledge creation in the interpretivism paradigm by allowing for interaction between the researcher and participants (Kiger & Varpio, 2020).

The data is reviewed in accordance with the thematic analysis, and broad themes are developed that give the data's content significance (Howitt, 2019). In order to identify themes, sub-themes, and categories, the researcher analysed the interview transcripts, questionnaires, observations, and her reflective journal. The themes constrain the data's content. The thematic analysis must be explicit and structured to accurately reflect the meaning of the material shared by the participants (Howitt, 2019). In order to build an understanding of experiences, thoughts, and behaviours across a data set, thematic analysis is the most appropriate approach to data analysis for this research project (Kiger & Varpio, 2020).

1.10   THE ROLE OF THE RESEARCHER

The involvement of the researcher in the persistent and extensive encounter with the participants is subsequently impacted by interpretive research as a qualitative research feature. Thus, the qualitative research process involves ethical and personal concerns that must be explicitly acknowledged, particularly with regard to any biases that could affect the study's interpretations (Creswell, 2014).

When a researcher collects data in their place of employment, there is a possibility that the researcher's and the participants' roles could be jeopardised, and the information may not be accurate while being easy and convenient to obtain (Creswell, 2014). As a preventative measure of the above-mentioned dangers, the roles of the researcher and participants need to be defined. Although the researcher is a staff member of the special school, she is not involved with the school's learners, teachers, and therapists. The researcher forms part of the IE Team and supports learners in mainstream schools who are on the waiting list for the special school. The IE Team functions independently of the special school and is not involved in educational or therapeutic activities. The members of the IE Team do not serve on any multidisciplinary team of the special school. The collection of accurate information and the roles of the researcher and participants were not jeopardised. Furthermore, the activities at the special school chosen as the research site were interrupted as the interviews and multidisciplinary team meetings took place after school hours.

1.11   QUALITY ASSURANCE

1.11.1   Dependability and credibility

The same vocabulary as in quantitative research can be applied to qualitative research; alternatively, terminology better suited to describing qualitative research can be applied. In qualitative research, "dependability" rather than "reliability" is more appropriate and depends on the calibre of data collection and analysis and the extent to which the research methodically investigated what was specified to investigate. In qualitative research, "credibility" is used instead of "validity" to describe the extent to which the participants and an accurate reflection of their perceptions were captured by the researcher (Ponelis, 2015; Walliman, 2011). I kept a reflective journal in which I recorded my thoughts, observations, queries, views, and conclusions. In order to avoid subjectivity and focus on the participants' actual words and actions, I also utilised my journal for reflection (Creswell, 2007; Maree, 2015).

1.11.2   Authenticity

The researcher must ensure that the findings accurately reflect the study questions and that the results are valid (Miles & Huberman, 1994). In order to accomplish that, the researcher needs to self-reflect continuously throughout the study. I had regular conversations with the participants to reflect on just interpretations of the data. If there is contradicting information, it has to be assessed (Cohen et al., 2018).

1.11.3   Confirmability

The researcher must acknowledge her personal prejudices by going into detail about her decisions, procedures, and viewpoints. Throughout the study, the researcher must regularly consider and comment on it. The data collected and the interpretation of the research methods are available for the reader to evaluate (Shenton, 2004).

1.11.4   Transferability

Results must be thoroughly described in order to ensure transferability (generalisation) so that the reader may understand the findings as the consequence of the data rather than the researcher's prejudice and subjectivity (Ponelis, 2015).

1.12   ETHICAL CONSIDERATIONS

1.12.1   Permission and consent

Before the commencement of this study, the researcher received written ethics approval from the University of South Africa. The WCED granted permission to carry out research at the three special schools. The researcher also received written permission from the three principals of the schools to conduct research.

Each participant submitted written informed consent before participation. Their participation was optional, and they were made aware of their right to leave at any time without penalty. After receiving the parents' informed written consent, the researcher was allowed to be present in the classes and therapy rooms. The parents were made aware that the researcher's objective was to monitor the teachers and therapists rather than the learners.

1.12.2   Confidentiality, privacy, and anonymity

As a key research ethical principle, the right to confidentiality, privacy, and anonymity of participants must be upheld (Patton, 2002). Prior to the start of data collection, all participants were informed of the significance of confidentiality (Cohen, 2018).

1.12.3   Storage and security of data

Transcripts, recordings, and field notes are stored securely in a cloud-based folder with a password only the researcher can access. The researcher will keep hard copies of participants' responses for five years in a secured filing cabinet in her office for potential future research or academic uses.

1.12.4   Maleficence and beneficence

The principle of non-maleficence, or "do no harm", is crucial in educational research. The researcher must intentionally consider all outcomes of the investigation that can affect the participants. Beneficence is the antithesis of non-maleficence and asks who and how the research can benefit from it (Cohen et al., 2018). The participants were willing to take part in this study because they accepted the advantages or benefits of this study, namely its addition to the best practices of multidisciplinary teams in special schools, particularly with regard to meeting the executive functioning demands of foundation phase learners.

1.13   DELIMITATIONS AND LIMITATIONS OF THE STUDY

This study was delimited in the following ways:

The participants of this research study were limited to the professionals on the multidisciplinary teams supporting foundation phase learners at three public special schools. Participants included speech-language therapists, occupational therapists, and foundation phase teachers. The participants were purposefully selected from public special schools. The researcher has made a personal choice not to disclose the race of the participants.

The research sites were three public special schools, which limit generalisability. However, this study did not attempt to offer generalised findings as it is not the methodology of a case study. This study explored multidisciplinary teams' approaches in specific public special schools. According to Creswell (2014), the value of qualitative research lies in the themes and exact descriptions developed within a particular setting. Good qualitative research is characterised by particularity rather than generalisability.

1.14   POTENTIAL CONTRIBUTION OF THE STUDY

This research study intends to contribute to an understanding of a multidisciplinary team approach accommodating foundation phase learners in special schools with regard to their executive functioning needs in order to inform and share best therapeutic practices. At the special school where this study was conducted, therapists and teachers work collaterally to ensure accessibility of the CAPS curriculum for the learners who experience barriers to learning. The multidisciplinary approach explored in this study could inform and enrich inclusive education practices as the focus of the therapists and teachers is on the functional needs of learners and the manifestation of the barriers to learning rather than on diagnosis and deficiencies. The approach of the multidisciplinary team could serve as guidelines for other special schools where the focus is still on deficiencies and individual therapy. Private practitioners could benefit from learning best practices followed by their peers in special schools, especially with regard to collaboration, an integrative approach rather than a parallel clinical approach. Executive functioning deficits are not exclusive to learners in special schools. This study can contribute to informing ordinary mainstream schools about interventions to address executive functioning needs in foundation phase learners.

1.15   DEFINITIONS OF KEY TERMS

1.15.1   Executive functions

The term "executive functions" (EFs) refers to a broad variety of cognitive, behavioural, and emotional control mechanisms. The prefrontal areas of the brain are the neurological basis of EF, and the processes associated with EF are focusing and sustaining attention, goal-setting, problem-solving, behaviour monitoring, cognitive flexibility, working memory, response inhibition, and emotion control (Fernández et al., 2014, p. 215). In this study, EFs refer to working memory, attention, inhibition, cognitive flexibility, shift, and planning.

1.15.2   Inhibition

The ability to intentionally suppress or stop dominant, automatic, or prepotent responses when necessary is known as inhibition (Tamnes et al., 2010). According to Walk et al. (2018), inhibition is the capacity to deliberately inhibit the first impulse before acting. In order to maintain focus, one must learn to restrain urges and block out distracting inputs. In this study, inhibition has two components: inhibiting external stimuli and irrelevant information to concentrate and inhibiting undesired behaviour.

1.15.3   Attention

According to Sternberg (2006), attention is the capacity of our senses and cognitive processes to process constrained information at the expense of copious information. Additionally, as people age, their attention shifts, becoming very selective and leading to ordered, directed activity (Wolfe, 2004). The four types of attention include prolonged, focused, split, and shifting attention (Fadaei et al., 2017). For the purpose of this study, sustained attention is the most important factor in ensuring sufficient and optimal learning.

1.15.4   Planning

Planning is the ability to anticipate future events, establish goals, and prepare the necessary procedures for a specific task (Gioia et al., 2015). Planning entails anticipating the result and determining the most effective path to get there; for example, a child with good planning skills will begin an assignment on time (Gioia et al., 2015; Nouwens et al., 2021).

In this study, the most important aspects of planning refer to task approach strategies, timeous completion of tasks, and goal-directed behaviour.

1.15.5   Cognitive flexibility and shift

Shift is the ability to nimbly transition between various circumstances, tasks, or facets of a problem as necessary. Important characteristics of shift include the capacity to handle problems in a flexible manner and to transfer your focus between different mental states and topics (Gioia et al., 2015). The ability to understand and implement the idea that the same problem can be solved in several ways is referred to in this study as cognitive flexibility, and the ability to shift is the capacity to transition from one task to another.

1.15.6   Working memory

Working memory is the capacity to store only the portion of long-term memory that has recently been active and exchange these activated components in and out of short-term, temporary memory storage (Sternberg, 2006). Walk et al. (2018) elaborate on this by describing working memory as the capacity to maintain, update, and monitor information as well as to mentally interact with or alter this information. In this study, the reference to working memory is in terms of retention and recall of information, especially to remember and recall instructions to execute tasks.

1.15.7   Middle childhood

Middle childhood is the period between six and twelve years (Louw & Louw, 2014). In this study, middle childhood refers to learners in Grades 1 through 3 (foundation phase) between the ages of seven and nine.

1.15.8   Multidisciplinary team

A collection of individuals with complementary skills who are dedicated to a single purpose, performance goals, and method for which they hold themselves mutually accountable might be described as a multidisciplinary team (Barbra & Mutswanga, 2015). The multidisciplinary teams in this study work at three special schools and consist of the foundation phase teachers, occupational therapists, and speech-language therapists.

1.15.9   Inclusive education

The notion of inclusion for this research study will be related to variety in terms of learners' teaching and learning needs, as well as the right of all learners to receive effective and tailored education based on their individual needs (Rapp & Corral-Granados, 2021).

1.15.10   Constructivism

According to Fernando and Marikar (2017) and Thomas et al. (2014), the constructivist theory encourages an interactive teaching strategy in which learners actively participate in the learning process, a key tenet of the multidisciplinary team approaches discussed in this study.

1.15.11   Collaboration

According to Carrea et al. (2005), collaboration is a collaborative effort when creating, implementing, and evaluating educational programmes for specific learners. Collaboration occurs when experts from different fields band together to operate as a team and pursue mutually beneficial goals (Hernandez, 2013). The foundation of the multidisciplinary team collaboration outlined in this work is those mentioned above.

1.16   CHAPTER OUTLINE

The components of the chapters of this research study are as follows:

Chapter One consists of an introduction, an analysis of the research problem, the aim of the study, a statement of the primary- and secondary research questions and objectives of the study. In Chapter One a preview of the literature and the conceptual framework that underpin the study were explained. Moreover, the nature and course of the research, and the clarification of concepts were given.

Chapter Two is devoted to a literature study exploring executive functioning and middle childhood. It explores the origin of EF, a brief history of EF is presented, and a discussion of the constructs constituting EF and how it relates to teaching and learning in the classroom. Furthermore, an overview of hot and cool EF is provided, EF development as well as the brain structures implicated. A description of EF deficits associated with SLD and the relation

between EF and ADHD and Autism Spectrum Disorder (ASD) is explored. Middle childhood is discussed in terms of cognitive development with reference to Piaget's- and Vygotsky's Theories of cognitive development, as well as the Information processing theory. Psychosocial development and the sociocultural perspective on child development are explored.

Chapter Three is a discussion of the conceptual framework. Inclusive- and special education, social justice, and human rights are discussed. The following aspects of inclusive education were reviewed: inclusive educational trends nationally and globally, models of inclusive education, and policy directives for inclusive education in South Africa. Different types of special schools in the Western Cape were discussed, as well as collaboration and constructivism in education. Finally, the roles of the school-based occupational therapist and speech-language therapist were discussed.

Chapter Four explains the research aim, -questions, and -objectives. The rationale, limitations, and advantages of the research approach were discussed, followed by the paradigmatic perspectives, ontology, and epistemology. The research design was explained, followed by the advantages and limitations of a multiple case study design. A discussion of the population and sampling followed with a description of the data collection and -analysis. The quality assurance, ethical considerations, and the role of the researcher were discussed.

Chapter Five discusses and analyses the study's results and findings in light of the themes that emerged after the data analysis.

Chapter Six contains the findings in light of the research questions outlined in Chapters 1 and 4. Followed were the recommendations, limitations, and contributions of the study, the recommendations, and the conclusion.

1.17   SUMMARY OF THE CHAPTER

Chapter One attended to the analysis of the research problem, the aim of the study, a statement of the primary and secondary research questions, and objectives as well as a preview of the literature and conceptual framework.

Following is Chapter Two, which is the literature study exploring executive functioning and middle childhood.

CHAPTER TWO
LITERATURE STUDY

2.1 INTRODUCTION

Chapter One provided an orientation to this research study by discussing the background and reasons for undertaking a multiple case study, exploring multidisciplinary team approaches in accommodating learners' executive functioning needs in three Cape Town special schools. It is important to know what an EF is before understanding the executive functioning needs of foundation phase learners. Efs are investigated by exploring existing literature. Chapter Two discusses the association of Efs and SLD because the research sites for this multiple case study are three special schools accommodating learners with SLD. Furthermore, the cognitive- and psychosocial development of middle childhood is explored as this multiple case study focuses on the executive functioning needs of foundation phase learners.

2.2 UNDERSTANDING EXECUTIVE FUNCTION

The term "executive function" was introduced in the middle of the 20th century to describe the operations associated with the frontal cortex. The case study of Phineas Cage drew attention to the frontal lobes as it was linked to disabled invisible processes such as planning and self-regulation, notwithstanding sound overall cognitive functioning (Demetriou et al., 2019). The term "executive" was introduced by Pribram in 1973, defining processes of the prefrontal cortex (Watson et al., 2016). However, as recently as about twenty years ago, executive functioning was still almost unknown, but recently, the term is well known and used, especially in developmental scholarly articles (Serpell & Esposito, 2016).

EF refers to a configuration of activities related to thinking, behaviour, and learning, namely inhibition, working memory, and shifting of attention in the context of object-orientated behaviour. EF is regarded as the cornerstone of cognitive development because it is considered a prediction of efficiency in managing and regulating intellectual, emotional, and social potential later in life (Guerra et al., 2021; Harms et al., 2014; Rose et al., 2012; Serpell & Esposito, 2016). One of the fundamental milestones in cognitive development is the capacity to manage or control behaviour and thinking consciously. This refers to the capability

to stop the execution of a task when requested to do so, to perform actions to achieve objectives, and the skill to maintain attention notwithstanding distractions. In the classroom environment, it pertains to controlling impulses to exclaim remarks or answers and to concentrate on a given task, although it may not be interesting (Roebers, 2017; Serpell & Esposito, 2016). EF abilities are associated with several educational factors, such as academic performance, involvement in classroom activities, and self-regulated classroom behaviour, e.g. effective management of thoughts, actions, and feelings (Dias & Seabra, 2017; Obradovic et al., 2018; Rose et al., 2012). The three major constructs of EF associated with classroom behaviour and learning are inhibition, working memory, and cognitive flexibility (shift). Inhibition is our ability to withstand impulses, as well as the control of attention in terms of resisting distractions. It is thus clear that inhibition is closely related to self-regulation. Working memory involves the retention and operation of information in our minds. Cognitive flexibility refers to our ability to shift attention from one activity to the next (Sasser et al., 2015; Dias & Seabra, 2017). Later in this chapter follows a more detailed discussion of the EF constructs.

The learner who can retain information and cognitively manipulate it, focus attention, inhibit inappropriate responses, and have the cognitive flexibility to shift from one activity to another is best equipped for effective learning and functioning (Dias & Seabra, 2017). On the other hand, learners who are diagnosed with specific learning disorders in reading, written expression, and/or mathematics exhibit underperformance in executive functioning tasks in relation to their neuro-typical peers (Spiegel et al., 2021).

Downes et al. (2017) studied the physiological changes in the brain associated with EF and found that the development of EF is parallel to the development of specific parts of the brain. They further established that there were physical differences in the brains of children with ADHD and deficits in EF compared to children without ADHD and executive functioning deficits (Downes et al., 2017). It was found that children with executive functioning deficits were more vulnerable to developing specific learning disorders in reading and mathematics than their peers without these deficits (Adolt-Silva, 2021).

There is enough evidence to confirm that EF is an umbrella term that includes cognitive functions strongly associated with learning and everyday functioning (Leung et al., 2016; Weismer et al., 2018). EF includes goal-directed behaviour, the capacity to be cognitively and behaviourally pliable, and the ability to resolve problems (Watson et al., 2016).

2.2.1 The origin of executive function understanding

During the 1970s, the concept of executive functioning was defined, but the origin dates back to 1840 with the description of one of the most illuminating case studies, namely that of Phineas Gage (Goldstein & Naglieri, 2014). Gage sustained a brain injury through a horrific, life-changing accident that captured the attention of scientists who wanted to understand the connection between the brain and behaviour. Following is Table 2.1 with the remarkable story of Gage.

Table 2.1: The story of Phineas Gage (Carcia-Molina, 2012; Goldstein & Naglieri, 2014)

This case study is well known in neuro-scientific literature and deals with the first documented case of personality change caused by a brain injury.

On the afternoon of 13 September 1848, Phineas Gage, a 25-year-old construction worker, was busy preparing a new track for a railroad company. Explosives were used to blast rocks out of the way. Gage used an iron rod, more than 3 feet 7 inches long, with a diameter of one and a quarter inch at the blunt end and a sharp point on the other end, to cover the gunpowder. Gage got distracted, the explosive went off, and the iron rod penetrated his head. The rod entered below his left cheek, passed behind the eye, through the front of the brain, and the base of the skull. Gage fell on his back but, most astonishingly, did not lose consciousness and spoke within a few minutes after the accident. Gage sat up straight in the cart on his way to the local hospital. While the doctor was tending to the wound, Gage was able to narrate what had happened to him (Kotowicz, 2007).

After Phineas recovered, certain behavioural changes were observed. His behaviour was described as "disinhibited" or "hyperactive", suggesting a lack of inhibition associated with damage to the pre-frontal cortex. This case study sparked the interest of psychologists and neuroscientists to study the influence of the frontal lobes and the concept of Efs (Garcia-Molina, 2012; Goldstein & Naglieri, 2014).

The question can be asked what the significance of the Gage case study is, and the answer lies in the fact that the case of Phineas Gage captured the interest of scientists, especially neuroscientists and social psychologists, which led to a significant contribution in the fields of social psychology, neuropsychology, and neuroscience. It was the first documented study about brain injury and its effects on personality, behaviour, intelligence, and brain functions (Kihlstrom, 2010). The significance of the Phineas Gage case is not only the fact that he survived the horrific accident, but it focused attention on the correlation between prefrontal cortex injuries and deficient cognitive- and behavioural control. This led directly to the establishment of the term "executive functions" (Suchy, 2009, pp. 108-109).

2.2.2   A brief history of executive functioning as a theoretical construct

Table 2.2 provides an overview of the history of EF theory development as outlined by Goldstein and Naglieri (2014) who can be regarded as prominent authors in the field of EF.

Table 2.2: The history of executive functions (Goldstein & Nagliere, 2014, pp. 4-6)

1950s	The role of the prefrontal cortex in intelligent behaviour intrigued neuroscientists and psychologists, compelling them to investigate the topic. The research led to establishing the idea of selective attention, which is strongly connected to EF.
1970s	There are many definitions for EF. Since the term "executive" was first used in 1973 by Pribram, at least 30 or more constructs have been included under the umbrella term "executive function", making the concept hard to define operationally. Despite many attempts and studies being made to define the EF, there is still no universal definition.
	Michael Posner, a psychologist, invented the term "cognitive control" in 1975. He stipulated that there is a separate executive division of the attentional structure administering the process to focus attention on specific elements. Alan Baddeley (1986) suggested a corresponding system involving his model of working memory, stating that there has to be a "central executive" authorising information to be stored in short-term memory.
1995	Lezak proposed that EF comprises a group of distinctive and related elements in terms of behaviour choice, conscious activities, and efficient execution of the selected behaviour.

2006	Reynolds and Horton (2006) described EF as distinctive from general knowledge. According to them, EF produces the ability to plan and act flexibly in executing activities. They further suggested that EF also entails decision-making, planning actions, and producing unique motor output in a flexible manner according to external demands.
2013	Executive functioning is described as a single phenomenon, conceptualising the efficacy of obtaining knowledge and solving problems across the areas of flexibility, inhibition, organisation, working memory, and planning.

The information in Table 2.2 presents the short history of defining EF. It is currently accepted to include cognitively managed operations that improve learners' abilities to hold and process information, focus attention, inhibit impulses, and shift from one activity to another to execute goal-directed behaviour. These abilities are managed by the prefrontal cortex and connected brain structures (Cook et al., 2018; Sasser et al., 2015).

Key terms that define EF as seen in the history provided and that pertain to this study are:

- A central executive authorising information to be stored.
- EF comprises distinct and related elements with regard to the execution of selected behaviour.
- EFs entail decision-making, planning actions, and producing unique motor output flexibly according to external demands.
- "Executive function" is an umbrella term referring to selective and focused attention, the efficacy in obtaining knowledge, solving problems, inhibition, flexibility, working memory, and planning (Cirino et al., 2018; Goldstein & Naglieri, 2014, pp. 4-6).

2.2.3   Constructs constituting executive function

The cognitive processes associated with the prefrontal areas of the frontal lobes are classified under the umbrella term of "executive function" (Deng et al., 2022). An EF consists of inter-connected and well-defined components, described as unison with distinct and diverse characteristics (Becker et al., 2014; Best & Miller, 2010).

EF comprises the following capabilities: (1) to retain information in the brain, manipulate the information, and act on it; (2) to exert self-control by conquering impulses and critically deciding on substitute behaviour; and (3) to adapt to diverse task stipulations and circumstances fluidly. The named threefold capabilities constitute the broad framework of EF, referred to as working memory, inhibition, and shifting (Cook, 2019).

Figure 2.1 depicts the constructs constituting EF, followed by a detailed discussion of each construct.
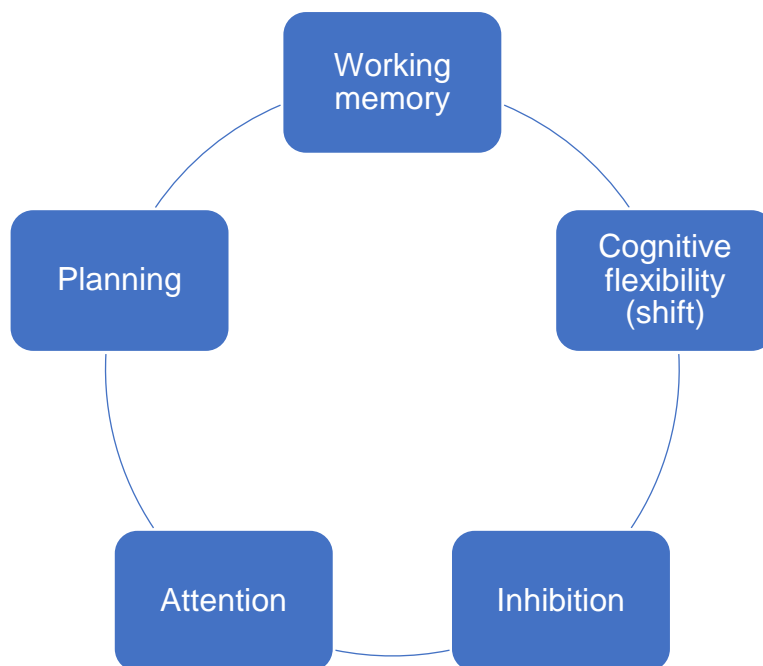
Figure 2.1: Constructs constituting executive functions (Author, 2023)

Following is a discussion of the constructs of working memory, cognitive flexibility (shift), inhibition, attention, and planning.

2.2.3.1 Working memory

Working memory is identified as one of the advanced cognitive skills that fall under the umbrella term of "executive function" associated with the prefrontal cortex. The dorsolateral prefrontal cortex is crucial in working memory by holding information in an active mode to ensure quick retrieval and processing. There is a strong relationship between working memory and executive functioning because both are involved in the processing of goal-directed behaviour, as well as intentional control or executive attention (Bernier et al., 2010; Cook, 2019; Nieto et al., 2016; Nutley & Söderqvist, 2017). Working memory is a system that coordinates the capacity for storing and processing information (Nouwens et al., 2021). The primary function of working memory is to amend and direct information for task-specific action. It means that applicable information is stored in working memory, and when it is not essential anymore, it is amended and replaced with relevant information (Engel de Abreu et al., 2014; Karbach & Unger, 2014).

The construct of working memory was established more than 50 years ago, and since then, different schools of thought have presented various definitions depending on the cognitive domains it represents. There is, however, a general agreement on the substantial engagement of working memory in goal-directed behaviours whereby knowledge and facts must be maintained and processed to enable efficient task performance (Chai et al., 2018).

Working memory is a complex construct to define because of several definitions and the use of different assessment tasks. In general, it refers to the ability to support and utilise information over brief periods without depending on external aids or cues. Some working memory tasks may require extended executive abilities, e.g., maintaining and manipulating information and directing behaviour to accomplish goals (Best & Miller, 2010). Working memory has a major influence on learning, resulting in learning taking place much quicker for those with a more pronounced working memory capacity, who can organise information, recall directions, and concentrate. Working memory can be conceptualised as the working bench of the mind and serves as the foundation from which new information is encoded into long-term memory, dynamic operations take place, and information is stored temporarily to execute specific tasks (Miyake & Shah, 1999; Nutley & Söderqvist, 2017).

In the field of cognitive psychology, there is still no consensus about the distinction between working memory and short-term memory (Miyake & Shah, 1999). There is, however, some consensus on the distinction between the storage-orientated belief of short-term memory and working memory, which focuses more on processing information. One of the prominent motivations behind the theoretical conversion from short-term memory to working memory was the lack of explanation of temporary memory involved in the performance of complex cognitive tasks (Miyake & Shah, 1999). The working memory model transforms the inflexible and contradictory view of memory being short or long-term. The working memory model postulates that in contrast to the simplistic purpose of short-term information storage, working memory involves multiple components that control the repository of information to ensure a more complex cognitive capacity (Chai et al., 2018).

Working memory consists of four elements. The first is the visuospatial sketchpad, detaining visual images for a short period. The second is the phonological loop, responsible for momentarily holding internal monologue for verbal comprehension and -recital. Two crucial elements of the phonological loop are phonological storage, holding information in memory, and the sub-vocal rehearsal key for putting information in the memory. The third element is

a central executive, which correlates attentional activities and controls reactions. The central executive is imperative for working memory as it controls the flow of information. The central executive is responsible for determining what information needs to be processed further and how it must be processed. It is associated with the ability to reason and comprehend, which is primary to human intelligence. The fourth element is several systems responsible for other cognitive or perceptual tasks. Another element that was added to working memory is the episodic buffer, which has a restricted volume but is competent to integrate information (Sternberg, 2006).

2.2.3.1.1 *Working memory in the school context*

Working memory, as an executive functioning skill, is responsible for children's ability to cognitively control their attention and behaviour, underlying academic and social prosperity in the school context. Working memory entails children's capacity to keep, amend, and control information in the mind for brief periods (Finch, 2019). Working memory capacity is a good predictor of academic achievement, as reading decoding skills, reading comprehension, mathematics calculations and –reasoning, as well as written expression, depend on efficient working memory ability. Working memory deficits are often seen in learners with specific learning disorders. Working memory is dependent upon integrating new information with existing (stored) information; for example, when learners are reading, they have to link the content they are reading with prior knowledge to give meaning to it. It is thus clear that there is a direct association between working memory and reading comprehension (Nouwens et al., 2021; Nutley & Söderqvist, 2017).

Working memory develops from infancy with a capacity to hold tiny fragments of information, succeeding with the ability to expand on that information, occurring between the ages of nine and twelve months. The manipulation and processing of more voluminous information develop more slowly. The progressive development of working memory abilities is seen over the first five years of life (Cook, 2019). Research that was done in England and Singapore found a consistent development in children's working memory abilities between the ages of four and fifteen years (Lee, Bull, & Ho, 2013). Research conducted using an early elementary school sample in Switzerland found improved working memory over the first three years of formal schooling (Röthlisberger et al., 2012). A research study in Belgium indicated

corresponding results, namely the improvement of working memory skills from kindergarten to first grade (Vandenbroucke et al., 2017).

The progression to formal schooling challenges learners academically to achieve specific learning outcomes in terms of literacy and numeracy. The new environment is not only academically challenging, but learners are also required to function more independently to organise and direct their time and behaviour. The academic and social expectations require the school beginners to employ their working memory skills to enable them to follow instructions, progress academically, and establish social interactions (Finch, 2019). In the process of creating written text, working memory is of utmost importance, especially in retaining information regarding punctuation, spelling rules, sentence construction, and syntax, while the formulation of thoughts takes place simultaneously (Watson et al., 2016).

Thus, efficient working memory is of the utmost importance for optimal learning. As the discussion of the executive functioning constructs continues, it is apparent that all the constructs can be related to learning and academic achievement. Later in this chapter, the association between executive functioning and SLD is discussed. For the purpose of this research study, the main focus is on the relationship between executive functioning and SLD and the approaches of the multidisciplinary teams to accommodate these needs. The role of the speech- and language therapist in accommodating learners with SLD related to language is of utmost importance, especially in making the curriculum accessible while bridging the barriers to learning and accommodating their executive functioning needs. The role of the occupational therapist is to support learners in their learning environment while responding to academic and functional needs. In order to accomplish that, they incorporate clinical- and best-practice knowledge as well as the needs of the learners (Meaux & Norris, 2018; Villeneuve, 2009). The approach of the multidisciplinary team accommodating the executive functioning needs of foundation phase learners is discussed in more detail in Chapter 3.

2.2.3.2   Cognitive flexibility and shift

Cognitive flexibility, also referred to as "shifting, attention switching, or task switching", is the ability to extricate attention flexibly from irrelevant information and a former task to more relevant information and a current or upcoming task. Cognitive flexibility enables us to think differently and innovatively and respond swiftly to unpredicted changes (Karbach & Unger, 2014, p. 2).

As mentioned in section 2.2.3, the constructs of EFs are individualistic but also intertwined because shifting has considerable dependence on inhibition and working memory processes. Effective shifting depends on the capability to inhibit a former cognitive operation. In other words, perseveration, a continued response, will cause a deficiency in shifting from one task to another. Furthermore, shifting depends on working memory in controlling and reconditioning information needed (Best & Miller, 2010; Zelazo et al., 2003). A further explanation of this intertwinement, as described by Cook (2019), is that EFs can be regarded as the mechanisms that control attention in a world filled with stimuli and that working memory grants arousal of information within the range of attention while inhibition channels the attentional focus, and shifting sanctions alterable transference of attention as it is required (Cook, 2019).

As mentioned, shifting relies heavily on inhibition and working memory. The capability to inhibit past activated mental sets is indicative of successful shifting. There is a marked difference between "inhibition tasks" and "shift tasks". "Shifting tasks" depend on the conversion "between two or more mental sets", in which each set entails some rules and not only the inhibition of one particular response. Age enhances the capability to shift. Pre-schooled children (aged three to four) are able to shift between two uncomplicated response sets with the rules presented in a story context and when the request on inhibition is decreased. Children must first have the ability to maintain a response set in working memory and then inhibit a response activation before they can activate a substitute response. Shifting achieves mature levels at approximately age 15 (Best & Miller, 2010, pp. 1650-1651).

Important elements of shifting encompass the ability to transform, flexible problem solving, shift attention, and the transition of focus regarding thoughts, activities, and topics. A moderate deficiency in the ability to shift influences the efficiency of solving problems, whereas severe deficiencies cause perseverative behaviour. Children may sometimes repeat the same incorrect application or attitude despite negative feedback. The inability to shift often manifests in rigid behaviour, and children with this problem need consistency and an expected or foreseeable routine (Gioia et al., 2015).

2.2.3.2.1 *Cognitive flexibility and learning*

If we look at the importance of cognitive flexibility in the classroom, the prerequisite for problem-solving, an important aspect of teaching and learning, is that the learner must have

the ability to select the most appropriate strategy to solve a particular problem. This cannot happen when the learner gets stuck on one method or strategy. In order to enhance a positive attitude toward classroom activities and school in general, cognitive flexibility plays a significant role because it assists with the learner's ability to adapt to different circumstances. Learners diagnosed with specific learning disorders must be taught to be cognitively flexible (Green & Rathgeb-Schnierer, 2020).

It is a challenge for learners to adapt their behaviour to different situations, especially when change is unexpected. Some learners get anxious, angry, or frustrated, negatively affecting classroom teaching and learning. Learners who experience difficulty with cognitive flexibility typically demonstrate the following behaviour:

• They need more time to adjust to strange circumstances
• They are uneasy in the presence of strangers
• They are distressed when their routine and life-world change
• They find it challenging to stop one activity and continue to the next (Huizinga et al., 2014).

Many teaching and learning tasks rely on cognitive flexibility. For example, in a written activity, there are different words with similar meanings, and in a reading comprehension test, a question may require an inference, and the answer is not explicitly stated in the reading passage. They have to learn that there are different strategies and ideas related to solving a particular problem. Learners with specific learning disorders must be taught and guided to learn strategies to adjust and comply with change and unpredicted situations (Huizinga et al., 2014; Khasawneh, 2021).

2.2.3.3   Inhibition

Inhibition is viewed to be inherent to EF, and many researchers have identified inhibition as one of the main EFs (Best & Miller, 2010; Jewsbury et al., 2016; Morra et al., 2018). Inhibition involves three interrelated processes, namely, the commencing dominant response to an event, to stop a continuous response, delaying the decision to respond; and the preservation of the interval between the delayed reaction and the autonomous response to prevent distraction from contending stimuli (Wolfe, 2004, p. 21).

Behavioural inhibition refers to the ability to withstand responses to irrelevant information or stimuli in order to improve task performance. Response inhibition is ultimately about concentrating on the applicable stimuli while performing a particular task. Some suggestions indicate that inhibition is a divided construct containing similar and distinct processes. Goldstein and Naglieri (2014) refer to some authors (Gray, 1982; Nigg, 2000, 2001) discriminating between certain types of inhibition, such as "motor inhibition, cognitive inhibition, interference control, motivational inhibition, and automatic inhibition of attention" (Goldstein & Naglieri, 2014, pp. 10, 19). Simple and complex response inhibition are differentiated based on whether working memory is also required. The first overt signs in the development of inhibition appear in the preschool years and continue to develop, especially from ages five to eight, specifically in tasks that combine inhibition and working memory. Inhibition develops significantly between ages three to five, followed by a less considerable change from five to eight and even less change after eight. Progression processes may include brain development, expanded ability to operate complex tasks and use rules, and emerging metacognition (Best & Miller, 2010).

It seems that inhibition is not a consistent construct because "interference control, cognitive inhibition, and motor inhibition may be distinct processes tapped by different tasks and develop at different rates across childhood" (Best & Miller, 2010, p. 1648).

Inhibition deficiencies are seen as the inability to inhibit behaviour or not being able to resist impulses. Behaviour manifestations are often seen in improper reactions to others, e.g., the inclination to intrude and interfere in social interactions and default of impulsive behaviour (Gioia et al., 2015).

2.2.3.3.1 *Inhibitory control in the classroom*

Inhibitory control, which develops during school ages five to eight years, is the intentional manipulation of attention and can be observed in something minor, such as interrupting someone or, in the case of a young child, calling out in the classroom out of turn. A study by Hernandez et al. (2018) discovered that the mathematical- and inhibitory control abilities of the school beginner develop simultaneously in the same part of the brain. They also found the same high correlation between inhibitory control tests and the prediction of good reading abilities. The ability to inhibit and disregard irrelevant information while reading contributes to a great extent to efficient reading comprehension (Nouwens et al., 2021). Children who are

impulsive and experience problems attending to important information and disregarding irrelevant information have trouble with emotional regulation (Adolt-Silva, 2021).

2.2.3.4 Attention

Since 1873, psychologists have been fascinated with attention, leading them to research its structures, advancement, and operations (Wolfe, 2004). Attention, specifically selective attention, has been identified as a major component of the development of EF. According to longitudinal studies, referred to by Cook (2019), selective attention in infancy can predict inhibition and working memory in toddlerhood. Attention is regarded as one of the essential cognitive abilities of primary importance for early childhood development (Cook, 2019). Attention is one of the dominant aspects in humans, broadly referred to as focus and awareness. Prolonged, focused, split, and shifting attention are the four subcategories of attention (Fadaei et al., 2017). Sternberg (2006) defines attention as our ability to process bounded information from abundant information to our expense through our senses and cognitive operations. Conscious attention is particularly important for cognition and serves three purposes. Firstly, monitoring our interconnection with the world around us keeps us mindful of how well we adapt to particular situations. Secondly, it helps us connect our memory (past) and sensations (present) to give us a feeling of consistency. Thirdly, it assists us to control and plan our future activities (Sternberg, 2006). Attention develops in accordance with the maturation of the individual in becoming "highly selective", generating "directive, selective and organized behaviour" (Wolfe, 2004, pp. 28-29).

Wolfe (2004) cites Posner and Fernandez-Duque and Posner (2001), who states that: (1) attention is a distinct system but is also associated with other processes and systems in the brain; (2) attention is the product of an anatomical network, not a single region or the brain as a whole; (3) different brain regions are responsible for different processes of the attentional system. There is, thus, an interrelation between the attention system and other brain processes. The conclusion is that there are functionally specialised brain areas and structures associated with executive functioning, but there is also an interconnection while performing executive tasks (Karbach & Unger, 2014).

According to Posner (cited in Sternberg, 2006), there are two attention systems, namely the anterior attention system and the posterior system. The anterior attention system is situated in the frontal lobe, and the posterior system is in the parietal lobe, a part of the thalamus, and

a part of the midbrain associated with eye movement. The anterior system is activated by activities that require consciousness, such as when a person must attribute meaning to words. Additionally, the anterior system is related to active focus, i.e., a specific action must be decided and/or prepared. The posterior system operates when activities require visuospatial attention. Attention also requires neural activity in specific visual, auditory, motor, or higher-order tasks that require relevant visual, auditory, motor, and related parts of the cortex (Sternberg, 2006). Attention is one of the crucial cognitive elements essential to early childhood development. As with EF, the frontal regions of the brain are associated with attention processing from infancy and childhood to adulthood (Cook, 2019). Problems with sustaining attention have a debilitating effect on learning (Korpa et al., 2020). The function of attention is to activate, orientate and focus executive attention to external stimuli. Attention is crucial for learners to succeed in classroom activities, as well as purposeful behaviour to accomplish objectives while resisting impulses that affect learning (Spiegel et al., 2021).

A study conducted by Rabiner et al. (2010) investigated attention training in early elementary school. Their sample incorporated 77 Grade 1 learners identified by teachers with attention deficits and randomly allocated to three distinct after-school groups, namely a computerised attention training programme (n = 25), the "Destination Reading" and "Destination Math" computerised programmes (n = 27), and a wait-list control group (n = 25). The treatment programme entailed two sessions per week for 14 weeks. The post-treatment assessment indicated that the two groups that received treatment improved significantly in teacher rating attention skills. The group who received the computerised reading and math training showed significant improvement in terms of their reading and math skills. This particular study is significant because it indicates that domain-specific training (computerised reading and math training) may have the same benefit as domain-general training (computerised attention training) in improving attention skills. Bierman & Torres, (2016) cites a study that was done by Kerns, Eso, and Thomson in 1999. They randomly selected a relatively small control group (n = 7) and intervention group (n = 7) of five to ten-year-old children diagnosed with ADHD. A pre-test was followed by an intervention plan consisting of a 16-week after-school programme, where a post-test was done. The intervention group performed significantly better than the control group (Bierman & Torres, 2016, pp. 6-7).

The significance of these two tests is the indication that interventions and practice can develop and improve attention. However, it is important to consider that there is still not

enough evidence to confirm that these interventions can be generalised to effectively influence scholastic behaviour and/or academic achievement (Bierman & Torres, 2016). Korpa et al. (2020) identified two categories for executive intervention programmes: strategy-based and process-based. Strategy-based programmes involve developing specific activities, such as a mnemonic exercise to enhance memory. The process-based programme develops a broad scope of cognitive processes. Their finding was that the process-based intervention programme is more effective as it proved to have greater transference of learned skills than the strategy-based programme (Korpa et al., 2020). Later in this research study, the approaches of occupational therapists and speech- and language therapists are discussed with specific reference to the transference of skills and abilities addressed in therapy to apply it in the classroom.

2.2.3.4.1 Attention in the classroom setting

Attention is the most crucial element affecting learning and is considered the initiating tool for conscious learning (Chun & Turk-Browne, 2007; Cicekci & Sadik, 2019; Posner & Rothbart, 2014). Attention manages learning and memorising, which is essential to succeed academically (Posner & Rothbart, 2014). Attending to the information being taught leads to processing the information in the mind. This greatly influences learners' academic performance (Al'Omairi & Balashi, 2015).

Reading disorders and verbal processing are directly linked to deficits in attention. There is a concurrence of ADHD and specific learning disorders varying between 10 percent and 50 percent. Other comorbid groups observed are attention deficit and linguistic functions (Bental & Tirosh, 2007).

Cicekci and Sadik (2019) explain that teachers can support learners who experience attention difficulties by adapting teaching methodology, the choice of teaching- and learning material, the selection of activity, minimising noise, and the place where learners sit in the classroom (Cicekci & Sadik, 2019). Williams (2013) summarises the role of attention in learning by saying that when attention is paid, learning takes place, and in the absence of awareness and attention, no learning takes place.

2.2.3.5   *Planning*

Planning is a compound construct and includes a large group of reactions and activities, such as reaching a conclusion, forming opinions, and evaluating the actions of oneself and others (Deng et al., 2022). Furthermore, planning is described as the ability to regulate present and upcoming task requirements. Planning is associated with the capability to precede future occurrences, set goals, and prepare the applicable steps in executing a particular task. Planning implicates anticipating the final goal and ascertaining the most efficient method to reach the goal. Good planning ability manifests in the child starting an assignment timeously (Gioia et al., 2015; Nouwens et al., 2021).

Working memory and planning have a strong connection and may impact certain facets of academic success. Planning abilities are reported to be lacking in learners who struggle with reading comprehension. In addition to affecting reading skills, planning is crucial for mental regulation (Deng et al., 2022).

The five fundamental constructs of executive functioning and the manifestations in the classroom were discussed. At this stage, it is important to briefly refer to teacher-child interactions in the classroom and executive functioning. Emotional- and instructional support, classroom management, and the interaction between teacher and learners influence the learner's cognitive- and executive functioning development. Emotional support involves the ability of the teacher to create a safe and secure classroom environment. Instructional support refers to challenging learners' higher thinking skills by asking open-ended questions and promoting occasions where learners can use advanced language. Classroom management refers to explaining rules and expectations and proactive planning (Vandenbroucke et al., 2017). During instructions, the teacher has to be observant and sensitive toward learners' attention and concentration. When there are indications that their attention is distracted, the teaching strategies must be adapted, or the learners must be provided with a short break. Teachers must always be aware that learners differ in their abilities and needs regarding EFs and the support they require (Berri & Al-Hroub, 2016; Cicekci & Sadik, 2019).

2.2.4 Cool executive function and hot executive function

EF comprises control of thought and action, such as response inhibition, and the flexible shift of attention to renew information in the working memory. Recent research distinguishes between two differentiable but related categories of EF, namely "cool executive function" and "hot executive function". The terms "hot executive function" and "cool executive function" describe how the brain processes information in emotionally charged situations, such as postponing satisfaction (Harms et al., 2014, pp. 1-2). Although "hot" and "cool" EFs have distinct features, both are associated with sufficient functioning, balanced thought, and behaviour based on goal-oriented logic (Becker et al., 2020, p. 2).

Cool EF involves cognitive skills such as planning, inhibition, flexibility, working memory, and monitoring carried out in rational and unemotional situations (Hongwanishkul et al., 2005). The cognitive abilities listed above that are linked to cool EF necessitate deliberate control over thinking and behaviour that is detached from emotion. Hot EF, in contrast to cool EF, entails goal-directed, future-focused cognitive processes carried out in emotional, motivated, and tension-filled environments between short-term rewards and long-term satisfaction. Developmental changes in EF components are caused by age-related maturation; hot executive functioning develops more gradually than cool executive functioning (Poon, 2018)

More evidence indicates a connection between language experience and the development of hot- and cool EF, specifically relating to bilingualism. The control of two language systems causes neural changes resulting in the rapid development of EF components such as "inhibitory control, working memory, and executive attention" (Poon, 2018, p. 2).

2.2.5 Executive functioning and the brain structures

Figure 2.2 illustrates the three entities of the prefrontal cortex.
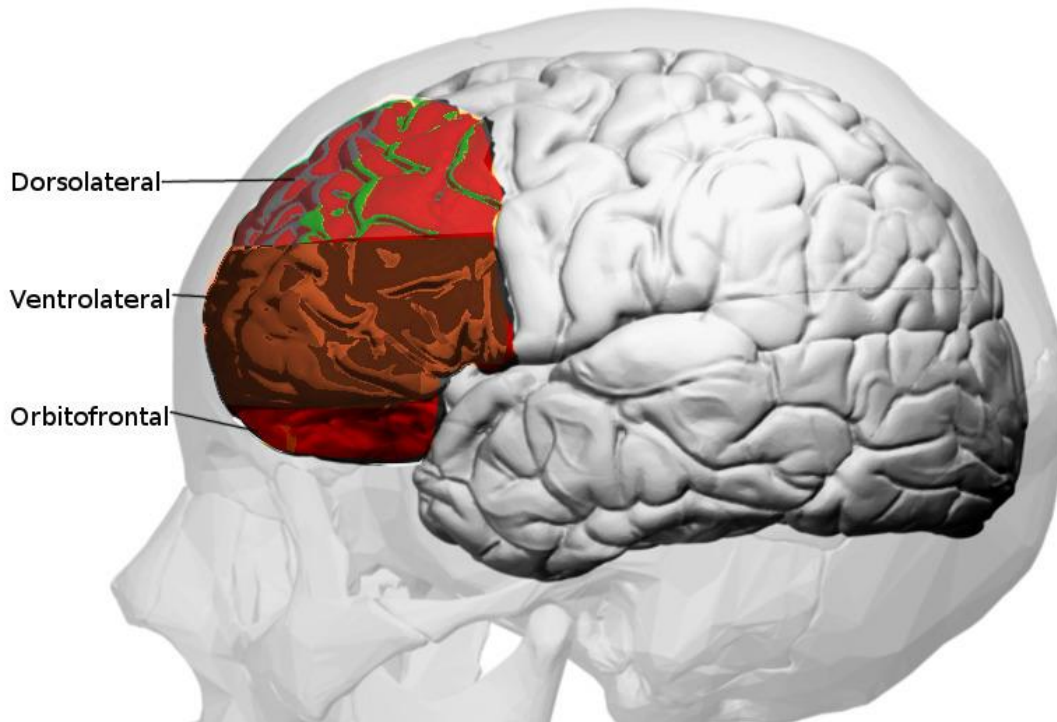
Figure 2.2: Prefrontal cortex (Image courtesy: Chaigasame
Source: https://www.ncbi.nim.nih.gov/books/NBK545214/?report=printable)

Executive functioning is intertwined with various brain structures and processes, but the neurology of EF starts with the prefrontal cortex (Kaufman, 2010). The frontal lobes are key in executing the most sophisticated and intricate mental processes, namely EF. Executive functioning develops remarkably only in humans; according to Goldberg (2009), we are all executive beings. Many authors mention EF as the function of the frontal lobes (Barbey et al., 2013; Cristofori et al., 2019; Goldberg, 2009; Moriguchi & Hiraki, 2013). The prefrontal cortex is the latest and most advanced part of the brain. The prefrontal cortex consists of three entities, namely the medial part, the dorsolateral part, and the orbitofrontal part (See figure 2.2) (Cristofori et al., 2019).

The frontal lobes are crucial for successful learning and self-directed action, whereas the other three cortical lobes – temporal, parietal, and occipital – receive, process, and store various sensory information. The "dorsolateral prefrontal cortex" is responsible for "goal setting, planning, organizing, initiating, shifting, and purposeful attention" (Kaufman, 2010, pp. 26-28). Due to genetic weakness or injury, defects in this area will present in the behaviour of inattention, restricted working memory, and planning difficulties (Cristofori et al., 2019). The "orbital prefrontal cortex" is connected to the amygdala and is associated with

emotional control and behavioural impulses. Processing insufficiency in this area is often associated with the "hyperactive-impulsive elements of the ADHD spectrum" (Kaufman, 2010, pp. 26-28). A deficiency in cognitive flexibility can be directly related to impairments in the orbitofrontal cortex (Cristofori et al., 2019). Neuroimaging studies and injuries in the frontal lobes show congruent evidence of the involvement of the prefrontal cortex in executive functioning. Evidence that supports this is found in patients with frontal lobe epilepsy, who experience deficits in attention, working memory, planning, and impulse control (Barbey et al., 2013; Longo, Kerr, & Smith, 2012).

The prefrontal cortex, essential for EF, is exceptionally well connected to every functional unit of the brain, especially the areas responsible for the "processing of sensory information, memory, emotions, and movement" (Kaufman, 2010, p. 30). An investigation of working memory execution in people with prefrontal cortex damage indicated deficits in working memory, specifically when the activity was complex or when focus and attention were required (Cristofori et al., 2019). This connection enables the prefrontal cortex to retrieve information stored in the long-term memory to the working memory, enabling efficient problem-solving. The retrieval of information from long-term memory is made possible by connecting the prefrontal cortex and the hippocampus (Kaufman, 2010).

2.2.6 Executive functioning development

The interrelation between EF and the slow maturation of the prefrontal cortex contributed to the belief that EF only develops in adolescence. Recent studies are evidence to the contrary, as EF can be observed and measured at preschool age. In actual fact, some characteristics of EF appear by the end of the first year of life (Bernier et al., 2010). Most studies with young children indicate age-related differences in executive performance, which correlates with studies on brain development, specifically the prefrontal cortex (Nieto et al., 2016). A study by Gottwald et al. (2016) found a strong association between the development of EF and the development of planned and controlled motor action in infants. The discovery of this association indicates that the minor movement planning of infants is related to higher-order EF. The findings of this study are consistent with cognitive development in an uninterrupted relationship between the brain, body, and a dynamic environment (Gottwald et al., 2016). Basic principles of behaviour management appear before the age of two years when neural solidity in the prefrontal cortex expands (Vandenbroucke et al., 2018). The best part of what

we know about the neural bases for EF development is based on studies assessing electrical event-related potentials (ERPs) noted during the performance of EF tasks. A fascinating element, the P300, is a "stimulus-locked" component that originates in the frontal and temporal-parietal areas and is assumed to update working memory and inhibition. The P300 score is significantly higher in adults than children, showing that EF systems become more adequate with time (Harms et al., 2014, p. 2).

Successful learning and academic development are dependent on the notable development of EF across childhood. Although it is generally accepted that EF develops throughout childhood into early adulthood, fundamental constructs, such as working memory, inhibition, and cognitive flexibility, can be noticed in children as young as three years of age (Karbach & Unger, 2014). In older children, these fundamental EFs are integrated to affirm more complex EFs, such as planning and reasoning (Vandenbroucke et al., 2018). Studies showed the activation of the prefrontal cortex when children as young as six years old perform EF tasks. Although it showed a more scattered network than adults, the indication is that efficacy increases with development (Harms et al., 2014).

The results of structural neuroimaging studies that investigated the involvement of the prefrontal- and parietal regions in EF indicated a considerable difference among different age groups (Goldstein & Naglieri, 2014). Evidence was found that links the developmental course of EF with structural maturation of the prefrontal- and parietal regions and changes in functional maturation. The capability to be adjustable in shifting from one task to another is the most prolonged development well into the adolescent developmental stage. The capacity to control information in working memory develops later and over a more extended period. Inhibition develops swiftly during preschool and continues into middle childhood (Karbach & Unger, 2014, p. 4-5). Executive functioning abilities reach maturity during the progression from adolescence to adulthood. Maximum efficiency is achieved between 20 and 29 years of age. Maturation is explained in the context of neural changes because development corresponds with synaptic pruning and myelination in the brain. Functional neuroimaging studies of executive functioning tasks indicate that similar integrated brain systems are used in children, adolescents, and adults; they only differ in efficiency (Friedman et al., 2016).

2.2.7 Executive functioning deficits associated with specific learning disabilities

Research findings of various studies described by different authors state that there is a definite association between children's EFs and their sufficiency in mathematics, reading ability, verbal- and non-verbal reasoning, academic achievement, and communication- and social skills (Bernier et al., 2010; Bierman & Torres, 2016; Deng et al., 2022). Deficits in EFs are closely related to various neurodevelopmental disorders, namely ADHD, ASD, and learning disabilities (Gooch et al., 2016).

According to the Desk Reference of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V, 2013, p. 37), a specific learning disability has three academic domains, namely "Impairment in reading", "Impairment in the written expression" and "Impairment in mathematics." A specific learning disability severely impairs the manner in which a child with an average and above-average cognitive ability learns, retains, and expresses information. This has a detrimental effect on their speech, reading, writing, and/or mathematics (Deng et al., 2022; Louw & Louw, 2014). According to the DSM-V (2013), there must be at least one of the following symptoms persisting for at least six months, despite the supplying of interventions:

- Incorrect or laboriously poor word reading
- Having trouble comprehending what is read
- Problems with the spelling of words
- Experiencing trouble with written expression
- Difficulties with calculation, numerical facts, or number sense
- Experiencing reasoning problems in mathematics

According to individually administered standardised achievement measures and thorough clinical evaluation, the affected academic abilities are significantly and quantitatively below those anticipated for the individual's chronological age and significantly interfere with academic or occupational performance or daily living activities (DSM-V, 2013).

2.2.7.1 Executive functioning and specific learning disability in reading and written expression

Executive functioning deficits are associated with neurodevelopmental disorders, such as SLD and academic achievement (Bailey et al., 2018). In children with certain learning impairments, Fadaei et al. (2017) discovered an astounding connection between focused attention and challenges with reading. The fact that there is a strong correlation between EF deficits and reading difficulties does not suggest that EF deficits generate reading difficulties. The relationship can rather be described as reciprocal, meaning that EF proficiency may develop with more compound reading ability. The correlation between EF and reading is inclined to be stronger for more complicated reading skills such as reading comprehension. This was established by a study done by Becker et al. (2020), who found after controlling factors contributing to reading comprehension – attention, decoding skills, fluency, and vocabulary – EF contributed significantly to reading comprehension and not word recognition skills (Becker et al., 2020).

A neurological disorder characterised by non-fluent word identification and subpar spelling achievement, which are not the result of sensory disorders, intellectual disabilities, or insufficient educational knowledge, is what is meant when someone has a specific learning disability in reading (Xia et al., 2017). Specific learning disability in Reading is regarded as one of the most general neurodevelopmental disorders in children, affecting approximately six to seventeen per cent of school-aged children. Research indicates a correlation between SLD and deficits in other neurocognitive fields, such as EF (Becker et al., 2020).

Executive functioning is considered to promote reading comprehension because it coordinates and controls specific reading processes, for example, the integration and retrieval of information which involve different reading processes. The following EFs, which profoundly influence reading comprehension, are working memory, inhibition, and planning. As discussed in section 2.2.3.1, working memory is a system that promotes storing information while concurrently executing activities. When learners read, the new content must be integrated and linked to previously established knowledge (Nouwens et al., 2021).

A bidirectional relationship exists between cognitive skills associated with executive functioning and language development. Children presenting with a language learning disability may develop impaired executive functioning or, conversely, may result from

executive functioning deficits (Kapa & Plante, 2015). Written language can be considered the most difficult academic skill for learners to master. It is thus clear why it is a major problem for learners with a specific learning disability. The common areas of difficulty are the planning, composing, revising, and editing of written work. If we look at the executive functioning skills associated with writing, which are planning, inhibition, and working memory, the areas of difficulty are related to these EF skills (Watson et al., 2016). Written expression involves the coordination of many EF components, especially working memory. Working memory is necessary to maintain awareness of the topic while retrieving information from long-term memory to apply it in writing. Sustained attention and planning are required for handwriting, typing, and spelling while generating text. The writing process requires the writer to filter thoughts, inhibit distractions, sustain attention, plan what to write, organise ideas, have cognitive flexibility, and adapt to changed perspectives and demands. Besides generating and organising ideas, the writer must translate these ideas into print. Thus, writing involves coordinating several cognitive processes and skills that make up EF (Watson et al., 2016).

Kapa and Plante (2015) refer to the "Procedural Deficit Hypothesis" which attributes delayed language development to a deviation in the neural network underlying procedural memory. The extent of the affected procedural memory is not limited to grammar but also leads to deficits in cognition and motor skills in learners with specific learning disorders (Kapa & Plante, 2015, p. 245).

2.2.7.2 *Executive functioning associated with language- and communication disabilities*

Specific language disability is diagnosed when language acquisition is impaired unaccompanied by hearing-, cognitive-, and neurological impairment, or emotional- and/or behavioural dysfunction (Kapa & Plante, 2015). In 2015, Heyl and Hintermair (2015) studied the EF and behaviour problems of learners with visual impairment in mainstream- and special schools. They found that EF deficits are related to underperformance in communication competence. According to Gooch et al. (2016), EF has a significant connection to language. Kuhn et al. (2014) found that early language abilities, directly and indirectly, affect learners' EF. Furthermore, a reciprocal causal influence was established between the development of language abilities and EF.

An explanation for this is offered, seeing that children use language in the execution of some executive functioning activities (Gooch et al., 2016; Kuhn et al., 2014).

2.2.7.3 Executive functioning and specific learning disability in mathematics

Evidence in the developmental literature indicates an average to substantial correlation between EF and mathematical potential. This evidence is congruent with neuro-scientific work revealing an interconnection between the neural substrates maintaining EF, numerical potential, and quantitative reasoning. Functional brain imaging supports the correlation between executive functioning and mathematical potential in that parietal-frontal cortical circuitry, associated with executive functioning, is found to be subsistent in numeracy and the solution of basic calculation problems (Blair & Razza, 2007; Gilmore & Cragg, 2014).

McDonald and Berg (2018, p. 1056) found that children with mathematical problems illustrate deficits in shifting, inhibition, and visuospatial working memory. A strong relationship exists between impulse control and acquiring "early childhood" math proficiency because inhibiting "irrelevant and distracting" information is crucial for developing basic academic skills. Efficacy in mathematics depends on the brain's executive system to acquire mathematical concepts and solve problems. Active reasoning while solving mathematical problems requires representing information in working memory. Furthermore, the shifting of attention between the different components of mathematical problems and the solving thereof and the response inhibition to concentrate only on the most applicable and current facts while solving mathematical problems are examples of EFs required for success in mathematics. Children who experience problems with planning struggle with applying the correct strategy required to solve problems. Their approach is often aimless and submissive (Blair & Razza, 2007; Kaufman, 2010).

2.2.7.4 Executive functioning and Attention Deficit Hyperactivity Disorder

ADHD is the most prevalent neurodevelopmental socio-behavioural cognitive disorder in learners. The symptoms causing the most prominent challenge are hyperactivity, inattentiveness, and impulsivity. These symptoms are closely related to EF. Executive functioning deficits are directly related to task incompletion, problems with goal-orientated learning, and failure to manage academic demands experienced by learners with ADHD. These learners find it extremely challenging to focus their attention and inhibit responses to

external stimuli (Kim et al., 2020). Research indicates that ADHD symptoms are related to insufficient EFs, such as working memory, cognitive flexibility, inhibition, and attention. These named EFs are imperative as they enable the learner to retain and regulate information, adapt behaviour in reaction to novel information, and inhibit reactions to incoming stimuli. The fundamental attribute of executive functioning, namely goal-directed behaviour, is associated with ADHD symptoms, such as the challenge to inhibit automatic responses and sustain attention to achieve a set goal (Korpa et al., 2020).

Schoemaker et al. (2014) did a longitudinal study examining the EF of 200 preschool learners (154 boys and 46 girls) with symptoms of ADHD. They found that learners with ADHD performed poorer on executive functioning tasks than their typically developing peers. The results further indicated that inhibition poses the biggest challenge to working memory and cognitive flexibility to a smaller extent (Schoemaker et al., 2014).

There is a wide range of pharmacological and non-pharmacological treatments for ADHD. Non-pharmacological treatment refers to, among other things, cognitive behaviour therapy. The study that Kim et al. (2020) describe involves cognitive functional treatment, an occupational therapy strategy to improve executive functioning in learners with ADHD. The fundamental attributes of cognitive functional treatment are learner-centred objectives that stipulate three executive actions, namely "stop, plan, and review", as well as guiding learners to design their own goals. Kim et al. (2020) found that occupational therapy based on cognitive functional treatment produced a remarkable improvement in executive functioning, especially in the execution of goal-directed behaviour (Kim et al., 2020, p. 2).

2.2.7.5 *Executive functioning and Autism Spectrum Disorder*

ASD is a neurodevelopmental disorder that causes constrained and recurring behaviour patterns with ongoing functional impairments throughout the lifespan. It also causes ongoing deficiencies in social communication and social interaction across a variety of contexts, such as the inability to form, sustain, and understand relationships (DSM-V, 2013; Seng et al., 2019.).

The focal point of the executive dysfunction hypothesis, a cognitive model, illustrates the divergent executive functioning processes associated with ASD. This model evolved from observing deficits in cognitive flexibility, inhibition, and working memory. As this model

expanded, there was a clear indication that executive functioning significantly influences social perceptions, mental health, and dysfunctions in day-to-day life. In general, the results of executive functioning in ASD indicate comprehensive disabilities (Demetriou et al., 2019). ASD is associated with various executive functioning challenges, to which planning can also be added. Planning depends on applying problem-solving strategies and considering secondary objectives to accomplish the final objective (Akbar et al., 2013). The restricted and repetitive behavioural symptoms of ASD are related to a deficiency in cognitive flexibility, and the socially inappropriate responses are associated with inhibition deficits (Leung et al., 2016).

Executive functioning deficits associated with learners diagnosed with ASD are problems with planning and cognitive flexibility. For learners diagnosed with ADHD, the associated problems are related to inhibition and attention. Berenguer et al. (2018) refer to research indicating that learners diagnosed with both ASD and ADHD exhibit significant deficits in executive functioning, more so than learners who have a single diagnosis.

2.3   MIDDLE CHILDHOOD DEVELOPMENT

For this study, the researcher concentrated on cognitive development, psychosocial development, and sociocultural development during middle childhood, as this study focuses on the foundation phase learners.

The development during middle childhood, between six and eleven years of age, may not be as rapid as during the other two developmental stages, namely the preceding infancy and early childhood and the subsequent adolescent phase. It is, however, a dynamic phase characterised by significant changes in cognitive development, social behaviour, and personality development (DelGiudice, 2018).

2.3.1   Cognitive development

The cognitive functioning of children attracted the attention and interest of researchers during the last decade. However, significantly more research has been done on cognitive development in early childhood and adolescence than in middle childhood. Cognitive development during the early primary school years is distinctive from earlier and later school years. One of the reasons for that is the considerable cognitive changes during middle

childhood (Karbach & Unger, 2014; Louw & Louw, 2014). When children start school, cognitive development is rapid. Some main characteristics are quicker information processing and an increased memory extent. Children are exposed to new and stimulating physical, social, and academic environments when they start school, contributing to their development and growth (Woolfolk, 2010).

2.3.1.1 Theories of cognitive development

Following is a discussion of two well-known theories of cognitive development, namely that of Piaget and Vygotsky. A third theory, the information-processing theory, is included as it describes components of EF.

2.3.1.1.1 Piaget's theory

One of the paramount theories of cognitive development is that of Piaget. Piaget's theory involves four phases linked to specific age ranges in which cognitive development takes place. The concrete operational phase is the third phase and circumscribes the period from seven to eleven years of age. As this is the age group (developmental phase) pertaining to this study, the concrete operational phase will be discussed in more detail. Children employ cognitive processes to reason and solve problems during the concrete operational phase. Mental operations guide and inform systematic thinking and pertain to various categories. Piaget described conservation as the identification of rational everyday life, the awareness that components can be modified or converted and still conserve many of their original characteristics, and the comprehension that these changes are reversible. Piaget argued that a prerequisite for solving conservation problems is mastering three fundamental characteristics of reasoning: identity, compensation, and reversibility. If the child has mastered identity, he/she understands that the substance stays the same if nothing is attached or removed. Compensation is mastered when the child understands that one change can be compensated for by another change, e.g., in a narrow glass, the liquid will rise higher. Piaget regarded reversibility as the most significant of all operations. An example of reversibility is when you have seven and add two, you get nine; when you subtract two from nine, the steps are reversed to get to seven again (Galotti, 2017; Louw & Louw, 2014; McGonigle-Chalmers, 2015; Woolfolk, 2010).

In Piaget's later works, he emphasised the changes in thinking through equilibrium rather than the separate stages of cognitive development. Another argument against the separate stages is that development is continuous and gradual, and some developing changes can appear suddenly. Research indicates that the developmental level of young children is not the only prerequisite for learning. Children can learn and execute cognitive operations through effective teaching, and importantly, children's thinking is influenced by awareness or insight and experience in a particular context (Galotti, 2017; Woolfolk, 2010).

2.3.2.1.2 Vygotsky's theory

In terms of the broader perspective of this case study, undertaken at three public special schools for learners with SLD, it is important to refer to language as part of cognitive development. Language is crucial for cognitive development as it allows for expressing ideas and perceptions, asking questions, and can be seen as the vehicle for thinking. Woolfolk (2010) refers to Vyotski's theory which proposes that thinking relies, to a large extend, on speech (as a means of thinking) and the child's social and cultural encounters. He believed that language, especially private conversation, influences brain development. Vygotsky saw private speech as essential for developing planning, monitoring, and guiding thinking and problem-solving. Furthermore, Vygotsky proposed that language is an important instrument in processing more cognitive advanced abilities such as reasoning and problem-solving. While children are engaging in activities with adults or peers, they have conversations discussing concepts and sharing beliefs, creating shared or new ideas, which are then internalised. Children learn to make sense of their environment as they continue interacting with others in social activities using language (Galotti, 2017; McGonigle-Chlamers, 2015; Woolfolk, 2010).

2.3.1.1.3 Information-processing theory

The description of the information-processing theory of cognitive development can be based on the analogy of a computer. Figure 2.3 below illustrates a model of information processing (Galotti, 2017).
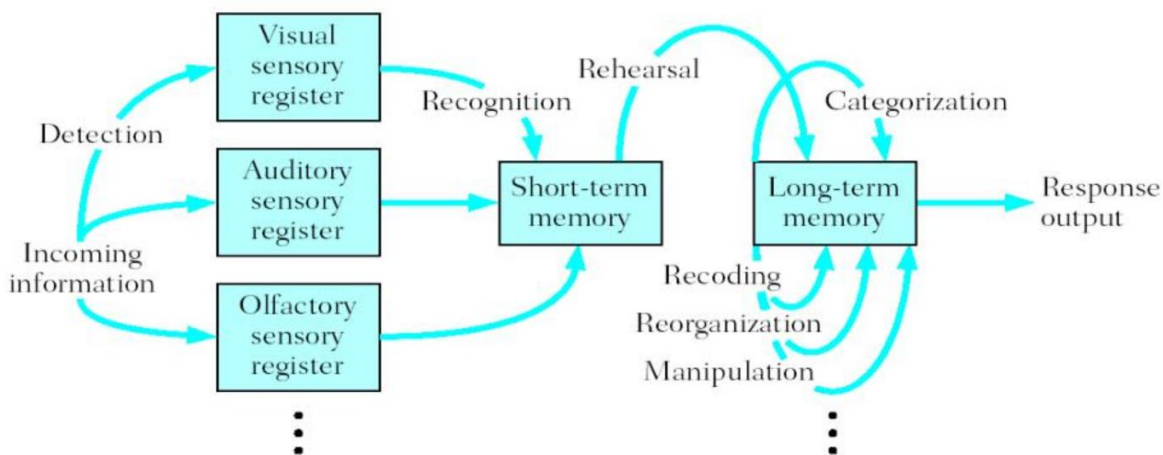
Figure 2.3: Information-processing model adapted from (Galotti, 2017, p. 48)

The computer analogy is used because information flows through a system, as Figure 2.1 illustrates. Information enters the brain through the senses and is stored in different memory systems. Memory sufficiency and capacity improve as the infant's brain develops. The short-term memory holds information for a short time, and from there, information that is rehearsed, analysed, and manipulated is stored permanently in the long-term memory with ample storage space. Baddeley (2012), one of the prominent authors in the field, proposed working memory, which has a central executive component. The central executive manipulates information, and rather than dealing with storage and retrieval, it directs information to be assigned for specific cognitive tasks. The other components of Baddeley's working memory model refer to the phonological loop and visuospatial sketch pad (see section 2.2.3.1). The phonological loop stores auditory information and has an important function in the acquisition of vocabulary, language comprehension, and learning to read. The visuospatial sketch pad creates mental images, e.g., maps and pictures (Galotti, 2017).

Cognitive development can be explained in terms of how and why it develops. Piaget's theory is fundamental in describing causes for development. His perspective is that cognitive development takes place as the brain adapts to the environment. The other viewpoint is that cognitive development occurs automatically and simultaneously with brain maturation. The information-processing theory explains cognitive developmental changes due to problem-solving (and adaptation), including Piaget's theory and general memory activities. Prominent to this theory is the child's capacity for information processing at a certain age. It also involves processing speed and attention systems. Robert Kail conducted a study in 1991 studying

children, adolescents, and young adults executing specific cognitive tasks. He found that information processing became faster and more efficient with age. Although this is an important finding, there is not a sufficient prediction of developmental changes solely from processing concepts (Galotti, 2017; McGonigle-Chalmers, 2015).

Current insight into brain processes, development, and functioning indicates multiple brain mechanisms and interconnectedness. Executive functioning connects the brain with behaviour by navigating the interrelation between information detected by the senses, the memory system, and attention to explain problem-solving and goal-directed behaviour (McGonigle-Chalmers, 2015).

2.3.2   Psychosocial development

Erikson's psychosocial development theory comprises eight stages covering the life span from birth until late adulthood. Erikson's theory presents a structure for the development of the self, the exploration of identity, the relationship with others, and the influence of culture throughout life. The school beginner must re-establish him-/herself in a foreign school environment. They must now rely on the virtues of previous psychosocial developmental stages, namely, to trust new adults, to behave in an autonomous manner, and to initiate activities in accordance with the new rules of the school (Woolfolk, 2010).

The psychosocial developmental stage in middle childhood is "industry versus inferiority", and the "virtue" developing from reaching a successful outcome is "competence". In developing competence, the child discovers a sense of accomplishment with regard to task completion and mastering skills and compares as equals to peers in terms of abilities (Papalia et al., 2006, p. 380). In other words, they now discover the correspondence between perseverance and the satisfaction of completing a task. They learn to move between home, school, and neighbourhood environments and how to handle academic pressure, manage themselves in group activities, and make friends. All these accomplishments will help them to discover a feeling of competence. However, difficulties with these demands may create a perception of inferiority. While children are conquering new skills and achieving new goals, they are compared to others with the probability of experiencing failure. Success in the primary grades is more crucial in determining future accomplishment than any other stage during the school career (Woolfolk, 2010).

During middle childhood, children become more independent and need more freedom to make their own choices. They often express discontent with rules such as playtime, bedtime, and chores. They start questioning their parents' judgment with regard to their choice of friends, what they may or may not do, where they may or may not go, and why certain activities are not allowed (Louw & Louw, 2014).

2.3.3   Sociocultural perspective on child development

Lev Vygotsky, a Russian psychologist, is a major associate of the "sociocultural theory" and believed humans are shaped within a cultural setting. One of his main proposals was that our unique mental structures and processes emanated from our interconnection with other people. These social interconnections significantly impact the creation of our cognitive constructs, thinking operations, and problem-solving. A child needs guidance and direction from an adult to accomplish and internalise learning. This instruction from adults is most successful in guiding children across the "zone of proximal development", the space between what they have already mastered and what they have not yet achieved. Vygotsky used the term "scaffolding" to describe the provisional support of parents and teachers until the child reaches the stage where he/she is capable of independent functioning. Vygotsky predetermined maturation as the internalisation of socially collaborative endeavours (Woolfolk, 2010, p. 42). Higher cognitive functions, such as attentional and cognitive focus, are jointly created during cooperative activities. To put it another way, the term "co-constructed process" refers to the social process in which participants converse and negotiate to reach a consensus or resolve a conflict (Galotti, 2017; Papalia et al., 2006, p. 39; Woolfolk, 2010, pp. 42-43).

EF is an essential part of child development, especially during middle childhood, as it determines to a great extent how well learners adapt to the changes and challenges when starting school, their socio-emotional competence, and academic success (Perone et al., 2017).

There is a close relationship between EF and academic success. Executive functioning in early childhood predicts sufficient academic functioning in middle childhood, especially in terms of attention, behaviour conducive to classroom learning, and applicable accomplished skills and knowledge (Benzing et al., 2019). EFs can be developed and improved by interventions in the classroom. Intervention strategies to develop EFs could be based on

Vygotsky's theory of scaffolding. Visual cues are utilised, for example, a picture of an ear to remind the learners to listen. This intervention strategy starts with support, guidance, and the use of visual- or concrete cues, and as the EFs develop, the guidance and cues are progressively removed. Learners are motivated with compassion to expand the boundaries of what they are able to do (Diamond & Lee, 2011).

2.4   SUMMARY OF THE CHAPTER

The literature review explored the literature base regarding executive functioning and aspects of middle childhood development. Certain developmental aspects of middle childhood and the association between EF and SLD were explored as they pertain to the special school setting of this case study. Chapter 3 is devoted to a conceptual framework, particularly inclusive education, special schools, and multidisciplinary teams.

CHAPTER THREE

CONCEPTUAL FRAMEWORK

"Coming together is a beginning. Keeping together is progress. Working together is success."
Henry Ford

3.1   INTRODUCTION

The key concepts constructing this framework are inclusive education, constructivism, collaboration in education, and multidisciplinary teams. The researcher started with a discussion of inclusive education because all the other concepts discussed in this chapter derive from inclusive education. The researcher examined inclusive education from a social justice and human rights perspective. An outline of inclusive education in the South African context and globally is provided. Furthermore, the researcher compared national- and international policies and reviewed the national policies that stipulate the application of inclusive principles, which also apply particularly to this case study. A description of inclusive education models succeeds in an explanation of the relationship between inclusive education and special education. Following that is a discussion of the policies regarding special schools as well as the referral pathway to special schools and different types of special schools in the Western Cape, a province in South Africa. Thereafter is an explanation of constructivism and collaboration in education. The chapter concludes with a discussion of multidisciplinary teams, particularly in special schools, and a look at the roles of school-based occupational and speech-language therapists.

3.2   INCLUSIVE EDUCATION

Due to the broad definitions, the inclusion of all individuals, and the fact that the term is also used in relation to politics, education, social justice, human rights, and child rights, inclusive education is a difficult concept to define (Shyman, 2015). There are many different ways to define inclusive education, depending on whether you refer to curricula, teaching and learning, or educational leadership. For the purpose of this research study, the definition of inclusion will be related to diversity in terms of learners' teaching and learning needs and the right of all learners to receive efficient and adapted education based on their specific needs

(Rapp & Corral-Granados, 2021) The DoE defines inclusive education in Education White Paper 6 as the recognition that all children and youth can learn and must all be supported in the learning process (DoE, 2001). The philosophy of inclusive education assumes the provision of a conducive environment to develop learners' personal and academic potential irrespective of their race, class, gender, disability, religion, culture, and sexual orientation. Inclusive education has a moral component by embracing diversity and respecting and valuing every individual. Inclusive education forms part of the human rights perspective, enunciating that all people are entitled to equal education and the support they require (Lehohla & Hlalele, 2012). Shyman (2015) summarises inclusive education by stating that all people, regardless of their distinct abilities and needs, have the right to equal educational opportunities in a classroom while they receive the required support to ensure that the environment and information are accessible.

In 1994, the World Conference on Special Needs Education was held in Salamanca, Spain, and is now referred to as the United Nations Salamanca Statement (UNESCO, 1994), signed by 92 member nations and 25 international organisations (Florian, 2014). The Salamanca Declaration is probably the most significant international agreement on special needs and inclusive education. This declaration directs special education toward a social justice education model by eliminating all forms of exclusion and discrimination. In essence, the Salamanca declaration changes the emphasis from disability, which is understood as a person's presentation of a shortfall in ability, to the obligation of the educational system to accommodate all learners who encounter learning barriers. The ethical consideration of inclusive education is necessary to provide accountability for establishing equity and inclusivity and recognising human rights (Hernández-Torrano et al., 2020; Kaliampos, 2021; Kefallinou et al., 2020).

3.2.1   Inclusive- and special education, social justice, and human rights

The learner's best interests must come first in all decisions involving learners who have special educational needs. This is the single most crucial premise. Every learner has the fundamental right to have their best interests taken into account when determining all policies and laws (Liew, 2015).

A generalised definition of human rights education, globally acknowledged, as presented by the United Nations in 2011 (Declaration on Human Rights Education and Training),

emphasise learning and teaching to promote human rights values and principles, fundamentally based on respect for others (United Nations, 2011). Furthermore, it is internationally agreed upon that it is a basic human right of every learner to receive equal and quality education (Miles & Singal, 2010; Tibbitts, 2017). Special education, built on the principles of human rights, implies the transformation of special education to include learners with diverse needs (previously) excluded from the general education curriculum without any discrimination and in a social- and ethical just way. Based on human rights, social justice, and ethical discourses, the nature of special education is directed to support learners, compensating for their individual needs, which caused labelling and segregation from the school system (Landorf & Nevin, 2007; Liasidou & Antoniou, 2013). Shyman (2015) summarises the characteristics of inclusive education based on the following social justice principles:

- Providing education for learners with unique and diverse educational needs is a continual process known as inclusive education.

- Fulfilling the needs of learners, educational support involves differentiating the curriculum, the teaching approach, the classroom and school environment, as well as the teaching- and learning materials.

- Equal educational opportunities must be offered in a separate setting to guarantee access to the curriculum when there is proof that all the resources in a mainstream school (generic classroom) have been exhausted and are no longer effective.

- When a learner in special education has overcome barriers to learning through therapeutic interventions and developed to the point that mainstream education is accessible, the choice to return the learner to mainstream education can be made in the learner's best interests (Shyman, 2015).

As described by Shyman (2015), these above-mentioned characteristics of inclusive education constitute the fundamental inclusive concepts for this case study. This case study explores the approaches followed by three multidisciplinary teams addressing the diverse executive functioning needs of learners in special schools, making the curriculum accessible while bridging their barriers to learning. The importance of curriculum differentiation was discussed later in this chapter. The learners placed in special schools by the DoE have very high needs that cannot be addressed effectively in mainstream schools. Learners with high educational support needs require comprehensive, persistent, and specialised collaborative support (McKenzie & Dalton, 2020).

3.2.2   Inclusive education in South Africa

A complex past, a diverse linguistic and cultural population, and poverty impact the education system in South Africa. Regarding the needs of learners with disabilities, how they should be taught, and the qualities of best practices, there are several points of view and attitudes (Donohue & Bornman, 2014)

In 1994, democracy was instituted in South Africa, bringing about significant changes in education. The equal provision of education for learners with disabilities was part of the transformation and development of inclusive education, which coincides with the Constitution of the Republic of South Africa, Act No. 108 of 1996 (Dalton et al., 2012; South Africa, 1996). The South African education policy after 1994 had to address the inequalities of the past in establishing one system that could offer all learners equal opportunities to acquire quality education (Lebona, 2013). In 1994, with the signing of the Salamanca Declaration, South Africa became one of 94 participating countries to strive for equal education readily available for all children. South Africa committed to Education for All in 2000, intending to ensure equitable access to adequate learning opportunities and enhance all elements of educational quality (DoBE, 2010). Since 1996, South Africa has been in the course of implementing inclusive education. Recent research accentuates the need for efficient education support services to accomplish the goal of inclusion (Steinhoff, 2015). As part of the operational process to implement Education White Paper 6 and promote inclusive education, a nationwide training programme was introduced in 2006. During that process, certain mainstream primary schools were converted to full-service schools (refer to the definition in Figure 3.1), DBSTs were incorporated, and special schools were transformed to serve as resource centres for neighbouring schools. The national training process introduced teachers to the concept of inclusion, the early identification of and support of learners who experience barriers to learning, differentiation of the curriculum, and assessment accommodations. The main goal was to establish collaborative support systems (Fourie, 2017).

3.2.3   Inclusive education: A global perspective

This section provides an overview of the policies and practices regarding inclusive education, among others, in Europe, North America, Malaysia, New Zealand, and South Africa.

In the international community, inclusive education involves education for all learners in a broad context. In contrast, in the USA, inclusive education refers to the accessibility of the

mainstream classroom for learners with disabilities (Waitoller & Artles, 2013). Promoters of inclusive education in Canada proposed a people-orientated perspective towards interventions, celebrating people's uniqueness rather than focussing on deficits. Inclusion is defined as the appreciation of diversity, and learners with disabilities are appraised and respected as essential members of society (Florian, 2014). After the demolition of the Soviet Empire in Ukraine, there was a renewal in the view of human rights, children's rights, and the rights of people with disabilities. This resulted in a movement towards implementing more inclusive policies to eliminate the exclusion of learners with disabilities from the school system. New education policies grant parents the opportunity to select a school of their choice for their children's education regardless of cognitive– or physical disabilities (Loreman et al., 2016).

The approach to providing inclusive education tends to range from total elimination and classroom removal to a more pliable and reactive system where support is provided in the classroom through customised training. The international trends for inclusive education can be described on a continuum. The personalised education strategy used in the USA, Canada, Austria, Australia, and New Zealand involves evaluating each learner with special needs and creating an Individual Education Plan (IEP) to address their unique needs (Fourie, 2017). The school provides human and financial resources for implementing these IEPs, focusing entirely on the individual, not the whole class. The British model, which emphasises meeting every learner's needs, is at the other extreme of the continuum. This so-called entire school strategy is based on the inclusive schools initiative of the United Nations Educational, Scientific and Cultural Organisation (UNESCO) (Bines & Lei, 2011; Buli-Holmberg & Jeyaprathaban, 2016; Fourie, 2017; Kefallinou et al., 2020).

In Sweden, the National Curriculum proposes an equal education for all children irrespective of gender, class, and ethnicity. Education should be adjusted to meet the individual needs of all learners. The school has a specific duty to accommodate learners who experience difficulty in reaching their educational goals. The primary educator is responsible for ensuring every learner receives guidance, encouragement, and excellent teaching material. Although special education should be provided in the classroom, it may be done in a separate group if certain circumstances make this impractical. The Swedish government commands an individual support plan for learners who require educational support. The plan should be compiled collaterally between parents, teachers, and the learner. The plan should state objectives and how they will be executed and stipulate whose responsibility particular

activities are. According to Biamba (2016), the European Agency for Development in Special Needs Education (2010) refers to the premise that mainstream teachers dispose of basic command and insight with regard to learners' distinct needs. Quality teachers who can accommodate learners who have special needs are highly valued because they give all learners the same opportunities and support an inclusive society (Biamba, 2016, p. 119)

Engelbrecht et al. (2015) elaborate on the abovementioned view about Swedish teachers by saying there is a national and international emphasis on efficient, inclusive teaching as it plays a crucial role in learners' academic, social, and emotional development. The fundamental nature of inclusive education entails much more than the accessibility of quality education to all; it is about acceptance and involving all learners in the learning process. For the last decade and more, there has been a call nationally and internally for inclusive education and policies in South Africa and worldwide are clear about it, but the success thereof lies with the teachers. Their perception and cognition of inclusive education and the application of the principles thereof in their daily teaching activities configure the policies (Engelbrecht, 2020; Engelbrecht et al., 2015; Magoge, 2018).

Special education in Malaysia involves three special education programmes: special schools, the special education integrated programme, and the inclusive programme. The special schools programme caters to learners with disabilities who are placed in special schools, separated from mainstream schools. This practice is congruent with special school policies in South Africa. The special education integrated programme entails special education classrooms situated in mainstream schools. The learners with disabilities share all the school facilities with the general school population. The inclusive programme involves the placement of learners with disabilities in mainstream classrooms (Khairuddin et al., 2016).

Research and inclusive educational practices from Europe, the USA, and Romania empathise with the vital role of the school curriculum in supporting and applying inclusion for learners with barriers to learning. Curriculum refers to the content taught and learned, the methodology of teaching, teaching- and learning material, and the assessment of learners. Vrasmas (2014) conducted a literature study focussing on research from the USA, Europe, and Romania regarding curriculum accessibility for learners who experience barriers to learning. The following results indicate what an inclusive curriculum requires:

- The curriculum must be differentiated and adapted to accommodate the diverse needs of learners.

- The curriculum and teaching and learning material must be flexible and accessible to accommodate learners with diverse learning potential and barriers to learning.

- Modifying the curriculum implies that learners can use computers rather than oral and written answers and enlarged font in reading material.

- Each learner who experiences barriers to learning needs an IEP to ensure accessibility to the curriculum content and progression according to ability (UNESCO, 2004; 2009; Vrasmas, 2014).

The practice of ISP for learners who experience barriers to learning is found in the USA (since 1974), the United Kingdom (since 1994), Australia, Canada, Finland, Switzerland, Sweden, Netherlands, Austria, Belgium, and the Czech Republic (Vrasmas, 2014).

Inclusive practices in South Africa in terms of curriculum differentiation and adaptation as well as ISPS for learners who experience barriers to learning, coincide with international practices and are stipulated in various policy documents (as discussed in section 3.2.6). The three special schools serving as research sites for this study follow the CAPS curriculum, and because learners with very high educational needs are placed in these schools by the DoE, curriculum differentiation, adaptation of teaching- and learning material, as well as assessment accommodations, are of utmost importance.

3.2.4   Inclusion and special education

Inclusion and special education may be regarded as opposites because inclusion fundamentally propagates a response to diversity and equal opportunities for every learner in one classroom. In contrast, special education means some learners attend schools only for learners with special educational needs. The definitions of inclusive education were discussed, and therefore, defining special education may shed light on how the two entities are related. Special education is fundamental to providing education for learners with very high needs and responding to their unique barriers to learning, which cannot be accommodated in a mainstream inclusive classroom. Learners who are regarded as having special needs, have a diagnosis of a specific learning disorder or require supplementary support that cannot be provided in traditional environments provided for their peers. Special education has a very distinct place in the education system because it accommodates those learners who are at risk because mainstream schools are not equipped to provide specialised education to all. In the South African context, special schools have specialised support

services that include psychologists, occupational therapists, speech- and language therapists, social workers, physiotherapists, and counsellors on the premises. The professionals providing the support services and the teachers function as multidisciplinary teams to support the learners. Special education is fundamentally inclusive by providing specialised education to a diverse group with high needs. Most importantly, special education ensures that the learner population who experience barriers to learning have equal opportunities and the same quality education as their peers in mainstream schools (Buli-Homberg & Jeyaprathaban, 2016; DoE, 2007; Florian, 2014; Francisco et al., 2020).

With the acceptance of Education White Paper 6 in 2001, schools were divided into three distinct categories: mainstream schools, full-service schools, and special schools serving as resource centres for full-service- and mainstream schools. The rationale for the different types of schools was to ensure that all learners, including those with diverse abilities and special educational needs, have access to specialised education accommodating their specific needs (Makoelle & Burmistrova, 2020). Figure 3.1 below provides a brief definition of the three distinct school categories.
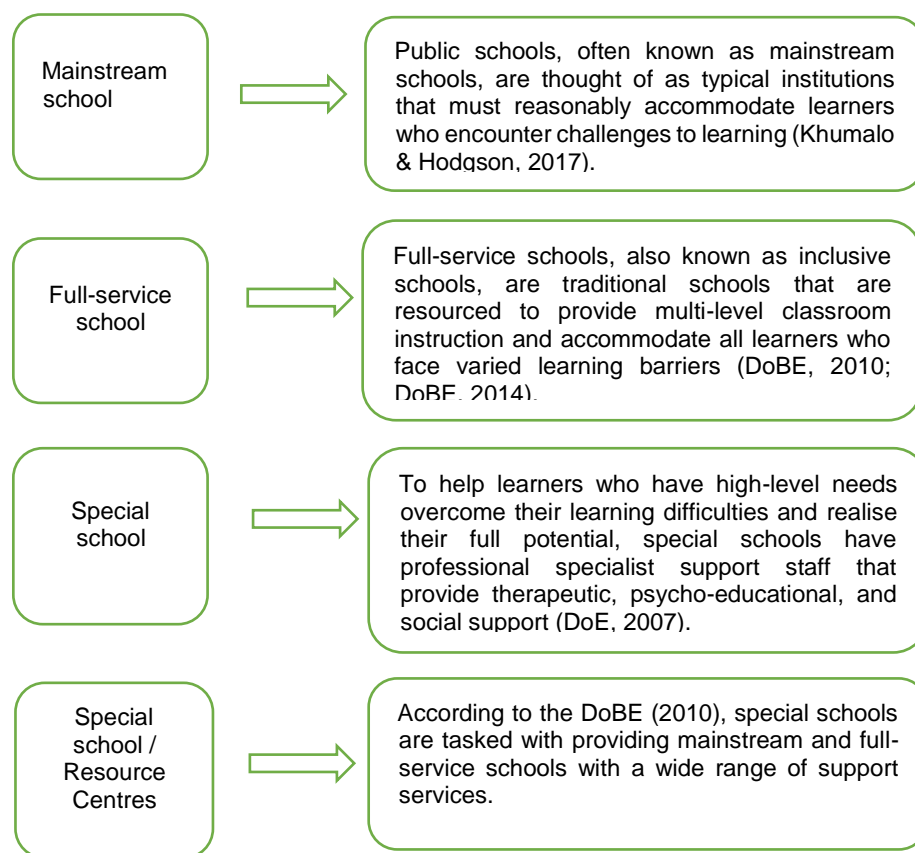

Mainstream school	→	Public schools, often known as mainstream schools, are thought of as typical institutions that must reasonably accommodate learners who encounter challenges to learning (Khumalo & Hodgson, 2017).
Full-service school	→	Full-service schools, also known as inclusive schools, are traditional schools that are resourced to provide multi-level classroom instruction and accommodate all learners who face varied learning barriers (DoBE, 2010; DoBE, 2014).
Special school	→	To help learners who have high-level needs overcome their learning difficulties and realise their full potential, special schools have professional specialist support staff that provide therapeutic, psycho-educational, and social support (DoE, 2007).
Special school / Resource Centres	→	According to the DoBE (2010), special schools are tasked with providing mainstream and full-service schools with a wide range of support services.

Figure 3.1: Defining different categories of schools (DoBE, 2010; DoBE, 2014; DoE, 2007; DoBE, 2010; Khumalo & Hodgson, 2017)

3.2.5   Models of inclusive education

Before the occurrence of the social model of disability, the medical model informed all practices regarding the need to treat people with a disorder or disability in an effort to restore the defect. Campaigners of human rights changed the perspective, and the social model of disability was developed. The social model views society as the contributing factor that causes disabilities and aggravates the impairments that people are experiencing. The biopsychosocial model is a combination of the medical- and social models of disability and views a disability as integral to the individual and affected by the environment and contextual factors (Petasis, 2019; Shakespeare, Watson, & Alghaib, 2017).

There is still ongoing rhetoric about the medical model versus the social-ecological model of inclusion, which influences the manner in which society considers people with disabilities (Jenson, 2018). Haegele and Hodge (2016) compare the medical- and social models, as illustrated in Table 3.1.

Table 3.1: Comparison between the medical model and social model (Haegele & Hodge, 2016)

Topic	Medical model	Social-ecological model
View of disability	An impairment or deficit within the person causes the problem experienced.	The problem experienced is outside the person, caused by deficits in social structures or systems.
Interventions/treatment	Treating the disability or deficit to accomplish stability.	Addressing social or environmental barriers to accommodate the needs of the individual.
Goal of interventions	Increase the functioning of the person in society.	Change factors in the environment and promote social inclusion.
Influence on the person's functioning in society	The environment or society does not change.	Social and environmental adjustment to promote inclusion.
View of people with disabilities	The person has a defect.	The person is distinct.
View of disabilities	There is a negative connotation, and it must be rectified if possible.	A neutral response to disability.

George Engel developed the biopsychosocial model in the 1970s, and is generally used in the context of psychiatry and psychology. The emphasis was on a comprehensive and integrated approach to investigating and treating mental illness. Gordon Waddell expanded

on this theory in the 1980s and described disability as a combination of biological- and social factors (Hogan, 2019; Shakespeare et al., 2017). The biopsychosocial model acknowledges the role of physical and biological problems in disabilities and that medical professionals must remedy them. In the same instance, it recognises society's role in terms of inclusion and provides equal opportunities and support to all, including those who experience disabilities (Petasis, 2019).

Steinhoff (2015) claims that inclusive education is based on the principles of the social model, which advocates the holistic change of the education system to accommodate the specific needs of individual learners. On the contrary, the medical model ascribes the problem or barrier to learning to the learner self and expects the learner to change. In South Africa, the social-ecological model is favoured to a great extent because it endorses the concept of social justice, which was adopted with the start of democracy. Great emphasis is placed on following the social-ecological model in education to ensure that the school becomes a place where every learner experiences a feeling of belonging and is accepted and supported while their needs are met. Therefore, educators and education support professionals should always provide education equity without discrimination (Steinhoff, 2015).

Inclusive education policies in South Africa (see Table 3.2) accentuate a socio-ecological collaborative perspective in terms of supporting learners who experience barriers to learning. The principles of inclusive education are informed by the bio-ecological system of Bronfenbrenner, which highlights the interrelations between learners and multiple other systems (Nel et al., 2014).

Bronfenbrenner's bio-ecological theory explains child development in the context of ecological systems that may either promote or hamper growth. Development occurs through reciprocal interaction between the child and direct conventional situations (normal day-to-day living). The multiple contexts of these interactions are identified as the microsystem, e.g., home, school, and the neighbourhood, and the mesosystem refers to a connection between two or more microsystems. An example is the connection between home and school and the different manners in which the child may act at home and school. A child may be spontaneous at home but comes across as shy and quiet at school. The macro-system refers to the social systems of a culture, including values and beliefs. The chronosystem refers to the constant or changing environment, for example, changes in the family structure, employment status of parents, and residence (O'Toole et al., 2013; Papalia et al., 2006).
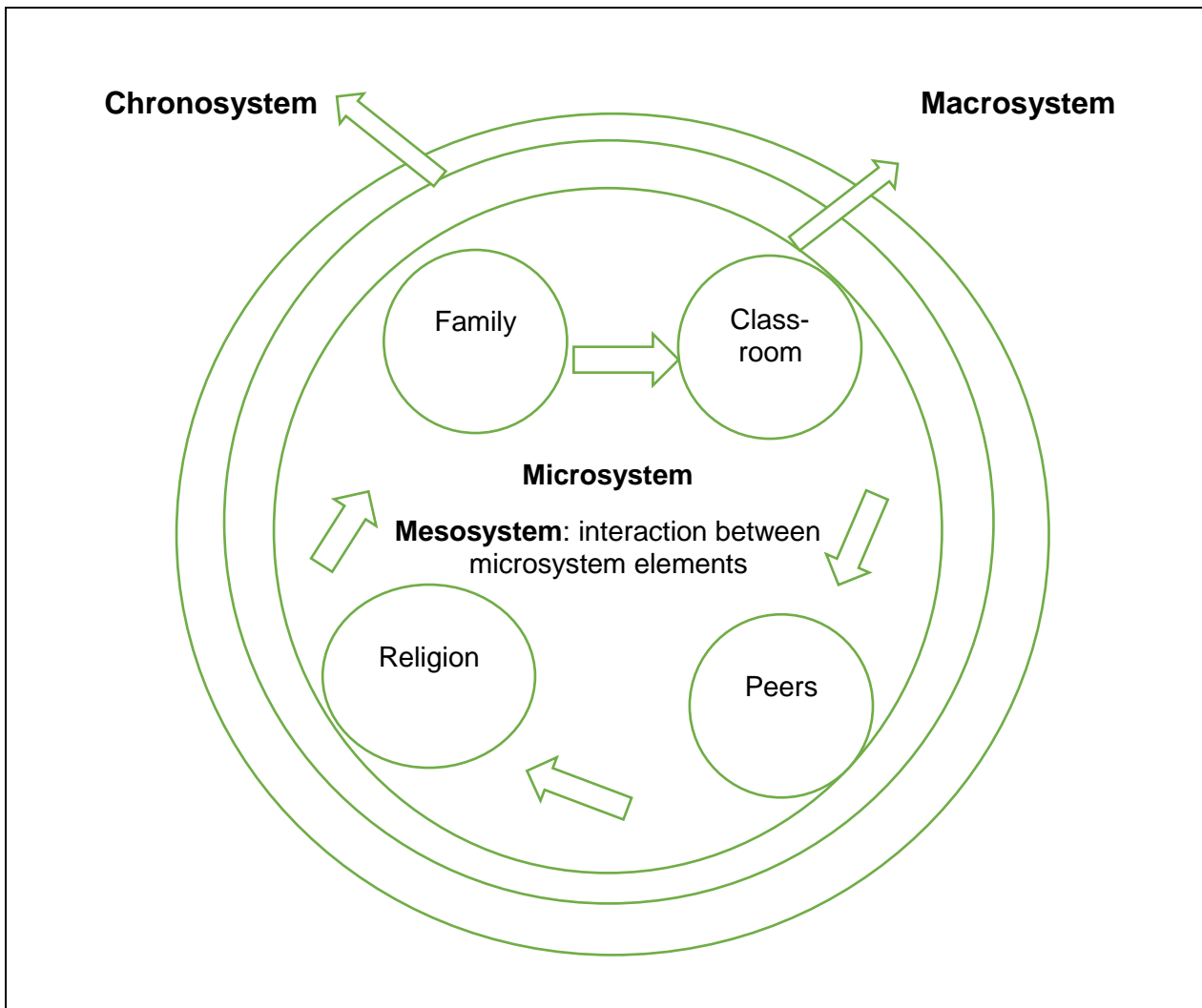
Figure 3.2: Bronfenbrenner's bio-ecological theory (Woolfolk, 2010)

Figure 3.2 explains the levels within the bio-ecological system in which the child develops and the social relationships, such as the family, school, and community (Hesjedal et al., 2016). School can be regarded as one of the most influential microsystems in a learner's life. Academic instruction and learning, and the social interaction between learners and teachers in the school context, promote learners' cognitive, social, and academic development. The principles of the bio-ecosystem model contribute to an understanding of learners' role and functioning in the school microsystem in terms of their characteristics, learning potential, and specific barriers to learning (Panopoulos & Drossinou-Korea, 2020).

Consideration and acceptance of unique characteristics are fundamentally about social justice and imperative for inclusion. The first step is acknowledging the reciprocity between the learner and bio-systems, such as the school (Kamenopoulou, 2016). Inclusive education is essentially about adapting the classroom environment, teaching- and learning material,

methodology, and curriculum differentiation to accommodate the diverse learning needs of learners and responding to their barriers to learning. Education White Paper 6 coincides with the above-mentioned as it emphasises that all learners are able to learn and need support to learn in order to reach their full potential. There is a huge responsibility on teachers to promote inclusive practices, and in doing that, they need a positive attitude toward inclusion and expertise to identify barriers to learning and differentiation strategies to accommodate all learners (DoE, 2001; Mahlo, 2013). A child-centred approach indicates that the education structure must accommodate all learners who experience barriers to learning and prepare them to be confident, self-sufficient citizens (Hove, 2014). Based on the principles of the socio-ecological model, the barriers to learning are not ascribed to the learners but are caused by external deficits, such as the classroom environment, curriculum, teaching methodology, and teaching- and learning material (Haegele & Hodge, 2016; Hove, 2014; Mahlo, 2013). In other words, learners who experience barriers to learning are regarded within their complete ecosystem, acknowledging the contextual factors which can contribute to the barriers they experience (Hay, 2018).

The section above highlights an interconnectedness between the principles of the socio-ecological model and inclusive education in responding to learner diversity and specifically accommodating learners who experience barriers to learning. These principles are essential for this research study as it involves the multidisciplinary teams' approaches to the diverse needs of learners with executive functioning difficulties.

3.2.6   Policy directives for implementation of inclusive education

In the South African context, the necessity of inclusive policies lay in the guidelines to transform the previous education system of exclusion to inclusion (Naicker, 2006).

The South African government adopted several policies and legislation in support of inclusive education. These policies serve as guidelines for the implementation of inclusive practices. The inclusive education policies are official documents needed for the implementation and execution of inclusion to realise the principles of the constitution of South Africa in terms of transformation and human rights (Magoge, 2018). With the signing of the Salamanca document, South Africa is committed to the principles of inclusion and achieving it in practice. Policies are needed to accomplish the aims of equal and effective education for a diverse population of learners (Rapp & Corral-Granados, 2021).

Table 3.2 shows the policies that are the most prevalent and applicable to this study.

Table 3.2: Policies pertaining to this case study (Author, 2023)

Policy	Relevance to this study
Education White Paper 6 (DoE, 2001)	Education White Paper 6 focuses on learners who encounter barriers to learning and their legal entitlement to support and education (Magoge, 2018).
Guidelines for Inclusive Teaching and Learning (DoE, 2010)	Learning barriers, differentiation strategies, inclusive teaching, learning, and assessment criteria, as well as learning disorders, medical problems, and impairments, are all included in this policy paper (DoBE, 2010). The conceptual framework of this case study incorporates all of these variables.
Policy on Screening, Identification, Assessment, and Support (SIAS) (DoBE, 2014)	The SIAS document addresses early detection of learners who face educational challenges, methods to support them, and a mechanism for referral to special schools. According to the policy, support is the total of all initiatives that foster solutions for a range of diverse requirements (Magoge, 2018).
Guidelines to ensure quality education and support in special schools and special school resource centres (DoE, 2007)	This policy document addresses the important criteria for special schools to ensure quality education and support to learners with very high educational needs. The criteria pertaining to the admission of learners, quality support, curriculum differentiation, assessment, teaching- and learning material, and specialist support staff (DoE, 2007). The above-mentioned are all relevant aspects discussed in the conceptual framework of this case study.
Guidelines for Responding to Learner Diversity in the Classroom through Curriculum and Assessment Policy Statements (CAPS) (DoBE, 2011).	The CAPS is a crucial policy for this case study as all three special schools that serve as research sites follow the CAPS curriculum (DoBE, 2011).

3.2.6.1 *Education White Paper 6*

The South African Constitution upholds the principle of inclusive education: all children have a right to a good education. The establishment of inclusive education throughout the educational system is explained in Education White Paper 6, the Policy on Inclusion, founded in 2001 (DoBE, 2010).

Education White Paper 6 recognises that the education system itself may pose a barrier to learning to learners with disabilities, of whom many are out of school. It addresses the problem by proposing structures to establish an inclusive training system to provide access for all learners to quality education (Walton, 2018).

In Education White Paper 6, inclusive education is described as:

- The understanding that every learner requires support and is capable of learning.
- Learners have diverse learning needs, and all children should be respected and valued.
- Differentiating educational systems, learning methods, and structures to fulfil the educational requirements of every learner.
- The development of learners' individual strengths and promote their participation in the learning process.
- To reach their full potential, learners will need more extensive and specific forms of help (DoE, 2001).

Inclusive education is aligned with a learner-centred approach, focussing on the awareness and recognition of learning problems and planning accordingly to meet the diverse needs of learners. This strategy is consistent with those used internationally to provide high-quality education for every learner (DoE, 2001; Kefallinou et al., 2020; Rapp & Corral-Granados, 2021). Education White Paper 6 argues in favour of the reconstruction of the education system to ensure access to learners with a wide range of barriers, including medical needs caused by chronic illness or physical disabilities, as well as systemic barriers such as socio-economic factors, a rigid curriculum, language deficits or poorly trained teachers (Engelbrecht et al., 2015).

3.2.6.2 Guidelines for inclusive teaching and learning

This document includes information regarding the presentation of specific barriers to learning, the influence of these barriers on learning, and guidelines on how to reduce the effects of the barriers. The Guidelines for Inclusive Teaching and Learning (DoBE, 2010) aim at counteracting the misconception that barriers to learning can only be found within the learner and that the manner in dealing with these barriers is to have fewer expectations of learners with special educational needs. The importance of curriculum planning to meet the diverse needs of learners is emphasised by providing examples of learning programmes and lesson plans. This document is an analysis of two processes, namely, curriculum adaptation and curriculum differentiation. "Differentiation" refers to the provision for different measures of ability to minimise the impact of diverse barriers on learning. "Adaptation" applies to the process of conversion or transformation of lesson plans, activities, and lesson materials to accommodate learners' diverse needs and abilities (DoBE, 2010, pp. 9-10).

The teachers and therapists who are part of the multidisciplinary teams at the special schools participating in this case study have to respond to the diverse learning needs of the learners. This case study explores the approaches followed by multidisciplinary teams while bridging barriers to learning and ensuring that the curriculum is accessible to all learners. The guidelines stipulated in this policy document apply to this study as it pertains to the strategies the multidisciplinary team members incorporated in their intervention- and support plans.

3.2.6.3 Guidelines to ensure quality education and support in special schools and special school resource centres

The success and efficiency of the inclusive education model rely on resource centres of special schools to assist full-service schools as well as neighbouring mainstream schools. Therefore, special schools serving as resource centres must be sufficient. This document guides special schools, ensuring efficiency in providing exceptional and appropriate education for learners with special educational needs. This is the foundation for being an efficient resource centre and coincides with the second aim of the document, namely, to provide special schools with information regarding the requirements for an effective special school resource centre (DoE, 2007).

3.2.6.4 *Guidelines for responding to learner diversity in the classroom through the Curriculum and Assessment Policy Statement (CAPS)*

This policy document provides a comprehensive discussion of diverse learning needs and differentiation of the curriculum, teaching methodology, and teaching- and learning material (DoBE, 2011). This makes it an essential and relevant document for this case study, as these are the concepts that multidisciplinary teams consider when they support learners in special schools.

The CAPS stipulates guidelines for instructional and curriculum modification to coincide with the commitment of Educational White Paper 6 to ensure the accommodation of the full spectrum of learning needs. One of the biggest obstacles to learning is the curriculum, namely the subject matter, language, classroom structure, instructional methods, the pace of instruction, the amount of time allowed to finish the curriculum, instruction, learning support tools, and testing. In order to address and respond to diverse learner needs and to ensure access to learning for all learners, it is vital to differentiate the transmission of the curriculum, specifically in terms of teaching methods and assessment (DoBE, 2011).

3.2.7 South African policy regarding special schools

Education White Paper 6's introduction by Professor Kadar Asmal, then-Minister of Education, stated that as part of an inclusive system, special schools in South Africa would be expanded, and initiatives to invest would be created to raise educational standards there (DoE, 2001, p. 3).

According to Education White Paper 6, special schools must offer exceptional services to learners who have significant and various impairments. In contrast, learners with mild-moderate to severe impairments can be successfully integrated into mainstream education with the help of DBSTs, which include special schools (DoE, 2001).

3.2.7.1 *Policy on Screening, Identification, Assessment, and Support*

The Policy on Screening, Identification, Assessment, and Support (SIAS) document was used as a means to guide the inclusive education objectives set forth in Education White Paper 6. The SIAS protocol specifies the procedure for identifying, evaluating, and enrolling learners at special schools. It also prohibits the arbitrary placement of learners in special

schools who can be accommodated in mainstream settings. Additionally, it outlines the significance of early identification, assessing the level of assistance required by learners, and choosing the best learning environment to meet those requirements (Dalton et al., 2012; Steinhoff, 2015).

The purpose of the SIAS document is to guide the process of providing efficient education for at-risk learners who encounter obstacles to learning. This may include learners in special schools whose learning is compromised by learning difficulties, disability, and language barriers. It may also include learners of school-going age and not attending school due to their disability or other barriers to learning. The fundamental aim of the SIAS document is to provide guidelines and support to teachers to make the curriculum (National Curriculum Statement) accessible for learners who experience barriers to learning. The policy aims to create a system that ensures early identification of learners who experience barriers to learning and sufficient interventions to minimise learning difficulties and prevent potential school abandonment. The SIAS policy is aligned with Education White Paper 6 regarding the enrolment of learners who require high-level interventions. The learners who experience barriers to learning need high-level interventions to ensure that the CAPS curriculum is accessible, irrespective of the nature of the barriers they experience (DoBE, 2014).

The SIAS process allows for four stages in terms of screening, identification, assessment, and support. During the first stage, a learner profile is created, using information obtained from the learner's history to understand the specific needs required and the learner's strengths. The second stage entails the identification of possible barriers to learning and development and the creation of a comprehensive profile of the learner. Compiling the profile involves the cooperation of the parents as well to ensure the recognition of contextual factors that may contribute to the possible barriers to learning and development. During the third stage, the learner's support needs are assessed. The fourth stage allows for the planning, provision, and monitoring of additional support (DoE, 2008; Steinhoff, 2015).

3.2.7.2 Referral pathway from mainstream schools to special schools based on the SIAS document

The referral pathway stipulated in the SIAS document ensures that only learners with high support needs are referred to special schools. Learners with low and moderate support needs must be accommodated in mainstream- or full-service schools. The SIAS document defines

learners who qualify for high support needs as those who necessitate support on a frequent and high-intensity basis in the areas of differentiated curricula, specialist support, technological aids for specialised learning, and teaching resources, as well as from teachers who have undergone special training (DoBE, 2014). Figure 3.3 illustrates the referral pathway to special schools described in the SIAS document.
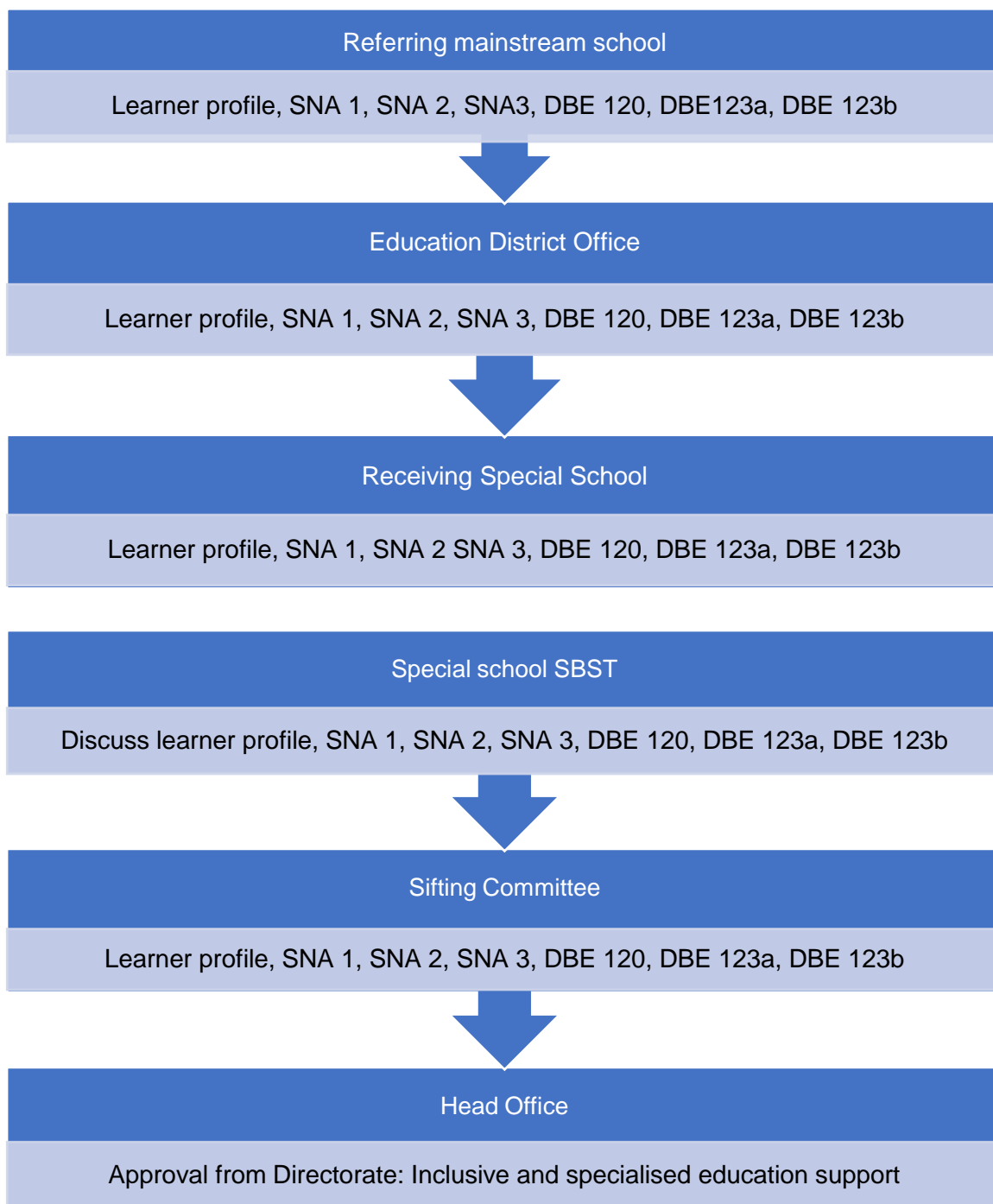
Referring mainstream school
Learner profile, SNA 1, SNA 2, SNA3, DBE 120, DBE123a, DBE 123b

Education District Office
Learner profile, SNA 1, SNA 2, SNA 3, DBE 120, DBE 123a, DBE 123b

Receiving Special School
Learner profile, SNA 1, SNA 2 SNA 3, DBE 120, DBE 123a, DBE 123b

Special school SBST
Discuss learner profile, SNA 1, SNA 2, SNA 3, DBE 120, DBE 123a, DBE 123b

Sifting Committee
Learner profile, SNA 1, SNA 2, SNA 3, DBE 120, DBE 123a, DBE 123b

Head Office
Approval from Directorate: Inclusive and specialised education support

Figure 3.3: Referral pathway to special schools based on the SIAS Document (WCED, 2022).

The learner's class teacher must complete the Support Needs Assessment (SNA) form 1 as part of the school-level intervention for learners who experience barriers to learning and development. This is the first step in identifying learners who need support. The areas that are covered in the SNA 1 form are:

- Areas of concern based on the teacher's observation, a description of the effect of the identified areas of concern on the learner's learning and development
- Any diagnosis by a healthcare professional.
- Strengths and needs of the learner in terms of (a) communication, (b) learning, (c) behaviour and social competence, (d) health, wellness, and personal care, I classroom and school, and (f) family, home and community situation.
- Teacher interventions and support in terms of (a) curriculum interventions, (b) teaching methods, (c) assessment, (d) learning environment, (e) physical environment.
- The views expressed by parents or legal guardians during the consultation(s).

The class teacher refers the learner who needs support to the SBST when the class interventions are not sufficient and further support is required. When the SBST meets, they review SNA 1 and supporting documents, such as reports from health professionals and verbal reporting from the teacher. The SBST has to complete SNA 2, indicating further support to the learner. On the SNA 2 form, they have to cover the following:

- Indicating that they agree (or not) with the referring teacher's identification of the learner's strengths and needs or challenges.
- They agree with the interventions the teacher applied in supporting the learner's barriers to learning in the classroom.
- The learner's barriers to learning must be summarised, and the SBST must indicate the support and intervention strategies they recommend.
- The above-mentioned information is used to compile an ISP for the learner, covering the following: (a) areas in which the support is needed, (b) target to be achieved, (c) strategies for interventions, (d) the responsible person, (e) time framework, (f) review date, and (g) comments on the progress made in achieving the targets.

When the learner needs more specialised support, the SBST completes a referral form, Department of Basic Education form 120 (DBE 120), requesting support from the DBST. On the DBE 120, the SBST must provide the following information:

- The reasons why support is needed from the DBST.
- The support required must be specified.
- The parents or legal guardians of the learner have to sign the form, giving their consent for further referral.
- The principal of the referring school must sign the form and indicate why he or she supports the referral.

All the documents mentioned above regarding the learner are sent to the District Office. The DBST completes SNA 3. In SNA 3, the DBST must indicate whether they received all the supporting documents given in SNA 1 and SNA 2 and the information, as discussed at the SBST meeting. The members of the DBST consist of the District-based educational psychologist, learning support advisor, and social worker. They have to indicate on the SNA 3 whether the referring school implemented all the recommended interventions appropriately. The learner's level of support needed must be rated in terms of a table, indicating low, moderate, or high levels of support needed. The multidisciplinary team members of the DBST must indicate their decision in terms of the support required on a checklist. The checklist is called the DBST Action plan, on which they must specify the support needed in terms of:

(1)   Specialised support services

- Psychologist
- Social worker
- Learning support teacher
- Nurse
- Therapists: occupational therapist, speech-and-language therapist, audiologist, and/or physiotherapist

(2)   Curriculum and assessment support

- Curriculum advisors with regard to curriculum differentiation
- Learning support services with regard to assessment accommodations
- Sign language instruction/interpreter

(3)   Specialised learning and teaching material and devices

- Braille instructions and books
- Large print material
- Adaptive activity sheets
- Individual assistive devices, e.g. hearing aids
- Physical access at the site level

(4)   Training and orientation of the school staff, e.g. what are the different barriers to learning and the support and accommodation of learners who experience barriers to learning.

The DBST multidisciplinary team must also indicate on the action plan the time frame and frequency of provision and the sources, for example, the school budget, special school resource centre and outreach team, or referral to a special school. If the DBST multidisciplinary team decides to refer the learner to a special school, the parents must sign a consent form, the Department of Basic Education form 123a. The referral is done on Department of Basic Education form 123b (DoBE, 2014).

3.2.7.3   *Different types of special schools in the Western Cape*

The following explains the different types of special schools in the Western Cape. The Western Cape is one of the nine provinces in South Africa. The data collection for this case study took place at three special schools; therefore, an explanation of the different types of special schools found in the Western Cape is relevant.

The WCED: Directorate of Inclusive Education makes provision for learners with diverse disabilities. The different special schools that are discussed include schools for learners with SLD, schools for learners with cerebral palsy and physical disabilities, schools for learners

who have a severe intellectual disability, schools for hearing impaired learners, schools for visually impaired learners, hospital schools, schools for learners with ASD, and schools of skills.

3.2.7.3.1 Schools for learners with specific learning disabilities

Nine special schools in the eight education districts in the Western Cape provide education for learners diagnosed with SLD. These institutions focus on addressing the educational and therapeutic requirements of learners who have SLD. The SLD schools offer the CAPS up to Grade 12, allowing learners to continue their education and training at the University level (WCED, 2022).

The three schools serving as research sites for this case study are SLD schools.

3.2.7.3.2 Schools for learners with cerebral palsy and physical disabilities

There are six schools in the Western Cape for learners with cerebral palsy and physical disabilities. The CAPS and assessment activities are made accessible to learners through the use of supplemental and alternative communication material, assistive devices, and technological tools (WCED, 2022).

3.2.7.3.3 Schools for learners who have a severe intellectual disability

There are 22 schools for learners with severe intellectual disabilities in the Western Cape. An individual education plan directs the teaching and learning of each learner. Vocational abilities are created to foster independence and prepare learners for life after school. Some of the vocational short courses are:

- Arts and crafts
- Agricultural activities
- Beauty and nail technology
- Bricklaying
- Consumer studies
- Office administration
- Plumbing
- Maintenance

- Hospitality

- Woodwork (WCED, 2022)

3.2.7.3.4   Schools for deaf learners

Delays in the acquisition of receptive and expressive communication abilities are brought on by hearing loss or deafness. Learning challenges brought on by the language barrier lower academic attainment. Early detection and intervention are crucial to reduce the effects of hearing loss on the learner's development and academic success. As a result, learners who have hearing loss can enrol as early as age three. South African Sign Language (SASL) or spoken language are the two separate and mutually exclusive methods of instruction for deaf learners allowed by the WCED.

For learners who have cochlear implants and those who use Frequency Modulation (FM) systems or hearing aids, a natural language acquisition strategy is used. In order for learners to improve their listening skills and learn a spoken language, their remaining hearing is enhanced via hearing aids and FM systems. To aid in the acquisition of language proficiency, the learners are exposed to an intense language acquisition environment in acoustic-oriented buildings with high illumination levels where the language of instruction and learning is spoken language. This strategy is being used by three schools across several Cape Town school districts.

The CAPS, which identifies SASL as a home language, is used by schools that offer SASL as a medium of instruction and learning. In the Western Cape, SASL is taught in five schools for deaf learners (WCED, 2022).

3.2.7.3.5   Schools for visually impaired learners

The Western Cape is home to two schools for the blind. Medical professionals frequently recommend learners to schools for the blind. After receiving the required documents, learners are allowed to go to the school for an observation period. The WCED's director of Inclusive and Specialised Education Support accepts suggestions made by a screening committee. The schools utilise the following systems and technology in teaching and learning:

- Braille – a tactile system, traditionally written on embossed paper.

- Perkins Brailler – a "braille typewriter" with a key corresponding to the six dots of the braille code.

- BrailleNote Apex – is the latest in the line of braille and speech output note-takers. Learners migrate to use this technology after Grade 4 in each school (WCED, 2022).

3.2.7.3.6 Hospital schools

Hospital schools deliver basic and secondary education to inpatients within a hospital, typically a children's hospital. During hospitalisation or rehabilitation, these schools assist learners in regaining their academic achievement. The three hospital schools in the Western Cape are accredited by the WCED and run by the district office to provide education with state funding. The CAPS curriculum is used in hospital schools. Low enrolment forces teachers to accommodate learners from various grades in a single classroom (WCED, 2022).

3.2.7.3.7 Schools for learners with Autism Spectrum Disorder

The Cape Peninsula is home to one ASD school. High-performing learners diagnosed with ASD are accommodated in special schools for learners with SLD or in ASD learning units at some special schools. Low-functioning ASD learners receive instruction in accordance with an ISP. The components that are usually incorporated in the ISP are:

- Academics and learning
- Communication and language
- Independence skills
- Sensory and motor development
- Social and emotional skills
- Vocational skills (WCED, 2022)

3.2.7.3.8 Schools of skills

A fundamental cognitive barrier to learning prevents certain learners from following the CAPS curriculum, so they receive their education from schools of skills. These learners risk not being admitted to a regular public high school due to their subpar academic performance.

The curriculum used by these accommodates learners with cognitive disabilities, and they spend fifty percent of their weekly instructional time in general education classes and fifty percent of it in career-related classes. The learners begin the four-year programme when they are 14 and complete it when they are 18 (WCED, 2022).

Following is an exploration of what collaboration in education and constructivism entails and evolving from a discussion of multidisciplinary teamwork and teams in special schools that specifically relate to this case study.

3.3   CONSTRUCTIVISM AND EDUCATION

The origin of the philosophical framework of constructivism stems from an aversion to the traditional Western theories of knowledge. The primary focus of the constructivist theory is that knowledge is not gained in a passive manner. Knowledge is gained through an active and continuous process (Donald et al., 2014). Constructivists hypothesise that knowledge can only exist in our minds, truth is not fixed (complete), and an individual formulates knowledge based on his or her experience (Bada, 2015; Yilmaz, 2008). The principles of constructivism indicate that the child operates in relation to the environment, creating, adjusting, and analysing the information that he or she is exposed to (Sutinen, 2007). The constructivist theory promotes an interactive teaching approach whereby learners are actively involved in learning (Fernando & Marikar, 2017; Thomas et al., 2014).

Constructivism implies that learning is a process of how people attach meaning to their experiences to gain understanding. In other words, constructivism explains how learning and thinking are taking place. Constructivism as an educational theory implies that teachers should be aware of learners' prior knowledge before expanding on it and allowing them to apply it in practice. In applying their knowledge, learners demonstrate an in-depth understanding of the information, which is more important than merely memorising facts (Amineh & Asl, 2015; Bada, 2015; Donald et al., 2014).

Educational constructivism encompasses two of the most important types: Piaget's personal constructivism and Vygotsky's social constructivism. Piaget proposed discovery as the most essential foundation for learning. Conversely, Vygotsky believed that cognitive development depends on external factors, for example, culture and social interaction, rather than individual construction (Amineh & Asl, 2015). Vygotsky explained that the construction of knowledge is a continuous process through social interaction, implicating that the social context plays a

fundamental role in the child's multidimensional development, especially cognitive development (Donald et al., 2014; Hebe, 2017).

In Figure 3.4 Vygotsky's zone of proximal development explains how learning takes place and influences the view of teaching (Wass & Golding, 2014).
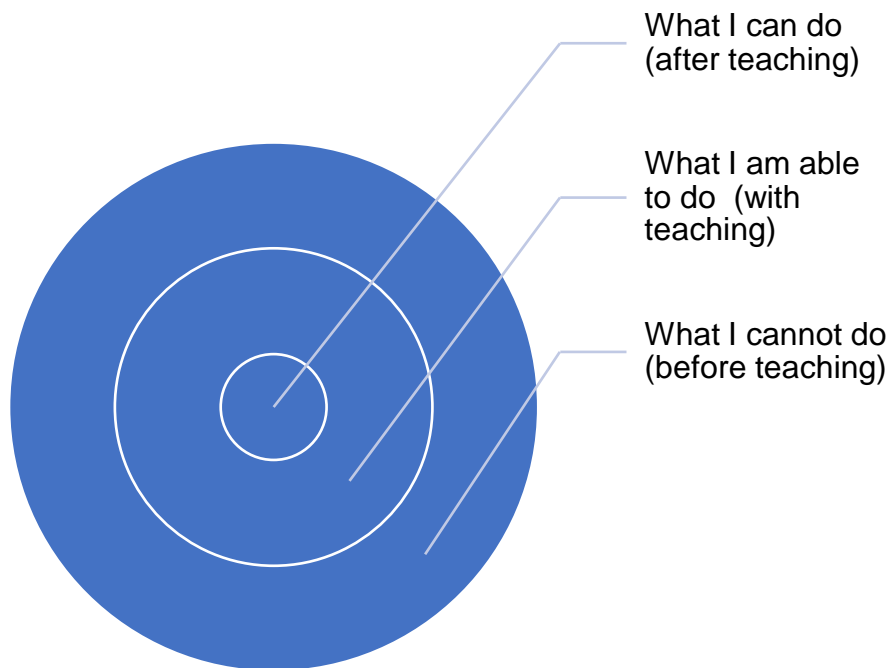

What I can do (after teaching)

What I am able to do (with teaching)

What I cannot do (before teaching)

Figure 3.4: Zone of proximal development (Wass & Golding, 2014)

Vygotsky suggests that the information taught must be in the learner's zone of proximal development for a learner to benefit from teaching. In other words, the zone of proximal development indicates the learner's potential to learn. Figure 3.3 illustrates the zone of proximal development as it indicates the space between what the learner has already learned and what they are able to accomplish with support and teaching (the learning ability) (Podolskiy, 2012; Smagorinsky, 2018). The zone of proximal development creates a structure to understand how a learner acquires knowledge and how learning occurs through the intervention and support from experienced and knowledgeable individuals, known as scaffolding (Polly & Byker, 2020).

In essence, scaffolding refers to the interventions from professionals to enhance learning and understanding by making use of instruction, different teaching strategies, multiple media, encouragement, and adaptive teaching methods. It also implies that at a certain point, when the learner has mastered the knowledge, interventions are eliminated (Hebe, 2017). All

learners are unique in terms of their cognition, social context, and needs, which is extremely important to consider when scaffolding is planned. Constructivist learning atmosphere implies that the learner must be provided with the opportunity to construct knowledge and gain understanding, and through scaffolding, the professional assists or supports the learner according to their unique needs and, in the process, makes the curriculum accessible (Dagar & Yadav, 2016; Donald et al., 2014).

Two important mutual principles were derived from the complex and diverse constructivist perspectives of learning, namely that the existing knowledge of learners forms the foundation for acquiring new knowledge, and learning is a dynamic process during which learners construct their own understanding in the context of their experiences in the novel learning circumstances. The constructivist teaching perspective emphasises the importance of learners' attempts and active engagement to construct their own understanding of knowledge (Amineh & Asl, 2015; Donald et al., 2014).

The principles of constructivism, as well as Vygotsky's zone of proximal development and scaffolding, are fundamental to this case study. Constructivism sheds light on the construction of knowledge and the important factors that teachers and other professionals involved with teaching should consider. Vygotsky's theories enlighten the process and strategies pertaining to the support of learners (especially those who require specialised support) to make the curriculum accessible so that they have the opportunity to reach their full potential.

Following is a discussion of collaboration in education. It is a crucial concept pertaining to this case study as it is fundamental to the functioning and organisation of multidisciplinary teams.

3.4   COLLABORATION IN EDUCATION

The policies that were discussed in section 3.2.6 lay the ground rules for inclusive educational practices. This incorporates collaboration between teachers and support services (which may be District Support services or, as in the case of this study, support services based at the special schools) to address barriers to learning and supporting learners with special educational needs. As discussed in section 3.2.5, barriers to learning may be intrinsic, such as a physical disability or chronic illness, or extrinsic, such as environmental factors, teaching methodology, and the curriculum. Therefore, collaboration between different professionals

from various fields is necessary to address the barriers and needs of learners (Nel et al., 2014).

Gajda (2004, p. 65) refers to the "collaborative effort" as the key to reaching short- and or long-term goals, which would not have been possible if entities were not working together. Over time, the need for merging proficiency between multiple fields grew, and the focus shifted from the individual to collaboration (Colbry et al., 2014; Marcus, 2018). Collaboration can be conceptualised as a process of continuity whereby teams and individuals follow different approaches in different contexts (Travers, 2020).

It is important to understand the meaning of collaboration as various definitions exist for various contexts. Hernandez (2013) defines the core characteristics of collaboration that apply to this study. The origin of the word is "co-labour, which means working together" (Hernandez, 2013, p. 482). The premise of "working together" is an interrelationship among the team members in compliance to share their resources, values, and expertise (Hernandez, 2013). Carrea et al. (2005) describe collaboration as a reciprocal endeavour to plan, implement, and evaluate educational programmes for individual learners. Collaboration takes place between individuals with expertise from different professional fields, grouped together to function as a team, striving to achieve common goals (Hernandez, 2013).

There are three well-known models of inter-professional collaboration, namely multidisciplinary-, interdisciplinary- and transdisciplinary collaboration. These three models have subtle differences in terms of collaborative practices and are, in many instances, interconnected in terms of the accomplishment of common goals, communication among team members, professional boundaries, and treatment in the best interest of the learner (Dillon et al., 2021; Stock & Burton, 2011; Wehmeyer, 2014). Multidisciplinary collaboration refers to professionals working parallel but also in tandem, communicating with each other (Travers, 2020). Multidisciplinary team collaboration is discussed in detail in section 3.5.

The interdisciplinary model refers to a team of professionals from different fields of expertise collaborating to solve a problem (Klaassen, 2018). They meet on a regular basis, where professionals give feedback regarding their therapy. The team has a collective purpose and therapy programme. The limitations of this model lie in the execution of the plan as each team member applies the strategies based on their professional discipline. This may cause disengaged therapeutic intervention (Wehmeyer, 2014).

The transdisciplinary model promotes the collaboration of team members across professional boundaries, integrating their roles. A single comprehensible assessment involves all team members, followed by compiling an integrated intervention plan with mutual goals (Straub et al., 2021; Wehmeyer, 2014).

The tendency worldwide in inclusive education is a growing emphasis on collaboration as a curtail assistive approach for educators who have to respond to a wide range of diverse learner needs. Inclusive education is not realised by putting learners who experience barriers to learning or learners with disabilities with their peers in a mainstream class. Inclusion calls on all the team members to collaborate in addressing barriers to learning and teaching that learners and teachers may experience (Hernandez, 2013; Khairuddin et al., 2016). It is a fact that inclusive special education is very complex, which makes the collaboration of professionals from different fields the best instrument for problem-solving to provide quality teaching for learners with special educational needs. Best practice evidence for inclusion indicates that team members (teachers and specialists) should involve the parents in the support planning in terms of the curriculum and assessment accommodations (Eccleston, 2010). A survey was done in 12 Utah (USA) schools about the concerns, attitudes, needs, and beliefs of general educators and special needs educators regarding collaboration in including learners with special educational needs in mainstream classes. They found that special needs educators were more inclined to collaborate than their general education colleagues (Hernandez, 2013).

The success in collaboration is that two or more people can achieve objectives that would not be possible for the individual working separately. The essence of collaboration is the combination of expertise. It is agreed upon that professional collaboration is a valuable means for professionals from different fields to assist learners with diverse disabilities. The research indicates several essential elements determining successful collaboration, including a positive attitude, interpersonal proficiency, professional expertise, and confidence. Furthermore, professionals must be thoughtful, knowledgeable, empathetic, and have good management skills. Being thoughtful postulates self-knowledge, self-understanding, critical reflection about strengths and needs, and ethical accountability. Meta-cognitive reflection is essential for professional development, individually and collectively, for the team (Eccleston, 2010; Hernandez, 2013).

Collaboration within an inclusive framework suggests that there is a need for an inclusive and supportive community characterised by effective communication, collective decision-making and problem-solving, joint responsibility and accountability for the decisions taken, cooperation to accomplish common goals, and where all members are valued counterparts (Nel et al., 2014).

3.5   MULTIDISCIPLINARY TEAMS

A multidisciplinary team can be defined as a group of people with corresponding expertise, working parallel or independently while striving towards collective goals and, in the process, holding themselves reciprocally responsible (Saint-Pierre et al., 2018). The implication is that these professionals are willing to exchange knowledge and expertise and are inclined to refrain from claiming individualistic expertise and command as part of a professional team to meet the needs of the learners (Barbra & Mutswanga, 2015; Cuevas et al., 2012). Barbra and Mutswanga (2015) cite Loannides and Michael (2008), describing the characteristics of multidisciplinary teams as follows:

- "Specialists working together, not parallel.
- The exchange between the various stakeholders in a coordinated manner.
- The objectives are shared, and information is shared to achieve them.
- A coordinator will share information and its transmission to recipients.
- Everyone brings their own professional skills to achieve goals.
- Everyone plays their own role and has their own responsibilities" (Barbra & Mutswanga, 2015, p. 28).

Identifying a learning disability requires a thorough investigation and assessments to determine the learner's current functioning, learning potential, and barriers to learning. An extensive investigation has to be done by a multidisciplinary team consisting of a psychologist, speech- and language therapist, occupational therapist, teacher(s), and the parents. Other professionals, such as physicians, counsellors, and social workers, can also be part of the multidisciplinary team (Barbra & Mutswanga, 2015; Wehmeyer, 2014).

One of the advantages of an effective and efficient functioning multidisciplinary team is the cohesion of peers supporting each other amidst challenging and sometimes distressing conditions. The collaboration of team members from different disciplines ensures that all aspects of interventions and services are addressed. The benefit of working together in a

multidisciplinary team is that team members learn from each other, promoting professional growth (Barbra & Mutswanga, 2015; Witteman & Stahl, 2013).

Although a multidisciplinary team approach is seen as the basis for collaboration, clinical judgment, and decision-making in many educational contexts, if there is no shared conceptual framework, it can easily degenerate into a disorganised and disjointed approach, failing the learner and professional. The service may become insufficient if no solid philosophical foundations are in place, leading to professional rivalry and dissatisfaction. Multidisciplinary teams should strive to provide specialised services to learners in relation to predetermined goals (Dillenburger et al., 2014).

3.5.1 Multidisciplinary teams in special schools

A collaborative team approach is essential when deciding whether it will be in the best interest of a learner to be placed in special education, as well as for compiling and implementing an individual education plan for such a learner (Dillon et al., 2021).

The functioning of multidisciplinary teams in special schools includes characteristics of interdisciplinary- and transdisciplinary models. The teams have a collective purpose and goals; they compile integrated intervention plans and work together across professional borders.

The multidisciplinary teams discussed in this study involve the collaboration between the foundation phase teachers, occupational therapists, and speech-language therapists. Supporting learners with high needs in a special school cannot be diminished to a programme remediating deficits. A collaborative approach is followed with the fundamental purpose of providing support to learners to bridge their barriers to learning and make the curriculum accessible. All support and intervention practices aim to benefit all learners (Liasidou & Antoniou, 2013; Wium & Louw, 2013).

3.5.1.1 *School-based occupational therapist*

Occupational therapy is crucial for learners with special educational needs to enhance their opportunities to benefit from special education fully. Occupational therapists do not only provide therapy; they also play an important role in compiling individual support plans for the learners. School-based occupational therapists adapted their roles from a consultation

approach in private practice to a service delivery approach in schools. Therapy provided in special schools is in line with the principles of inclusive education, as learners with special educational needs are supported in collaboration with the teachers to ensure that learners with high needs have similar opportunities as their peers in mainstream schools. Occupational therapy service delivery involves the following:

- Assisting and developing the potential of learners to meet the curriculum requirements.
- Empower teachers to maintain the same strategies in the classroom.
- Eliminating physical barriers and addressing barriers related to the learners' attitudes toward learning and, in the process, enhancing their engagement in the learning process.
- Addressing learners' constraints by supplying technology or assistive devices to enable them to reach their full potential despite the barriers they experience (Villeneuve, 2009).

Hargreaves et al. (2012) describe a study about the collaborative relationship between therapists and teachers in the foundation phase. All the participants in the study agreed that limited time for meetings and team discussions negatively impacts efficient communication. Efficient communication was also highlighted by all the participants as imperative to ensure optimal collaboration. The participants indicated these two factors – efficient communication and optimal collaboration – as the most important prerequisites for early identification and adequate support to learners who experience barriers to learning.

3.5.1.2 *School-based speech-language therapist*

There is an increasing demand for speech- and language therapists to support teachers and learners in special schools. In order to accommodate as many learners as possible, the conventional model of withdrawing learners from the classroom for individual therapy is progressively replaced with a more collaborative support approach. The expansion of support services includes the provision of support to learners in the classroom in terms of their language-, reading- and written expression needs. This collaborative approach, assisting learners in the classroom, demands that the speech-language therapist be well acquainted with the curriculum (CAPS) and required learning outcomes and assessment criteria. The speech-language therapist working in a special school must support learners with diverse

diagnoses and be aware of the impact on the learners' functioning in the classroom and curriculum context (Wium & Louw, 2013).

The role of the teacher as a curriculum specialist is to collaborate with the speech-language therapist and occupational therapist, specifically in terms of classroom interventions (Wium & Louw, 2013).

3.6   SUMMARY OF THE CHAPTER

This chapter provided an account of inclusive education in South Africa and a comparison between national and international policies with regard to inclusive education. A brief description of the medical, social, and biopsychosocial models is included because it highlights the change and shift to inclusion. The policies with regard to special schools are discussed, and the referral pathway from mainstream schools to special schools is explained. The different kinds of special schools in the Western Cape are portrayed, followed by a description of constructivism in education. Collaboration in education is discussed because it can be seen as the theoretical foundation for multidisciplinary team approaches. The main concepts pertaining to this case study were discussed in this conceptual framework. Chapter 4 will be devoted to the research methodology pertaining to this multiple case study.

CHAPTER FOUR

RESEARCH METHODOLOGY AND DESIGN

4.1 INTRODUCTION

Chapter Three described the theories and concepts of this study: inclusive education, collaboration and constructivism, and multidisciplinary teams in special education.

This chapter discussed the research aim, questions, and objectives, followed by a description of the qualitative research approach, the paradigmatic perspectives, and the research design. This was followed by a discussion of the research methods (participant observation, interviews, qualitative questionnaires, and focus group interviews) employed to collect data for this study and the approach followed to analyse the data, which entails thematic data analysis. Lastly, the ethical considerations pertaining to this study were discussed. The researcher then positioned herself as the researcher in this study.

4.2 RESEARCH AIM, QUESTIONS AND OBJECTIVES

4.2.1 Research aim

This study aimed to comprehend and characterise the therapeutic methods and tactics used by multidisciplinary teams that cooperate to meet the executive functioning requirements of foundation phase learners. Such a strategy aims to improve curriculum accessibility and remove barriers to efficient learning.

4.2.2 Research questions

The below research questions guided this study.

4.2.2.1 Primary research question

How do collaborative multidisciplinary teams approach therapy and support to address the executive functioning needs of foundation phase learners in special schools?

4.2.2.2 *Secondary research questions*

1. What collaborative, multidisciplinary team approaches are employed in the foundation phase in special schools?
2. What are the executive functioning needs of foundation phase learners in special schools?
3. What methods are used by multidisciplinary teams to develop executive functioning skills of foundation phase learners in special schools?
4. How do multidisciplinary teams collaborate to render a therapeutic service in special schools?

4.2.3 Research objectives

1. To explore the different collaborative multidisciplinary team approaches in the foundation phase of special schools.
2. To determine the executive function needs (manifestations) of foundation phase learners in special schools.
3. To determine the methods multidisciplinary teams use to develop executive functioning skills of foundation phase learners in special schools.
4. To explore the collaboration of multidisciplinary teams in rendering a therapeutic service in special schools.

Table 4.1 below depicts the research design and methodology utilised in this study.

Table 4.1: Research design and methodology of this study (Author, 2023)

Research approach	Qualitative
Research paradigm	Interpretivism
Research design	Multiple case study
Population and sampling	Purposive sampling of research sites and participants
Data collection	Qualitative questionnaires
	Semi-structured interviews
	Focus group interviews
	Participant observations
	Reflective Journal
Data analysis	Thematic data analysis
Quality assurance	Trustworthiness based on:
	Credibility
	Dependability
	Authenticity
	Confirmability
	Transferability
Ethical considerations	Permission and informed consent
	Confidentiality, anonymity, privacy
	Storage and security of data
	Ethics of interviewing
	Non-maleficence and beneficence

The following sections explain the research methodology, population, sampling, data collection, and interpretation strategies for this study and describe the researcher's role, reliability, validity, and ethical considerations.

4.3 RESEARCH APPROACH

The quantitative, qualitative, and mixed methods approaches are, among others, the three most well-known research methodologies. Qualitative and quantitative research can be considered the two extremes, with mixed methods research as the middle ground (Creswell, 2014).

For this study, the qualitative research approach was the best choice, as it allowed me to explore and understand the significance and essence of the approaches followed by the multidisciplinary teams supporting the executive functioning needs of foundation phase learners in special schools.

The major hallmarks of a qualitative approach are the progressive creation of questions, data collection in the participants' environments, and data processing and interpretation that typically follows an inductive process from the specific to generalisation of themes. The selection of participants is contingent on their knowledge and experience. Writing the closing article or research study for qualitative research involves words, open-ended inquiries, and a case study approach. The framework is flexible and adaptable (Creswell, 2014; De la Questa Benjumea, 2015; Scotland, 2012).

Quantitative research is a statistical investigation that examines theories while determining the relations between variables. The characteristics of a quantitative research approach refer to instrumental testing of the variables to collect data concerning numbers, and the data analysis is done by means of statistical inquiry. (Creswell, 2014).

In mixed methods research, both qualitative and quantitative research methodologies are used. Instead of adopting a single approach, mixed methods research adds additional value to the research study by allowing for a more thorough accounting of the research problem (Creswell, 2014; McKim, 2017).

4.3.1   Qualitative research approach

Qualitative research supports a comprehensive and elaborate understanding of the meaning people attribute to human phenomena, their behaviour, beliefs, and attitudes as observed in their natural environment (Cohen et al., 2018).

As mentioned, a qualitative approach was followed when there was a need to understand the meaning that participants attribute to a social or human problem. In the case of this study, I wanted to explore the multidisciplinary team members' understanding, experience, and knowledge of the executive functioning needs of foundation phase learners in a special school, as well as the approaches followed by the three multidisciplinary teams supporting the executive functioning needs. The purpose of qualitative research is to answer the questions of "how, why, and what" of a particular concept or occurrence (Haven & Van

Grootel, 2019). This study aimed to explore the collaborative approaches of multidisciplinary teams addressing the executive functioning needs of foundation phase learners in special schools.

The following section describes the characteristics and rationale of the qualitative research approach, as Creswell (2013) explained. The characteristics illustrated were incorporated into this study.

4.3.2 Description and rationale for qualitative research approach

Figure 4.1 depicts the characteristics of qualitative research. This is followed by a discussion of the characteristics and the requirements for conducting qualitative research. At the end of this discussion, all the characteristics are integrated into this study.
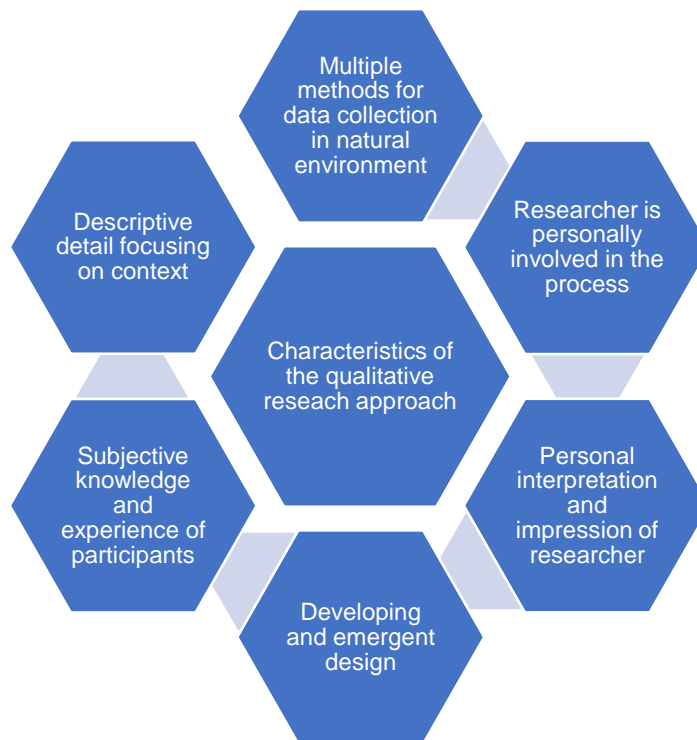
Figure 4.1: Characteristics of qualitative research (Creswell & Poth, 2018, p. 43-44)

- **Multiple methods for data collection in the natural environment of the participants**

  Qualitative research is regarded as an interconnection between data collection and analysis (Babchuk, 2019). In qualitative research, comprehension is produced by gathering an extensive amount of information about a particular subject, and information is typically gathered in the form of written and/or oral language as well as other behavioural records (Haven & Van Grootel, 2019; Rahi, 2017). Qualitative research generally constructs a holistic perception of contextual, usually unstructured, and non-numerical data through conversations with participants in a natural setting (Ponelis, 2015). The qualitative research approach generally allows for multiple methods to collect data, for example, interviews, questionnaires, and observations, rather than a single method (Creswell, 2013). I utilised a qualitative research approach because it enabled me to incorporate questionnaires, observations, individual interviews, and focus group interviews to understand the different approaches of the multidisciplinary teams in three special schools supporting foundation phase learners' executive functioning needs.

- **The researcher is personally involved in the process**

  Qualitative data are predominantly collected in the research field, which, for this study, was three special schools in Cape Town. The qualitative researcher expects to be actively involved by observing and interviewing participants. I interacted on a personal level with the participants, and most of the time, the participant interviews and focus group interviews were informal although semi-structured (Patton, 2002; Somekh & Lewin, 2005).

- **Personal interpretation and impression of the researcher**

  The researcher can be seen as an important implement in the qualitative research process. The qualitative researcher is the measuring instrument and plays a crucial role in creating the findings from the data. The researcher's interpretations, subjectivity, and to what aspect you pay attention when doing observations are factors that the researcher must be aware of and need to account for to ensure the integrity of the findings (Haven & Van Grootel, 2019). In section 4.10, I explained what I did in terms of quality assurance.

- **It is a developing and emergent design**

  The qualitative research process is known to be evolving, meaning that the initial premise is dynamic and developing; questions can be changed or adapted as the

participants are observed in their natural environment (Creswell & Poth, 2018). The researcher must be sensitive to changing circumstances and adapt the inquiry, which develops a deeper understanding of the studied phenomena. The researcher must, therefore, steer clear from fixed designs and be receptive to new directions as they develop (Patton, 2002). I was very conscious of the fact that I had my reality, knowledge, and experience regarding multidisciplinary team approaches and executive functioning deficits of learners who experience barriers to learning. I concentrated on the narratives of the participants.

- **Subjective knowledge and experience of the participants**

Qualitative researchers strive to shift the emphasis from the researcher to the participants, selected purposefully as they are regarded as specialists in the research study. Thus, the participants play a crucial role in qualitative research (Babchuk, 2019). Qualitative research establishes an understanding of people's experiences, composing a reality using various perceptions clarified by different references and processes (McGuirk & O'Neill, 2016).

The participants of this study were purposefully selected based on their knowledge, experience, and expertise as members of multidisciplinary teams in special schools supporting foundation phase learners. Qualitative research is about interpreting and understanding the social environment and social phenomena through the participants' perspective (Bryman, 2016). In this study, the data collected from the participants using the interviews, focus group discussions, questionnaires, and observations contributed to an understanding of the different approaches followed by the three multidisciplinary teams, as well as the knowledge and understanding of the learners' executive functioning needs and the various strategies followed by the team members supporting and accommodating these needs.

- **Descriptive detail focusing on the context**

Discussing the findings in a qualitative study tends to focus on descriptive detail rather than explanations. A detailed and comprehensive description of the environment and the activities taking place are significant to understanding the participants and the phenomena under investigation (Bryman, 2016). The context within which the participants teach and are therapeutically involved with foundation phase learners in special schools was of utmost importance to understand the executive needs of the learners as well as the support rendered by the multidisciplinary team. This study aimed to explore the approaches followed by

multidisciplinary teams in response to the executive functioning needs of learners. Detailed descriptions were necessary to answer the research questions (Smith, 2015).

Conducting qualitative research calls on the dedication of the researcher to deal with the following demands:

- The researcher must spend considerable time in the field to collect ample data. Collaboration with participants is time-consuming, but it is very important to understand their unique experiences.
- The data analysis is a complex and tedious process as large amounts of data must be reduced to a few themes.
- The researcher has to write an extended and illustrative report reflecting the multiple perspectives of the participants.
- The researcher must be aware that a qualitative approach is a complex and developing process with constant changes. In other words, the researcher should be flexible and aware of changing contexts and situations.
- The researcher must be aware that despite thorough planning regarding ethics, unexpected ethical controversies may arise and need to be addressed immediately (Creswell & Poth, 2018; Mason, 2009).

The qualitative approach allowed me to understand the approaches followed by multidisciplinary teams at three special schools in Cape Town, responding to learners' executive functioning needs. In this study, the qualitative approach enabled me to utilise multiple methods for data collection to answer the research questions.

4.3.3   Advantages of the qualitative research approach

The strength of a qualitative research approach lies in the opportunity to gain comprehensive insight to answer the research questions and produce an extensive, holistic, and detailed account of the data. Qualitative research focuses on investigating real-world existence, human behaviour, and social questions rather than quantification and statistical evidence. By incorporating a qualitative research approach, I had the opportunity to give a detailed description and interpretation of the participants' experience, knowledge, and perspectives regarding the executive functioning needs of learners in a special school. (Cohen et al., 2018; Creswell, 2013; Creswell & Poth, 2018; Rahman, 2017). Research in the natural setting

implies that there is no manipulation of the situation or event that is studied. The event occurs naturally and can thus be recognised as a real-life event. The outcomes are not predetermined; therefore, no limitations and restrictions are involved about the participants or the event studied (Patton, 2002). Data collection takes place in the real world rather than a controlled clinical environment, and the data collection methods are versatile and conscious of the social context (Mason, 1996). Furthermore, participants and research fields are purposefully chosen because they have extensive information and expertise rather than a random sample from public society (Patton, 2002). The qualitative approach is pliable and can be constructed and reconstructed to increase efficiency in answering the research questions. The participants have the opportunity to verify their responses, which contributes to the understanding of complicated matters (Rahman, 2017).

In my study, the qualitative approach allowed me to be part of real-life events in the classrooms and therapy rooms to observe the strategies and approaches of the teachers and therapists and how they dealt with the learners' executive functioning challenges. I could gain a comprehensive understanding of their knowledge and expertise during the semi-structured and focus group interviews. I gained insight into the different approaches of multidisciplinary teams. Furthermore, the qualitative approach allowed me to purposefully select the participants, based on their position at a special school, working with foundation phase learners and their knowledge and expertise addressing learners' executive functioning needs.

4.3.4   Limitations of the qualitative research approach

A significant challenge for qualitative researchers is to learn how to continuously develop, ensure that the study is credible, and preserve the researcher's reputation through rigorous self-reflection without self-defeating (Mason, 2002).

Participants share their subjective knowledge, experiences, and understanding of the phenomena under study. The danger exists that the information may be distorted or selective, and the participants may be unaware of their deficient knowledge (Cohen et al., 2018). For this study, data was collected through various methods from three different multidisciplinary teams and three different schools, which may ensure, to a certain extent, that the information (data) is comprehensive and sound. Participants are personally involved in qualitative

research, so protecting their confidentiality and privacy can pose a challenge (Mason, 1996). I have used acronyms for all the participants and schools in this study to ensure anonymity.

To counter possible limitations in qualitative research articles, the following requirements were identified: a logical and coherent structure of the research study, an explicit and accurate research process, and the written paper (report or thesis) must be accessible and comprehensible to readers (Queiros et al., 2017).

Following is the discussion of the paradigmatic principles on which this study is based, namely the ontological and epistemological philosophical standpoints and the interpretivism paradigm.

4.4   PARADIGMATIC PERSPECTIVES

Table 4.2 illustrates the paradigmatic standpoint applied to this study.

Table 4.2: Paradigmatic standpoint (Mertens, 2015, p. 11).

Paradigm	Research approach	Ontology	Epistemology	Methodology
Interpretivism	Inductive	Internal truth of subjective experiences	Empathetic Observer inter-subjectivity	Interactional Interpretive Qualitative

The term "paradigm" refers to the fundamental assembly of beliefs collectively held by scientists about our understanding of dilemmas, how we see the world, and how we conduct research (Rahi, 2017; Sefotho, 2015). Research paradigms determine how the research will be conducted; they serve as a guide to the researcher, and by choosing the best paradigm suited for the particular study, the researcher is bound to abide by the principles and methods of the particular paradigm (Sefotho, 2015). The paradigm used within the ambit of this study is discussed below.

Ontology and epistemology are philosophical standpoints and are fundamental guidelines for research and determine the selection of the particular paradigm for the study (Al-Saadi, 2014; Uzun, 2016).

4.4.1   Ontology

Ontology can be regarded as a description of reality that demonstrates how truth is established around a specific concept or procedure in qualitative research (Hays & Singh,

104

2012; Uzun, 2016). Grbich (2013) describes the ontological process as the understanding of data related to broad structural and social matters that influence the claims of the truth.

The ontological assumptions of the interpretive paradigm are based on the construction of multiple social realities and the acknowledgement that different people approach it differently (Creswell & Poth, 2018; Grbich, 2013). This paradigm granted me the opportunity to explore the different realities of the multidisciplinary team members with regard to their understanding and knowledge of the executive functioning needs of learners in special schools. I was able to gain an understanding of their approaches to accommodating these executive functioning needs in the classrooms and therapy sessions.

4.4.2   Epistemology

Epistemology is how the world is perceived and the meaning attached to it (Al-Ababneh, 2020). The primary epistemological principle for qualitative research is that the personal interaction positions the researcher to experience the reality, thoughts, and feelings of the participants firsthand (Bryman, 2016; Creswell, 2013; Hays & Singh, 2012). The theoretical viewpoint of epistemology for this study was interpretivism, which granted me the opportunity to enter the realities of the participants and to experience through their eyes and minds the knowledge and understanding they have in terms of the executive functioning needs of foundation phase learners in special schools and the various approaches followed in responding to and accommodate these needs (Bryman, 2016).

Chapter One explained that this research study aimed to explore the nature of the multidisciplinary team approaches in special school settings about support and accommodation of executive functioning needs of learners in the foundation phase to develop a framework for multidisciplinary team approaches in special schools. The research paradigm of this study was rooted in interpretivism.

4.4.3   Description and rationale of interpretivism

The interpretivist paradigm was chosen for this study because the focal point of interpretivism is about social interaction, whereby people generate their environment and attribute meaning to it (Bailey, 2007; Smith, 2015). The functioning and approaches of the multidisciplinary teams under investigation in this study are fundamentally about social or professional interaction and the meaning that the participants attribute to their therapy and teaching

strategies as they respond to the executive functioning needs of the learners. Interpretivism reasons that there are several explanations for one event or occurrence (Pham, 2017). This research study explores the different approaches of multidisciplinary teams, and the meanings they attribute to their therapeutic responses to learners' executive functioning needs.

Supporters of the interpretivist paradigm advocate a comprehensive understanding and exploration of a phenomenon and the world we are living in (Rahi, 2017). The interpretive paradigm proposes different perspectives on the essence of truth and real life. In accomplishing that, participants are given the platform to share their experiences and best practices (Rinquest, 2021).

Greek sociologist and philosopher Epictetus stated Humans are not alarmed or concerned by actions but rather by their perceptions of and whims towards actions (Chowdhury, 2014). This view gave way to acknowledging that there is a subjective element in trying to understand the social environment. Examining the social environment through personal thought and proposition explains the importance of interpretivism: viewing the world from the perspective of the people being studied, granting multiple perspectives of reality instead of the single reality of positivism (Chowdhury, 2014). The researcher is guided to consider their position with reference to the epistemological and philosophical consequences by looking at a research study from the standpoint of a certain paradigmatic framework. Each research paradigm differs with regard to presumptions, design, methodology, and constraints, which influence the evaluation of the research. The choice of a paradigm is important and depends on the researcher's knowledge and understanding of the nature of the particular paradigm (Ponelis, 2015).

Interpretivism is about the significance of human identity, character, and participation in social and cultural life (Howitt, 2019). Interpretivists seek the explanation and rationale for people's behaviour and interactions with others. The views and reasoning of people are studied, and the meaning they attribute to what they regard as important. Interpretivism claims that observations and interpretations of the social world are embedded in theory and are not disengaged from subjective beliefs. The characteristics of interpretivism advance the worth of qualitative data to inquire about knowledge. The fundamental nature of this philosophical and research paradigm pertains to the distinction of a specific situation supporting contextual profoundness. Although Interpretivism is acknowledged for the contribution of contextual

profoundness, it is also criticised for validity, reliability, and generalisation (Chowdhury, 2014; Howitt, 2019; Ponelis, 2015; Sauders et al., 2019).

The benchmark for evaluating results within the interpretive paradigm is different from that of the positivist paradigm. The merit of the positivist paradigm is evaluated based on the degree to which the results are generalised to a wide population. In contrast, the merit of the interpretive study is regarded by the level to which it corresponds to the perspectives of the participants (Ponelis, 2015; Saunders et al., 2019).

I chose the interpretivism paradigm for this research study because this paradigm focuses on a subjective, interactive, and socially constructed ontology, recognising multiple realities and the essence of comprehending the meaning that participants attribute to particular circumstances (Cohen, 2018; Howitt, 2019; Saunders et al., 2019). In other words, the subjective meaning that the participants contribute to their teaching and therapy approaches, as well as the multiple realities of the multidisciplinary teams regarding the executive functioning needs of learners in special schools, the impact of the needs on their functioning, and the approaches they follow to accommodate these needs.

4.4.4   Advantages of the interpretivism paradigm

Interpretivism views people as the primary and original authority of data. Collecting data directly from participants through interviews, focus group discussions, observations, and questionnaires gives an account of their knowledge and experience without consulting secondary data (Mason, 2009; Walliman, 2016). For this research study, data was collected directly from the teachers and therapists on the multidisciplinary teams from three special schools. During the interviews and focus group discussions, participants shared their expertise, and I collected information directly from them, contributing to a comprehensive understanding of their approaches without making use of secondary data. I verified my understanding of what I observed and heard during the interviews and focus group discussions. Furthermore, it allows the researcher to be present in the real-life experience of the participants while collecting data, as the researcher is not observing from the outside but is present in the lifeworld of the participants, which allows for an in-depth understanding of the participants' context (Mason, 2009; Walliman, 2016). During the observations, I was present in the classrooms and therapy rooms, and I could observe and experience the interaction of the teachers and therapists with the learners.

4.4.5 Limitations of the interpretivism paradigm

The objective analysis of the data regarding the phenomena under study is very difficult because, as mentioned above, the researcher is present in the situation and has her preconceptions, knowledge, and beliefs. Interpretations are based on perspectives and knowledge, which may obstruct the interpretation of the data (Walliman, 2016). As mentioned repeatedly, rigorous and continuous self-reflection from the researcher is imperative to prevent subjective and biased data analysis. This was done using my journal reflections and discussions with my supervisor.

4.5 RESEARCH DESIGN

There are different types of qualitative case studies, and the selection depends on the data needed to answer the research questions. A case can, among others, refer to an individual, a few individuals, a group, groups or a programme. The single case study refers to one defined phenomenon, location, group, individual, or programme. The multiple case study refers to several phenomena, locations, groups, individuals, or programmes. The intrinsic case study is usually a narrative study involving one phenomenon, individual or programme evaluation (Creswell & Poth, 2018).

4.5.1 Multiple case study research design

The researcher decides on a research design best suited to the research purpose. The purpose of the research design is to ensure that the research question(s) are answered by the evidence obtained (Cohen et al., 2018). The research design involves incorporating the plan into the study (Creswell, 2013). I selected a multiple case study design to study the collaborative approaches of three multidisciplinary teams. The multidisciplinary teams at each of the three schools were seen as a single case that was confounded, depending on the school context (Morgan & Morgan, 2008; Stake, 2006). The three single case studies thus compose the multiple case study.

4.5.1.1 Description and rationale

The rationale for selecting a multiple case study design is to portray different perspectives of the phenomena being investigated. The purpose of the study demands the selection of various programmes, participants, groups, and several research sites (Creswell, 2013). In

the case of this research study, three multidisciplinary teams were purposefully selected at three different special schools where the inquiry procedures were replicated to collect comprehensive data to answer the research questions. Although a multiple case study design is more complicated to execute than a single case study design, it provides greater credibility to the findings (Yin, 2012).

This multiple case study focuses on the approaches followed by three collaborative multidisciplinary teams at three different special schools, which each constitutes a case, making the CAPS curriculum accessible for learners with specific learning disorders in accommodating their executive functioning needs. It can thus contribute to established theory and conceptual frameworks, inform best practices, and suggest further research in this field.

4.5.1.2 Advantages of the multiple case study design

The objective of a case study method of inquiry is to postulate a thorough and holistic explanation of a single enclosed unit in a certain context to gain an understanding of a particular reality. Some advantages of using a case study are establishing a relationship between the researcher and the research respondents, acquiring and generalising adequate descriptions, and, fundamentally, in-depth insight into the phenomenon under investigation. A case study design is particularly applicable for studying processes, problems, and programmes for informing and improving practice. A case study endorses both theory building and theory testing. In the case of theory building, a case study is particularly valuable when established theoretical and conceptual frameworks are insufficient. Rather than a formulated hypothesis, case studies make use of general ideas or expectations to guide empirical research. The understanding gained from case-based theory-building research can be utilised as a hypothesis in suggested further research (Ponelis, 2015; Ridder, 2017).

4.5.1.3 Limitations of the multiple case study

A threat posed to case study designs is a lack of precision and failure to follow a methodical and well-organised structure. This may cause ambiguous data to affect the results and interpretation. The researcher has to give a true and just description of the data and, at all times, be aware of the influence of bias (Yin, 2014). The researcher has to reflect and do introspection continuously to avoid biased interpretations. (Tufford & Newman, 2010).

Another limitation is the assumption that a case study design does not allow for the generalisation of the findings. It is possible to generalise findings by proposing a theory rather than a population (Yin, 2014). In this study, I explored the different approaches of multidisciplinary teams and how they support learners with executive functioning needs. The findings were related to the concepts discussed in the conceptual framework in Chapter 3 and were not generalised.

There is a threat that multiple cases in one study may affect the overall analysis as well as the in-depth time and quality spent with each case (Creswell & Poth, 2018). As for this research study, the multiple data collection methods allowed ample time to be spent with each participant during the individual observation sessions, interviews, and teams during the focus group discussions. This ensured in-depth investigation, and I was able to experience the approaches of the individual team members (teachers and therapists) and observe directly what the approaches were responding to the executive functioning needs of the learners in different contexts (Bell & Waters, 2018; Howitt, 2019).

4.6   POPULATION AND SAMPLING

The essential goal of sampling for a qualitative researcher is to select specific cases, events, or actions that can broaden the researcher's perception of the studied phenomenon (Ishak & Abu Bakar, 2014). Unlike quantitative research, there is no random sampling in qualitative research. The sample is chosen based on the particular case intended for the research study (Ridder, 2017).

A sample of three multidisciplinary teams working in the foundation phase at three special schools was selected from a population of special schools for learners with specific learning disorders with multidisciplinary teams in Cape Town. Chapter 3, section 3.2.7.3.1, mentions that nine special schools in the eight education districts in the Western Cape provide education for learners diagnosed with SLD. All of these schools have multidisciplinary teams supporting the learners. The sample of the three special schools was purposefully selected from the population of special schools. The participants in this study consisted of three Grade 1 teachers, three Grade 2 teachers, three Grade 3 teachers, three speech-language therapists, and three occupational therapists.

4.6.1 Purposive sampling

The method of sampling chosen for this research study was non-probability purposive sampling. The researcher decides upon particular participants based on their expertise, experience, and characteristics to meet the specific requirements of the phenomena being examined. Purposive sampling is done to ensure representation to compare data, concentrate on particular distinct circumstances or cases, and develop theory through collecting data from various resources (Cohen, 2018).

The limitation of purposive sampling is that although it complies with the researcher's requirements, it is biased and not representative of the bigger population (Cohen, 2018). For this study, the participants were purposively chosen based on their professions, knowledge and expertise, and positions in special schools.

4.6.2 Sampling of the research sites

The research sites and participants are purposefully selected because they are in the best position to provide information and contribute to the researcher's understanding to reach the research goals and answer the research questions (Creswell, 2014).

The three special schools were purposefully selected as the research sites because the research questions pertain to special schools and the support services on site. The support services are composed of health professionals from various fields, e.g., psychologists, counsellors, social workers, nurses, physiotherapists, occupational therapists, speech-language therapists, and audiologists. The support services form multidisciplinary teams together with teachers and parents. The teams meet regularly to discuss learners' needs and to compile individual education (and support) plans. The three special schools chosen for this research study are situated in the northern suburbs of Cape Town. The learner population and the admission criteria are similar. In terms of demographics, the learners are representative of all the population groups in the Western Cape of South Africa. Schools A and C are dual mediums, in which case the language of teaching and learning is Afrikaans and English, and School C has only one language of teaching and learning, namely English. Learners with special educational needs are placed in these schools by the DoE because their needs cannot be met in mainstream schools. All three of the special schools follow the CAPS curriculum. The special education and therapeutic support, as well as assessment

accommodations, are aimed at bridging the barriers to learning experienced by the learners and making the curriculum accessible to them so they can reach their full potential.

The sample of participants and research sites are representative of the multidisciplinary teams working in the three special schools.

4.6.3   Sampling of the participants

When conducting qualitative interpretive research, the number of participants is usually relatively small (Ponelis, 2015). Although the sample size is not prescriptive in qualitative research, the precondition that determines the choice of the sample size is that it should allow for the generation of comprehensive data from a representative population (Cohen et al., 2018). Creswell and Poth (2018) recommend that the number of cases included in a multiple case study not exceed four or five cases. For this multiple case study, I purposefully selected three cases involving three multidisciplinary teams of five team members each. The participants include three speech- and language therapists, three occupational therapists, three Grade 1 teachers, three Grade 2 teachers, and three Grade 3 teachers. Thus, there were three cases (multidisciplinary teams) and 15 participants. Their voluntary participation was guaranteed. The objectives of this research study and the expectations were explained to the participants before deciding to take part in the study. The team members were purposefully selected as they are involved with the teaching, learning, and therapy of learners in the foundation phase.

Following in Table 4.3 is a description of the participants for this research study.

Table 4.3: Description of the participants

Participants of School A				
Discipline	**Age**	**Ethnicity and Gender**	**Years of experience in special education**	**Qualifications**
Grade 1 teacher	32	Afrikaans Female	7 years	B Ed (foundation phase) B Ed Hon. (Inclusive education)
Grade 2 teacher	31	Afrikaans Female	6 years	B Ed. (foundation phase)
Grade 3 teacher	31	Afrikaans Female	5 years	B Ed (Foundation phase) B Ed Hon. (Inclusive education)
Occupational therapist	38	Afrikaans Female	8 years	B Sc. Occupational therapy
Speech-language therapist	47	English Female	23 years	B. Speech Language therapy and audiology
Participants of School B				
Grade 1 teacher	49	English Female	10 years	B. Social science
Grade 2 teacher	64	Afrikaans Female	15 years	Teacher's Diploma
Grade 3 teacher	32	Afrikaans Female	10 years	B. Ed (Foundation phase)
Occupational therapist	63	Afrikaans Female	42 years	B. Occupational therapy
Speech-language Therapist	61	Afrikaans Female	39 years	B. Speech and Hearing pathology
Participants of School C				
Grade 1 teacher	33	English Female	7 years	B. Ed. (Foundation phase)
Grade 2 teacher	40	English Female	18 years	Performance Diploma in Music Post Graduate Certificate Education
Grade 3 teacher	38	English Female	11 years	B. Ed. (Foundation phase)
Occupational therapist	36	Afrikaans Female	10 years	B. Occupational therapy
Speech-language therapist	32	English Female	9 years	B. Sc. Speech-language therapy

4.7 DATA COLLECTION

Qualitative data collection is usually done using interviews, observations, and focus group discussions. Qualitative research explores and explains perceptions, attitudes, and mindsets regarding the research questions (Haven & Van Grootel, 2019). One of the advantages of a multiple case study method is the adjustability and versatility, allowing for multiple data collection methods while investigating a research problem (Ponelis, 2015). This study gathered data using questionnaires, observations, semi-structured interviews, and focus group discussions.

4.7.1 A qualitative questionnaire

Qualitative questionnaires are valuable tools to collect data about people's beliefs, knowledge, and perceptions. Questionnaires are highly effective for qualitative data collection because of their practical, economical, and flexible nature (Rinquest, 2021). Questionnaires are convenient for the participants as they can complete them in their own time; however, they may experience it as an administrative burden. Questionnaires allow the researcher to formulate and order questions to obtain specific information from the participants without personally engaging with each participant. The planning of the questions has to be precise to obtain the required information based on the research questions (Walliman, 2016).

For this research study, I utilised one questionnaire with structured, semi-structured, and unstructured questions to collect data about the research questions. Structured questions were asked to obtain biographical information from the participants, semi-structured questions about their experience in a multidisciplinary team, and unstructured questions about their approaches as a therapist and teachers working with learners who have special educational needs in the foundation phase of a special school, as well as their approach to accommodate learners' executive functioning needs, therapeutic interventions, and the use of curriculum content in their individual-, small group-, and class group sessions.

The questionnaire for this research study was developed to get information about the participants' qualifications and experience.

4.7.2 Semi-structured interviews

An interview is regarded as a social interaction between the researcher and the participant where information is shared. The required information gathered in an interview is based on

the research questions. Semi-structured interviews are a means to gain knowledge and understanding of interpretations and events from the perspective of the participant. Qualitative interviews have different features, e.g., unstructured or semi-structured interviews can be described as inventive experiences. Self-reflection is an important quality in conducting interviews, as it provides discernment into the specific experiences of people. Qualitative interviews can be conducted in different manners, such as face-to-face interviews, telephonic interviews, or engagement in focus group interviews where six to eight participants are present (Creswell, 2014; Creswell & Poth, 2018; Dowling, Lloyd & Suchet-Pearson, 2016).

Semi-structured interviews initiate data responses to open-ended questions, with the result that outcomes cannot be predicted and rely on the quality and depth of information offered by the participants (Rinquest, 2021). The questions in the individual interviews were conducted with each one of the participants. All the participants gave informed consent for the interviews to be recorded.

The advantages of semi-structured interviews are that they can be modified to gather more detailed and comprehensive information about a particular concept or area which needs to be elaborated on. Not many participants are necessary to gather comprehensive and insightful information. The interviews can be done in informal circumstances to set everyone at ease. Some disadvantages are that it is time-consuming to conduct the interviews and the analysis to compare the information. The participants must be selected with care to avoid biased opinions. The results are not generalisable (Queirós et al., 2017)

In this study, semi-structured interviews were employed to get detailed information from the multidisciplinary team members (participants) through open-ended questions. An interview guide directed the questions posed to the participants to gather information to answer the research questions. Before the interviews, I had appointments with all the participants for a preliminary information session, during which I explained the purpose of the study and provided each participant with the questions to be addressed during the interviews. I had one contact person at each of the three schools with whom I liaised to negotiate convenient times for the participants and arrange the venues at the schools for the interviews.
I had face-to-face interviews with all the participants at the selected schools. The participants signed informed consent forms and gave consent for recording the interviews.

4.7.3   Focus group discussions

A focus group is a group discussion that involves a comprehensive discussion on a specific theme or topic. The group consists of members with specific expertise and experience about the topic. The researcher's role is to facilitate the discussion and not dominate it. The researcher needs to be sensitive towards the more reserved group member(s) who might need prompting to take part in the discussion. The advantage of a focus group is that a member may express a certain understanding or belief that may lead to a further discussion, revealing relevant and important information and clarifying certain aspects. Focus group discussions can be time-effective compared to individual interviews. A disadvantage may be that it could be difficult to lead and direct (Queirós et al., 2017; Walliman, 2016).

For this study, there were three focus groups consisting of three multidisciplinary teams, one from each special school.

I had discussions with three multidisciplinary teams from three special schools who work in the foundation phase. Each team had five members: a Grade 1 teacher, a Grade 2 teacher, a Grade 3 teacher, a speech-language therapist and an occupational therapist. The interviews were done after school at a convenient time for the participants at their schools. The face-to-face discussions varied between 35 to 50 minutes. The participants received the questions before the discussion. In the informed written consent forms each participant signed, they permitted that discussions be recorded.

4.7.4   Participant observations

I had the opportunity as a non-participant observer to experience first-hand the strategies and approaches of the participants in addressing and accommodating learners' executive functioning needs. I observed the teachers in their classrooms and the therapists working with class groups, small groups, and individual learners. The role of non-participant observer was the best option for my purpose because I was able to observe while not involved and positioned not to intrude or be obvious (Creswell & Poth, 2018; Hopkins, 2017).

Observations are considered one of the main data collection methods in qualitative research. Observations depend on the research aim and questions (Creswell & Poth, 2018). Observing participants allows the researcher to gain an understanding of their social reality (Rinquest, 2021). The researcher takes field notes while observing the behaviour and activities of the

participants at the research site. The researcher's recordings can be unstructured or semi-structured, and some of the questionnaire questions may be utilised (Creswell, 2014). For this study, the researcher observed class groups, small groups, and individual sessions presented by the multidisciplinary team participants. Meticulous notes were made regarding their approaches to accommodate the executive functioning needs of the learners in the different foundation phase classes. I used a template to record my observations (Annexure D). The role of the researcher in this study was an observer as a non-participant, which will allow the researcher to record information as it occurs (Creswell, 2014). Observer as non-participant refers to the detached and non-invasive role of the researcher during a class observation. The researcher attends to what she sees and hears without involvement or interaction (Hopkins, 2017).

Observation is an effective strategy to collect data while the event occurs without any interference from the researcher. It is a discreet and pliable method directed towards discovering insight and awareness of the phenomena studied. Observations can be very time-consuming and necessitate meticulous planning in terms of convenience and availability of the participants and researcher to visit the research site where the event takes place (Queiros et al., 2017).

The participant observations were planned according to a schedule to get information about the approaches the teachers and therapists followed in the classroom and therapy room, with class groups, small groups, and individual learners. Special attention was given to the strategies used to accommodate executive functioning needs and how they bridge the barriers to learning to make the curriculum accessible. I observed an English Home Language lesson taught by the Grade 1, 2, and 3 teachers at all three schools. I observed the therapists from the three schools while busy with class groups, small groups, and individual therapy. Special attention was given to their approaches to accommodating executive functioning needs, bridging the barriers to learning to make the curriculum accessible, and whether the therapists integrate curriculum content with their therapy strategies.

My role as participant observer was neutral and distant. There was no participation except to introduce myself. My position was removed, and the learners could not see me in most instances. The teachers and therapists explained before the time to the learners that my role was to observe what they did and not the learners. The learners' parents signed an informed consent form giving consent that I may be present in the classroom or therapy room,

specifying the number of times I will be present. I was in the role of a spectator, observing the interactions and what happened in a certain context and environment (Mason, 1996).

4.7.5   Reflective journal

An archive of important information is kept in the form of a journal. These inscriptions by the researcher contribute to the data analysis. The journaling involved thorough explanations of observations and interactions. At first, the notes about observations give an account of what the researcher sees and hears; it does not involve any analysis or explanations. However, when there are interviews or conversations, the notes kept in the journal must be accurate and comprehensive descriptions (Bailey, 2007).

I kept a journal from when I embarked on this research journey. I had meetings with the principals and participants at the three schools to explain my research aims. I noted my impressions, observations, questions, perceptions, and conclusions in my journal. I also used my journal to reflect, which helped to discern my subjectivity and concentrate on the actual words and actions of the participants (Creswell, 2007; Maree, 2015).

4.8   DATA ANALYSIS

Data analysis is a pivotal part of qualitative research. It is not the data but the analysis that determines the research outcome (Kiger & Varpio, 2020). Data analysis is not a successive process but continuous and emergent. The process involves consistent evaluation, categorisation, recording, and combining evidence while answering the research questions (Rinquest, 2021).

4.8.1   Thematic analysis

Thematic analysis is a qualitative data analysis method that involves identifying, analysing, and reporting repeated patterns of all the data collected by various instruments. The concept of thematic analysis entails coding data, searching for and refining themes, and reporting the findings. Thematic analysis is flexible and can be applied to answer a wide collection of research questions for different research designs, methods, paradigms, and sample sizes. In the interpretivism paradigm, thematic analysis enables the development of knowledge that is created through the interaction between the researcher and the participants (Kiger & Varpio, 2020). While I was conducting the semi-structured interviews with the participants, I

could refer back to some of my observations during the classroom- small group- or individual sessions with learners to clarify my understanding of their goals, or they had the opportunity to elaborate on certain concepts. It was valuable and contributed to establishing themes.

David Byrne (2022, p. 1392) refers to the work of Braun and Clarke (2012), in particular the term "reflexive thematic analysis", which is their most recent contribution to thematic analysis. Reflexive thematic analysis is described as a reasonably easy, attainable, and theoretically pliable approach to identifying themes during qualitative data analysis.

The researcher formulates themes through thematic analysis to rethink, reinterpret, and form associations between data components. Themes are, therefore, used not only for the classification of data labelling but also for the meaning attributed to it. Although the researcher will incorporate classification and labelling of data, thematic analysis goes further into interpreting the data (Kiger & Varpio, 2020).

It is important to define the term "theme" in the context of this analysis method before examining the specific steps of thematic analysis (Kiger & Varpio, 2020). According to Braun and Clarke (2006, p. 82), "a theme is a patterned response or meaning" acquired from the data informing the research questions. A theme is an abstract operation involving considerable data interpretation and integration (Braun & Clarke, 2006). When applying thematic analysis, themes can be recognised independent of how many times a specific idea associated with a particular theme appears in the data. On the other hand, the dominance or essentialness of a theme is not necessarily delineated by the frequency of its emergence within the data (Braun & Clarke, 2006; Kiger & Varpio, 2020). Themes can be categorised as either "semantic" or labelled as "manifest", identifying the more obvious meanings of data components, or "latent", reflecting the subtle and fundamental meanings, assumptions, or ideologies (Kiger & Varpio, 2020, p. 3). The researcher has considerable flexibility in identifying themes but must always aim to identify themes that stipulate key insights addressing the research questions.

In accordance with thematic analysis, the data is examined, and general themes are established that attribute meaning to the content of the data (Howitt, 2019). I studied the transcripts of the interviews, the questionnaires, the observations, and my reflective journal in order to establish themes, sub-themes, and categories. The themes circumscribe the content of the data. Thematic analysis has to be explicit and structured to reflect the meaning of the information the participants convey (Howitt, 2019). Thematic analysis is the appropriate

method of data analysis for this research study, as it is an authoritative method to establish an understanding of experiences, thoughts, and behaviours across a data set (Kiger & Varpio, 2020).

4.8.1.1 *Deductive thematic analysis*

Deductive analysis is utilised to develop and test theory in a structured manner. There are several antecedents to theory, for example, "previous research and theoretical concepts, professional and personal experiences, and knowledge of persons and situations that are the focus of research" (Yukhymenko et al., 2014, p. 96). Deductive analysis is effective in analysing data as it is enlightened by a confirmed conceptual structure and based on the preliminary coding of the data. The fundamental aim of deductive analysis is to test current theories, presumptions, and hypotheses to determine consistency between research findings and the literature review (Yukhymenko et al., 2014). Only a short overview of deductive thematic analysis is presented as inductive thematic analysis will be utilised in this research study.

4.8.1.2 *Inductive thematic analysis*

Inductive analysis of qualitative data is predominantly used in social science and health research. The fundamentals of inductive analysis imply studying raw data and attributing meaning to it by obtaining categories and themes. Research findings develop from recurring and prevalent themes in the data. Inductive analysis permits the researcher to expand the theory that appears from the data. Inductive analysis has three aims: condensing diversified raw data into a short synopsis, demonstrating a comprehensive and justifiable connection between synoptic findings and research aims, and developing a theoretical model of the raw data that portrays the fundamental structure of the data. In other words, the short synoptic findings obtained from the raw data are incorporated to generate relevant themes and categories relating to the research aims and objectives. The findings of inductive analysis are introduced by describing the dominant themes and categories (Yukhymenko et al., 2014).

Codes should be generated before the commencement of inductive analysis. Generating codes relies on "categorising segments of data with a short name that simultaneously summarizes and accounts for each piece of data" (Charmaz, 2006, p. 43). Codes are imperative, indicating that data were selected, differentiated, and organised. Inductive

analysis is a repetitive process whereby raw data is read and re-read to define, refine, and clarify codes, themes and categories (Yukhymenko et al., 2014).

Following in Figure 4.2 is a depiction of the process followed to analyse the data.

4.8.1.3 Six steps of data analysis

Figure 4.2 below graphically depicts the six steps of data analysis based on the guidelines of Braun and Clarke, as cited in Howitt (2019).
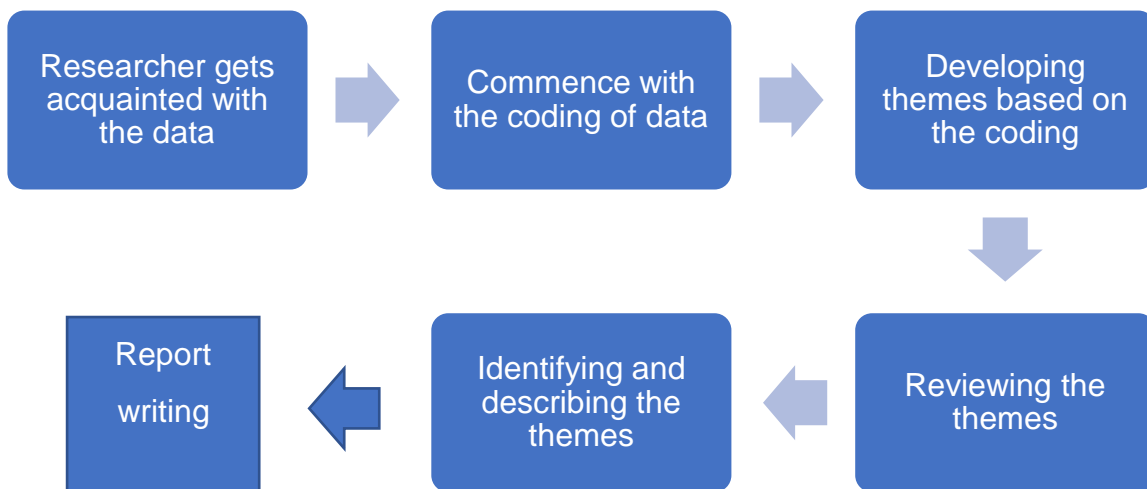
Figure 4.2: Thematic data analysis process (Howitt, 2019, p. 154)

4.8.1.3.1 Step one: Familiarisation with the data

During this first step of reflexive thematic analysis, the researcher has to gain a comprehensive understanding of the data. I could start the data analysis with prior knowledge of what it entailed because I collected all the data myself through interaction with the participants. The data analysis process started while I listened to the recordings of the individual- and focus group interviews, and then when I did the transcripts of the recordings, the attentive listening contributed to my knowledge and understanding of the data. By reading and re-reading the data, it allowed me to determine information applicable to the research questions. It was a process of active listening and reading, determining meanings and patterns in the data (Braun & Clarke, 2006; Braun & Clarke, 2013; Byrne, 2021; Howitt, 2019).

4.8.1.3.2 Step two: Coding of the data

Stage 2 is the coding stage and the first step in identifying themes. The codes are regarded as the primary component of what will develop into themes (Byrne, 2021). This "line-by-line coding" was done as I read the interview transcripts (Howitt, 2019, p. 153). The content of one or two sentences is labelled, and that label is the code. I highlighted the content and the code I wrote next to it in the same colour. I have worked comprehensively through every data item, determining all the information applicable to the research questions. The codes that dominated and appeared throughout the data developed into themes (Braun & Clarke, 2006; Braun & Clarke, 2012; Bryman, 2016; Byrne, 2021; Flick, 2014; Howitt, 2019; McMillan & Schumacher, 2014).

4.8.1.3.3 Step three: Developing themes based on the coding

I started with an extensive list of codes from the entire data set. I examined and combined the codes with similar meanings. During this stage, I used a mind map clustering the codes with similar characteristics to potential themes. An important factor to acknowledge is that themes are identified by studying the relationship between codes and determining how they support a given theme. Themes are not predetermined. Themes should be connected to construct a logical and comprehensible reflection of the data (Braun & Clarke, 2006; Braun & Clarke, 2012; Byrne, 2021).

4.8.1.3.4 Step four: Reviewing the themes

At this stage, all the potential themes must be studied with reference to all the coded data. The themes must reflect the essence of the data, there must be sufficient data to endorse the themes, and it has to contribute to answering the research questions. Therefore, at this stage, some potential themes may be disregarded because there is not enough evidence in the data to endorse them, and some themes could be merged into one, whereas others could be subdivided. I transferred the themes to a table with potential sub-themes and categories (Braun & Clarke, 2006; Braun & Clarke, 2012; Byrne, 2021).

4.8.1.3.5 Step five: Identifying and describing the themes

At this stage, a comprehensive analysis of the thematic framework was done. Individual themes and sub-themes were described with regard to the data and research questions.

Although individual themes are analysed, all themes have to form a logical and comprehensive unity in agreement with the entire data set. During this stage, the researcher has to select the appropriate data items to use as extracts in Chapter 5 when the findings are discussed. The identified extracts should reflect a captivating and expressive account of the discussion and reasoning of the particular theme. Several extracts should be incorporated from the complete set of data items that apprise the theme in order to disclose the variety of explanations of meaning across the data items to indicate the unity of the theme's components. Each extract should be explained with respect to the particular theme and the research questions. Thus, the aim is to generate systematic descriptions informing the reader about the relevance of the extracts pertaining to the theme and research questions (Braun & Clarke, 2012; Byrne, 2021).

4.8.1.3.6   Step six: Creating the report

Stage six is the realisation of the final stage – writing Chapter 5 of the thesis or an article describing the data analysis process and answering the research questions. The researcher must keep in mind that the themes must be discussed in a manner that portrays it as a coherent, systematic, and comprehensive account of the data (Braun & Clarke, 2012; Byrne, 2021).

4.9   QUALITY ASSURANCE

To ensure trustworthiness, the research topic has to be relevant, authentic, and compelling. The research study must add theoretical value to the research field. Substantial data must be collected by devoting ample time to the research field to support the findings. In order to ensure the integrity of the study, the researcher must reflect continuously through honest introspection about the research process from the starting point of data collection to the final stage of data analysis. Comprehensive descriptions must demonstrate the credibility of the research findings. A meticulous ethical process must be followed during all stages of the research process. There must be a relevant connection between the literature review, the research questions, methods, results, and interpretations (Cohen, 2018; Patton, 2002).

4.9.1   Dependability and credibility

In qualitative research, the same terminology as in quantitative research can be used, or alternatively, terminology more applicable to describe qualitative research can be used. "Dependability, instead of "reliability", is more applicable to qualitative research and is based on the quality of data collection and analysis and the degree to which the research methodically studied what was stipulated to be studied. In qualitative research, "credibility" is used instead of "validity" and refers to how successful the researcher was in capturing the participants and the true reflection of their perceptions. The researcher has to ensure that the data is at all times true and free from bias, as this will enhance the credibility of the study. I tried to accomplish dependability by using the same meticulous data collection- and analysis methods throughout the research study (Ponelis, 2015; Walliman, 2011).

Credibility can be enhanced by in-depth engagement with the participants and comprehensive data collection. The researcher must at all times be aware of contradicting information and be able to differentiate between groups in different settings (Cohen, 2018). As for this study, the differentiation was between the three different multidisciplinary teams at three different special schools.

4.9.2   Authenticity

The fundamental questions to be answered to affirm authenticity are: (1) Are the results acceptable and valid? and (2) Are the findings a true and original reflection to answer the research questions? (Miles & Huberman, 1994). The researcher can apply the following to ensure the authenticity of the research study:

- Self-reflection by the researcher on a regular basis.
- Work together regularly with the participants to ascertain that the meanings given to their responses are just and accurate.
- Create frequent opportunities for participant input.
- Analyse information that is conflicting.
- Examine various perspectives to identify underlying assumptions or presumptions (Cohen, 2018).

Self-reflection by means of the reflective journal was incorporated throughout the study to ensure that the data analysis and findings are true and answered all the research questions.

Participants were consulted to ensure that my interpretations reflected the true menaings of their responses

4.9.3 Confirmability

In quantitative research, confirmability is known as objectivity (Cohen et al., 2018). Although it is impossible to eliminate a researcher's bias totally, every reasonable effort should be made to assure impartiality by ensuring that the findings accurately reflect the information provided by the participants and are not biased by the researcher. By elaborating on her choices, methods, and opinions, the researcher must own her personal biases. The researcher must continually reflect and provide comments on it throughout the study. The reader will have the chance to assess the data gathered, and its interpretation of the research methodology has been discussed in depth. The method used to interpret the data must be clear to the reader, who must also be able to determine whether the data answers the study questions (Shenton, 2004). I ensured confirmability by comparing the raw data, my notes in the reflective journal, information from the interviews, and focus group discussions. I made a conscious effort to be unbiased in reporting the results as a true depiction of the product of inquiry.

4.9.4 Transferability

In order to ensure transferability (generalisation), results need to be reported meticulously to ensure that the reader is able to comprehend the results as a product of the data rather than the bias and subjectivity of the researcher (Ponelis, 2015). The theory generated by the research study (explaining the researched phenomena) must be functional and provide more insight into other comparable situations. For the purpose of this study, transferability referred to a specific group, the multidisciplinary teams, in a specific context, the special schools (Cohen, 2018). To ensure transferability, I deliberated on detailed explanations of the participants, the data collection and the research findings.

4.10 ETHICAL CONSIDERATIONS

It is essential to follow the correct ethical procedures by applying the necessary ethical principles to minimise or prevent harm to the participants under investigation. Researchers should uphold at all times their moral principles while they are busy with their research study.

Principles such as academic probity, honesty, and respect for participants should be exerted in a consistent manner throughout the study (Rinquest, 2021).

Qualitative research is inclined to be personally intrusive, and therefore, it is pivotal to follow ethical protocol regarding informed consent, ensuring confidentiality, anonymity, privacy, and respect (McMillan & Schumacher, 2006). Formal ethical procedures to be followed before the commencement of data collection for this research are:

- Obtain ethics approval from the University of South Africa to conduct research.
- Obtain permission from the WCED to conduct research at the selected special school.
- Obtain permission from the governing bodies of the three selected special schools to conduct research.

Following is a discussion of the ethical considerations that were implemented.

4.10.1   Permission

I obtained permission to conduct the study from the University of South Africa and the Western Cape Education Department. These letters of approval were handed to the three principals of the special schools who granted permission to conduct research in the schools.

4.10.2   Informed consent

The rights of and respect for each participant are regarded with utmost importance. Each participant gave their informed written consent before participation. Participation was voluntary, and they were informed about their rights to withdraw at any stage without any repercussions. Consent from the participants was included in their written consent forms to make audio recordings of the interviews and focus group discussions. Informed written consent was obtained from the parents, by which they permitted me to be present in the classrooms and therapy rooms. The parents knew that my goal was to observe the teachers and therapists, not the learners.

4.10.3 Confidentiality, anonymity, and privacy

Participants' right to privacy, confidentiality, and anonymity must be respected as it is a fundamental ethic in research (Patton, 2002). The importance of confidentiality was discussed with all the participants before the commencement of data collection (Cohen, 2014). The participants were informed that they had the right to withdraw at any stage of the study without any penalty involved. I assured them that I would do my best to protect their anonymity. I had a coding system whereby each participant had a unique code. The data collected from each participant was clearly marked with a unique code. Geographical locations and the names of the schools were not used. Alphabetical symbols were assigned to each school as a means of reference. The hard copies of the data collected from the participants were stored in my office in a cabinet with a lock to which only I had the key.

4.10.4 Storage and security of data

The researcher will ensure that transcripts, recordings, and field notes are kept safe in a password-protected cloud-based folder to which only the researcher will have access. This safety measure will ensure that unauthorised individuals cannot misplace, lose, or access data. The researcher will store hard copies of participants' responses for five years in a locked filing cabinet in her office for future research or academic purposes. After five years, hard copies will be shredded, and electronic copies will be permanently deleted from the computer's hard drive through a relevant software program (Rinquest, 2021).

4.10.5 Ethics of interviewing

When interviewing participants, the following elements must be kept in mind:

- To be honest and open with participants, reflecting on what I heard to ensure at all times that my field notes correlate with their truth. Being honest and open will contribute to reciprocal trust and enhance the validity.
- To always be aware not to abuse the power relations in my role as interviewer (Rinquest, 2021).

4.10.6   Non-maleficence and beneficence

Non-maleficence – do no harm – is of utmost importance in educational research. The researcher has to consciously examine all possible consequences of the inquiry on the participants (Cohen et al., 2018).

The counterpart of non-maleficence is beneficence – to whom and how can the research be beneficial? Prospective participants could be convinced to take part in the research if they know the advantages of the research study. In the case of this research study, the advantages or benefits would be the contribution to best practices of multidisciplinary teams in special schools, especially with regard to accommodating foundation phase learners' executive functioning needs (Cohen et al., 2018).

4.11   REFLEXIVITY AND THE ROLE OF THE RESEARCHER

In this section, I reflect on my role as a researcher in three special schools serving as research sites for this study.

I hold the position of Educational Psychologist on the IE Team at one of the special schools in the northern suburbs of Cape Town since 2017. Although I am a school staff member, I do not work directly with the staff members or learners. My mandate is to support the learners while waiting to be placed in the special school. The referrals of learners with special educational needs are done by their mainstream schools, and the learners can only be placed in a special school with the approval of the DoE. The school has a long waiting list, and the IE Team, consisting of an educational psychologist (the researcher), an occupational therapist, and a learning support teacher, was appointed by the DoE to support the learners on the waiting list. The IE Team visits the mainstream schools where these learners are and meets with the teachers and, in some cases, the parents to determine the needs and establish a support plan for the teachers who have to accommodate these learners until they can be placed in the special school.

The position of the researcher in the school will thus not pose a significant threat of being biased. Regarding the other two special schools, I was unfamiliar with the staff members or learners of the schools.

The researcher had her own "supposition, including her knowledge, experience, and academic reflections" pertaining to the "phenomenon under investigation" (Tufford &

Newman, 2010, p.84). In order to reduce the adverse consequences of unidentified assumptions, biases, and previous experiences associated with the research, bracketing is used by qualitative researchers. Bracketing can alleviate conflicting results in the research study, as it assists the researcher in applying continuous and extensive reflection across all the stages of the research, e.g., selecting participants and research sites, composing the questions for the interview, data collection and analysis, and reporting the findings. Tufford and Newman (2010) illustrate that bracketing is a sustained process where the researcher focuses on self-awareness and self-discovery regarding emotions and cognitive biases. By applying bracketing, data collection and -analysis, and the interpretation and reporting of results can be enhanced as the researcher adapts the role of an instrument in the research process. On the other hand, the researcher's emotions, past experiences and cognitive biases may contribute to a distortion in data collection and analysis (Tufford & Newman, 2010).

4.12   SUMMARY OF THE CHAPTER

Chapter Four was dedicated to the description and outline of the research methodology. I started by stating my research aim, questions, and objectives. I explained the paradigmatic perspective and research design that was utilised in this study. I discussed the rationale, strengths, and weaknesses of the qualitative research approach. This was followed by a discussion of interpretivism as the research paradigm of this study. A multiple case study design was illustrated in terms of the rationale and why I chose it for this study. I described the sampling techniques used to select the research sites and participants. This was followed by a presentation of the process of data collection and analysis. This chapter concluded with the considerations of quality assurance, ethical matters relevant to this study, and the role of the researcher.

Chapter Five presents the results and discusses the findings of the study.

CHAPTER FIVE

PRESENTATION OF THE RESULTS AND DISCUSSION OF THE FINDINGS

5.1   INTRODUCTION

In Chapter Four, I discussed the research methodology and design, which is fundamental for this study. I motivated my decision to follow an interpretivist paradigm. Following that was a discussion of the research design and the selection of the research sites and participants. I then explained the data collection methods and the analysis thereof. I reviewed the measures implemented to ensure the trustworthiness of this study.

In this chapter, I present the results of the study and discuss the findings according to the literature and the conceptual framework in order to answer the research questions outlined in Chapter One.

The primary research question in this study was:

How do collaborative multidisciplinary teams approach therapy and support to address executive functioning needs of foundation phase learners in special schools?

The secondary questions are:

- What collaborative multidisciplinary team approaches are employed in the foundation phase in special schools?
- What are the executive functioning needs of foundation phase learners in special schools?
- How do the multidisciplinary teams collaborate to render a therapeutic service in special schools?

5.2   CODING OF THE EXCERPTS

Table 5.1 below outlines the codes used to present the research results.

Table 5.1: Outline of the codes used for the excerpts

Participant and code for the school	Code for interview	Code for focus group discussion	Code for questionnaire
Grade 1 teacher School A (GR1TSA)	GR1TSAI	GR1TSAFG	GR1TSAQ
Grade 2 teacher School A (GR2TSA)	GR2TSAI	GR2TSAFG	GR2TSAQ
Grade 3 teacher School A (GR3TSA)	GR3TSAI	GR3TSAFG	GR3TSAQ
Occupational Therapist School A (OTSA)	OTSAI	OTSAFG	OTSAQ
Speech-language Therapist School A (SPTSA)	STSAI	STSAFG	SPTSAQ
Grade 1 teacher school B (GR1TSB)	GR1TSBI	GR1TSBFG	GR1TSBQ
Grade 2 teacher school B (GR2TB)	GR2TSBI	GR2TSBFG	GR2TSBQ
Grade 3 teacher school B (GR3TSB)	GR3TSBI	GR3TSBFG	GR3TSBQ
Occupational Therapist School B (OTSB)	OTSBI	OTSBFG	OTSBQ
Speech-language Therapist School B (SPTSB)	STSBI	STSBFG	SPTSBQ
Grade 1 teacher School C (GR1TSC)	GR1TSCI	GR1TSCFG	GR1TSCQ
Grade 2 teacher School C (GR2TSC)	GR2TSCI	GR2TSCFG	GR2TSCQ
Grade 3 teacher School C (GR3TSC)	GR3TSCI	GR3TSCFG	GR3TSCQ
Occupational Therapist School C (OTSC)	OTSCI	OTSCFG	OTSCQ
Speech-language Therapist School C (SPTSC)	STSCI	STSCFG	SPTSCQ

In Table 5.1, codes are assigned to participants for reference in this study. Each participant has two codes, referring to the questionnaire, semi-structured interview, focus group, data collection method, and research site.

5.3   DATA COLLECTION

To demonstrate rigour in the study, Table 5.2 provides an overview of the participants and data collection methods in this study.

Table 5.2: Participants and data collection methods

Data collection method	School A	School B	School C	Total
Questionnaires	Grade 1 teacher: 1 Grade 2 teacher: 1 Grade 3 teacher: 1	Grade 1 teacher: 1 Grade 2 teacher: 1 Grade 3 teacher: 1	Grade 1 teacher: 1 Grade 2 teacher: 1 Grade 3 teacher: 1	9
	Occupational Therapist: 1	Occupational Therapist: 1	Occupational Therapist: 1	3
	Speech-Language Therapist: 1	Speech-Language Therapist: 1	Speech-Language Therapist 1	3

Total questionnaires				15
Participant observations				
Class group observations	Grade 1 teacher: 1 Grade 2 teacher: 1 Grade 3 teacher: 1	Grade 1 teacher: 1 Grade 2 teacher: 1 Grade 3 teacher: 1	Grade 1 teacher: 1 Grade 2 teacher: 1 Grade 3 teacher: 1	9
	Occupational Therapist: 1	Occupational Therapist: 1	Occupational Therapist: 1	3
Small group observations	Speech-Language Therapist: 1	Speech-Language Therapist: 0	Speech-Language Therapist 1	2
	Occupational Therapist: 1	Occupational Therapist: 1	Occupational Therapist: 1	3
	Speech-Language Therapist: 1	Speech-Language therapist:1	Speech-Language Therapist: 1	3
Individual therapy observations	Occupational therapist: 1	Occupational therapist: 1	Occupational therapist: 1	3
	Speech-Language Therapist: 1	Speech-Language Therapist: 1	Speech-Language Therapist: 1	3
Total observations				26
Semi-structured interviews	Grade 1 teacher: 1 Grade 2 teacher: 1 Grade 3 teacher: 1	Grade 1 teacher: 1 Grade 2 teacher: 1 Grade 3 teacher: 1	Grade 1 teacher: 1 Grade 2 teacher: 1 Grade 3 teacher: 1	9
	Occupational therapist: 1	Occupational therapist: 1	Occupational therapist: 1	3
	Speech-Language Therapist 1	Speech-Language Therapist 1	Speech-Language Therapist: 1	3
Total semi-structured interviews				15
Focus group interviews	1	1	1	3

Table 5.2 summarises the types of data gathered from the fifteen participants at the three special schools. A thorough deliberation on sampling the participants and schools was presented in Chapter 4, section 4.6.

In the next section, I present the themes, sub-themes, and categories I developed from the thematic content analysis of the semi-structured interviews, focus groups, questionnaires, participant observations, and notes from my reflective journal.

5.4 PRESENTATION OF THE RESULTS

In this section, I report on the findings of the current study. I present the four main themes that emerged during the thematic content analysis and interpretation phase. The main themes are as follows:

a)   Knowledge and understanding of executive functioning needs

b)   Addressing executive functioning needs

c)   Multidisciplinary team approaches to therapy and support

d)   Collaboration

For each theme, I also provide the inclusive- and exclusive criteria for data selection, the sub-themes, and categories, followed by the presentation and discussion of the findings. I enrich and authenticate the findings of this study through participants' verbatim quotations. In the discussion, I reflect on the themes in terms of the literature.

5.4.1   Theme 1: Knowledge and understanding of executive functioning needs

Figure 5.1 outlines the themes, sub-themes, and categories that were developed from the analysis of data gathered from the semi-structured interviews, questionnaires, participant observations, and notes from my reflective journal.

THEME 1				
Knowledge and understanding of executive functioning needs				
Participants' knowledge and understanding of the executive functioning needs of foundation phase learners in special schools.				
Inclusive criteria All the information regarding executive functioning needs and all references to the English Home Language as that was the learning area for the participant observations.			**Exclusive criteria** Information with regards to barriers to learning not related to EFs, handwriting, and barriers in subjects other than English Home Language.	
Sub-theme 1.1				
Executive functioning needs of foundation phase learners in special schools				
Category 1.1.1	**Category 1.1.2**	**Category 1.1.3**	**Category 1.1.4**	**Category 1.1.5**
Understanding cognitive flexibility and shift needs	Understanding planning, attention, and inhibition needs	Understanding working memory needs	Executive functioning influence on teaching and learning	Executive functioning challenges that influence emotions
Sub-theme 1.2				
Responding to learners' individual needs				

Figure 5.1: Overview of emerged sub-themes and categories for Theme 1

In this section, I present the views of the participants with regard to their knowledge and understanding of learners' manifestations of executive functioning needs in the classroom and therapy room. For the context of this study, it is important to portray the prevalence of executive functioning needs of foundation phase learners in special schools (special schools for learners with specific learning disorders). It is also important to reflect on the participant's understanding of the influence that executive functioning needs have on learning and learners' general functioning.

5.4.1.1 Sub-theme 1.1: Executive functioning needs of foundation phase learners in special schools

All the learners enrolled at the three special schools, the research sites in this study, are diagnosed with neurodevelopmental disorders, namely SLD with impairment in reading, and/or impairment in written expression, and/or impairment in mathematics, ADHD, and ASD.

EF deficits are closely related to neurodevelopmental disorders, as discussed in Chapter 2, section 2.2.7. An occupational therapist explained: *"I've actually grown to see and understand that it (EF) really is a key feature that I think sets them apart from the age-related peers in mainstream schools."* (OTSAI: 186 – 189). This sub-theme identified the following categories: Understanding cognitive flexibility and shift needs; Understanding planning, attention, and inhibition deficits; and Understanding working memory needs.

5.4.1.1.1 Category 1.1.1: Understanding cognitive flexibility and shift needs

Cognitive flexibility and shift deficits imply that learners find it difficult to adapt to changes and select appropriate strategies to solve problems. OTSCI explained rigidity as a manifestation of cognitive flexibility deficits: "*They fixate on plan A although it does not work, they struggle to move on and think of an alternative."* (OTSCI: 26 – 28).

Two teachers in the study confirmed that the learners may have rigid thinking patterns and find it difficult to change: *"…the children with ASD, SLD, and ADHD, most of them are rigid and don't handle change well."* (GR1TSAI: 66 – 68). "*All the learners have a diagnosis like SLD, ADHD, and ASD, so most of them, if not all of them, have rigid thinking patterns, and they really struggle with change."* (GR2TSCI: 12 – 16).

Furthermore, GR1TSBI elaborated on the above view and explained: "*I think our kids are very rigid and very set in their ways, and if you change something just a little bit or they struggle, and they don't get something right, then it's really a big thing for them."* (GR1TSBI: 66 – 70).

Furthermore, a Grade 3 teacher participant described the difficulties learners experience adapting their behaviour to different situations and activities due to problems with the shift: "*That's also challenging for our children to make a shift from one activity to the next. A lot of them cannot make that move in their minds to know that they need to go to the next thing."* (GR3TSBI: 18 – 27). Another teacher participant confirmed this challenge that learners experience: "*It's very difficult for them to shift from one activity to the next."* (GR1TSBI: 73 – 75).

5.4.1.1.2 Category 1.1.2: Understanding planning, attention, and inhibition needs

Sufficient planning determines task approach strategies and how to execute a task. The ability to attend plays a crucial role in learning, and inhibition is the ability to inhibit and disregard irrelevant information and emotional regulation. These EFs and their effects on learning were discussed in Chapter 2, section 2.2.3. In the following selected excerpts, participants described how planning, attention, and inhibition deficits manifest in the classroom and in therapy.

OTSAI explained that learners who experience this challenge struggle to plan their movement and to see space and time in their minds: "*So they even struggle to plan movement. I think that's also part of executive function, which is like they can't see space and time in the mind. So, to think of a school day, or even a period or therapy session, can seem endless; they don't know when it's going to end*". (OTSAI: 152 – 153; 176 – 181).

OTSAI further elaborated on the effect of planning deficits not only on task approach strategies and the execution of tasks but also on goal-directed behaviour, which has a negative impact on their self-esteem and causes anxiety: *"Apart from the actual diagnosis or learning disability, I think the ability as you get older, to use executive functions to organise and guide your actions really sets you apart, in how you're able to approach your work and approach life. And I think that those skills really affect how they feel about themselves. Because it's not a matter of intelligence, they know what is expected of them. They know what it has to look like, but somehow, they're unable to do it."* (OTSAI: 191 – 208).

The participant explained that when learners experience such challenges, they experience much negativity, which affects their self-esteem: "*They feel forgetful or are called lazy or disorganised, and those are very negative things, and they feel and experience that they don't know how to start. They are anxious about these things. So, I think that really affects self-esteem in a big way. They are scared and anxious to try something new and to take up a challenge because they're not sure that they'll be able to do it. They experience a lot of problems with aim-directed behaviour because they know more or less what is expected, but to get the plan to reach that aim, they don't know how to do that.*" (OTSAI: 211 – 214).

Participants in this study pointed out that learners with EF challenges struggled to maintain adequate attention and struggle to follow instructions. For example, GR3TSCI pointed out that the majority of learners in her class have problems with sustained attention: "*All the*

learners in my class have various degrees of attention deficit. The learners in my class find it difficult to stay focused on the task at hand; they are easily distracted, and they struggle to follow instructions." (GR3TSCI: 23 – 24; 58 – 61). It is of concern as attention contributes to working memory and cognitive flexibility. This statement is confirmed by an occupational therapist in the study: "*Lack of attention causes a lot of disruption in the sessions. Attention is a big barrier influencing working memory and cognitive flexibility."* (OTSBI: 53 – 54; 56 – 58).

Participants explained the consequences of attention deficits for learners: "*All the kids in my class, those with SLD, ADHD, and I have two ASD kids, they all struggle with planning, attention, inhibition, and they are rigid and find it difficult to move on or understand and accept change."* (GR2TSAI: 148 – 152).

"*…it* (attention) *impacts the learners' ability to concentrate and complete tasks. If it is not addressed, it can hinder participation in activities altogether, especially in the classroom therapy setting. Often, our children get very lost amongst the other learners and get distracted."* (SPTSCI: 149 – 155).

The inability to stay focused is observed in different contexts, as mentioned by SPTSAI: "*I realised that not only in the individual sessions but also in the class group, it's hard for them to give that continuous attention."* (SPTSAI: 169 – 172). Sustained attention in the classroom and therapy sessions affects learning as well as task completion.

OTSCI explained that difficulties with planning affect task execution: "*Most of our kids struggle with planning, so when you give an instruction, you see that the connection between the brain and the body doesn't work. They hear but do not know how to execute."* (OTSCI: 118 – 121).

GR3TSBI explained the impact of inhibition and planning deficits by stating: "*Inhibition is something that does not come naturally to our children at all. Planning is really a big problem with our children, and then not to be too overwhelmed by the lesson with too many new concepts at the same time or activities at the same time."* (GR3TSBI: 83 – 84; 103 – 107).

5.4.1.1.3   Category 1.1.3: Understanding working memory deficits

Sufficient working memory is associated with academic success, as discussed in Chapter 2, section 2.2.3.1.1.

Participants explained that working memory deficits pose a significant challenge to the majority of learners. "*The working memory of most of the learners in my class is not good. It doesn't function optimally.*" (GR1TSAI: 1 – 5). This view is supported by OTSCI pointing out that: "*…most of them do have working memory difficulties.*" (OTSCI: 17 – 18).

Limited working memory capacity causes learners to feel overwhelmed when they are confronted with too much information. It also affects their ability to retain information. "*With our children, if you give them too much at once, it can be a bit overwhelming and they tend to forget…*" (GR2TSAI: 35 – 38). A teacher participant supports her opinion: "*Everyone struggles with working memory. So, it is important to understand each child and their barriers and their needs.*" (GR3TSAI: 5 – 8).

The replies that participants gave in response to the question of how common executive functioning needs are among learners in special schools are captured below.

"*The prevalence is very high. A lot of our kids have ADHD, ASD, and SLD, and all of those diagnoses have a big influence on executive functioning. Number one is attention, and working memory as well has a big influence. It is co-morbid to all the diagnoses.*" (SPTSCI: 183 – 188).

Another participant elaborated by pointing out that learners with executive functioning needs experience barriers in terms of sustained attention, self-regulation, and planning difficulties: "*All the learners in my class struggle with executive functions. They find it hard to stay focused, follow directions, and handle their emotions. On a daily basis, all the executive skills are skills that have to be recapped and upskilled to ensure optimal functioning. I have learners diagnosed with ADHD, ASD, Apraxia with verbal and motor planning difficulties, and learners with auditory processing disorder. All of them have difficulty coping and managing themselves. As I said, they all have problems with executive functions.*" (GR1TSCI: 56 – 69).

Participants pointed out that there is a high prevalence of executive functioning needs among learners in special schools. They observe EF deficits as co-morbid to learners diagnosed with specific learning disorders, ADHD, ASD, and developmental delays. This statement is confirmed by the Grade 1 teacher from school A: "*You know, I think it's very high* (the prevalence of executive functioning needs), *especially in a school for learners with learning disabilities like ours. But I think it's really very closely associated with the diagnosis we see*

in our school because they have developmental delays, struggle with abstract concepts, and there is a definite correlation with executive functioning deficits." (OTSAI: 249 – 254).

The fact that the majority of foundation phase learners in special schools have executive functioning needs influences their general functioning in the classroom, affecting their attention, resulting in, amongst others, incomplete tasks and inhibiting reactions to external stimuli. "*In a special needs school, all the learners struggle with executive functions. So, we've got disruptions and distractions, and incomplete work or poor work speed. So, it gives daily challenges."* (GR3TSAI: 205 – 209).

5.4.1.1.4   Category 1.1.4: Executive functioning influence on teaching and learning

Learning and academic achievement depend on sufficient EF (Karbach & Unger, 2014). EF directly influence reading, specifically reading comprehension, language development, written expression, handwriting, and mathematics (Becker et al., 2020; Blair & Razza, 2007; Kapa & Plante, 2015; Watson et al., 2016).

The aforementioned findings, as well as the link between EF and neurodevelopmental disorders, were supported by the participants. Additionally, they emphasised how EF affect learners' overall functioning in the classroom and how therapy has to address this.

SPTSBI indicated that EF have a significant impact on learning. Furthermore, she pointed out that there is a correlation between executive functioning deficits and neurodevelopmental disorders: "*The impact is vast. We need to concentrate on it and keep executive functions in mind in therapy. Without it, learning cannot take place. Executive functioning deficits are co-morbid to all diagnoses. It is a serious problem in learning disabled learners."* (SPTSBI: 67 – 69; 73 – 75).

GR3TSBI emphasised that the majority of learners with neurodevelopmental disorders also present with executive functioning needs and that the needs of the learners determine adaptive teaching methods and approaches. For example, "*The impact is quite severe. You can't just teach like you would teach in a normal* (mainstream) *class because most of the children have difficulty in most of the executive functions. They struggle all over* (with all aspects of executive functioning), *so it has a huge impact, not only on the scholastic work but also emotional and social, so it is far-reaching. My whole class has executive functioning needs. And they all have various degrees of needs. They all have executive functioning*

needs, no matter what their diagnosis is. So yes, there is a big prevalence in my class."
(GR3TSBI: 129 – 136; 149 – 151).

GR2TSAI commented on the impact of working memory and planning deficits on the general functioning of learners in a classroom by stating that: "*…they struggle with working memory and planning, and it has definitely a big impact on the school and the school day."* (GR2TSAI: 131 – 133).

OTSBI pointed out that impulsivity, which is caused by inhibition deficits, affects attention and working memory. She asserted that: "*Impulsivity also influences working memory and learning as such as they respond to all the external stimuli and their concentration and attention is very poor."* (OTSBI: 77 – 80).

GR3TSBI conveyed her opinion about the impact of working memory deficits on the retention of information taught by stating: "*Their working memory is very poor, so it is not something that comes easy for them. You'll also find you will teach them something today and tomorrow they won't remember."* (GR3TSBI: 1 – 6).

OTSCI stated that EFs have a significant impact on learners with learning disabilities. She further elaborated on the lack of concentration, which is the primary barrier to learning. If a learner cannot sustain attention and has a limited concentration span, it influences the retention and integration of information, and task execution and -completion are compromised because they cannot attend to all the information and instructions. She stated that: "*I would say executive functioning has a great impact, especially on our learners with learning difficulties. Number one, I would say, is concentration. I mean, all the executive functions work on concentration, which is why I say it is number one. If a child is not able to concentrate, they can't take in any new information. They are not able to retain information or carry it over to the next day. A lot of teaching in the class is built on previous lessons. Task completion is a big problem." "…the attention gets distracted, they cannot complete their tasks, and they miss instructions also because of working memory. They are missing instructions and getting half of it, so they don't know what to do. Tasks are not correct. They miss a lot of information and cannot remember from five minutes ago what they have heard. They struggle to block out distractions, they struggle with self-regulation, and it all impacts on their learning."* (OTSCI: 163 – 172; 174 – 182).

SPTSAI explained that planning difficulties severely impact task approach strategies with the result that tasks are incorrect and incomplete. She stated: "*I think with the planning, a lot of the learners have trouble initiating. And it is an executive function problem." "…the planning is difficult for them. Sometimes, you explain to them what the activity is about and what we're going to do, but then they still cannot visualise all of that, or they don't see the bigger picture. And now they look at you and don't know how to approach this even though you just laid out the steps.*" (SPTSAI: 262 – 266; 285 – 292).

GR3TSBI confirms the effect of planning difficulties by stating: "*…because they struggle to plan their environment, so you can't just take for granted that they know how to execute a task.*" (GR3TSBI: 108 – 110).

SPTSAI highlighted that due to cognitive flexibility deficits, rigid thinking also affects task approach strategies and causes, in some cases, resistance to executing a task. She said: "*…they are just comfortable with the old way of thinking and approaching a task. So that is challenging, especially when they are refusing to do the activity and resistant to approach a task.*" (SPTSAI: 68 – 70; 78 – 79).

5.4.1.1.5   Category 1.1.5: Executive functioning challenges influence emotions

The participants discussed how EF affect foundation phase learners in special schools' emotions in the excerpts that follow.

The point is made that insufficient working memory capacity and attention deficit impair information retention and recall, which causes learners to feel anxious or frustrated since they are unable to remember the instructions and feel overwhelmed. For example: "*Emotions also play a role as they become frustrated or forget what they need to do. The skills need to be done on a daily basis. Most of the learners struggle with executive functions.*" (GR3TSCI: 61 – 65).

When the routine is altered, or learners are faced with an unexpected shift, this is another factor that creates anxiety. Deficits in cognitive flexibility are the cause of this.

The Grade 3 teacher of School A pointed out the effect of unexpected changes in routine. "*They know the routine. And if I mix and match that, then you can see, especially the ASD kids, they become very worked up and upset.*" (GR3TSAI: 89 – 92).

Inhibition issues bring on impulsive behaviour, and there are reciprocal effects because on' learner's actions influence another's. For example: "*Our learners are very challenging in terms of all the different diagnoses in one class, and their behaviour is sometimes difficult because they will trigger each other.*" (GR3TSCI: 98 – 102).

Executive functioning challenges influence learners' academic achievement, emotional regulation, and social interaction. "*So, it's not only academic, definitely not only academic; it can be social behavioural.*" "*So regardless of their primary diagnosis, in the end, all of those diagnoses have similar things like their impulsive or social skills, emotional, how they deal with that. I see the deficits in all of them.*" (GR3TSAI: 221 – 223; 228 – 233).

Participant SPTSB summarised the above-mentioned as she wrote in her questionnaire: "*Learners cannot always control their emotions, monitor their behaviour, impulsive reactions, and adapt to change.*"

5.4.1.2   Sub-theme 1.2: Responding to learners' individual needs

The participants mentioned that most foundation phase learners in special schools struggle with executive functioning. The therapist's objective is to improve the learners' academic functioning to make the curriculum accessible. For example, SPTSCI said: "*…executive functioning is something that all our kids struggle with, and we have to work on that during therapy. If you want the child to be functional in a school setting, those are the executive functioning skills that they need to sit and listen and complete a task and to be able to learn, and you have to work on it in therapy.*" (SPTSCI: 190 – 196).

Participants agreed that it is important to be flexible and adapt teaching strategies to meet the needs of the learners. Some learners diagnosed with ASD experience problems with sensory integration. Too much sensory stimulation or a change in a routine affects their behaviour, which is the "domino" effect that the participant refers to. "*It is difficult to plan because not one day is the same. If a learner has a bad day, it can quickly look like a domino's falling. You have to know that it will most probably not be exactly how you planned the day. You have to be flexible and adapt to their needs and respond to them at the moment.*" (GR2TSCI: 98 – 105).

Furthermore, GR3TSAI elaborated on a flexible approach and adapted the lesson according to the needs of learners. She emphasised the significance of having knowledge of and an

awareness of the demands of the learners: "*…you got to modify the lessons…*" "*…different ways that I need to teach them and guide them with different aids, and you have to know what they need.*" (GR3TSAI: 11 – 15). SPTSBI confirmed that a flexible approach is necessary in order to respond immediately to the needs of learners: "*Many of the accommodation of needs of the learners are intuitive therapy. The therapist must be flexible and react immediately to the need of the learner.*" (SPTSBI: 37 – 40).

OTSCI expanded on a flexible approach, responding to the needs of learners as she observes it: "*…my therapy involves all the executive functions, and I am constantly working on it. I respond to a need when I see it. My sessions are child-directed, so I have my goals and planning, but if the child takes you in a totally different direction, then you go with his lead, obviously trying to reach your goals and guiding the child. That works much better than being rigid.*" (OTSCI: 155 – 162).

Learners are unique in terms of their executive functioning needs and require individual accommodation to enhance their functioning. In order to respond to individual needs as they arise, knowledge and understanding of EFs are required. The fact that each child is unique and has different needs is explained by GR3TSAI: "*…every child is different, and I need to take everyone into consideration.*" (GR3TSAI: 81 – 83).

Participant GR3TSCI added the importance of differentiating and adapting the curriculum to meet the needs of the learners. "*We try to accommodate our learners by differentiating and streamlining the curriculum by doing just the necessary. We spend a lot of time to recap, to repeat, to revise, and the time for that is always a challenge.*" (GR3TSCI: 105 – 110). GR2TSBI further elaborated by pointing out that not only the curriculum but also instructions and workload must be adapted to ensure that the learner achieves success: "*So we all try to accommodate that kind of learner in a way to simplify his instructions make his workload a little bit smaller and shorter so that he can catch up, …so I actually respond to each one's needs.*" (GR2TSBI: 355 – 359; 388 – 389).

SPTSA wrote in her questionnaire that she uses games as a teaching strategy in therapy to restrain anxiety. She gives positive feedback and acknowledges all attempts. She incorporates their interests, although this strategy works best in small group therapy sessions with only two learners. She allows time for them to express their frustrations or thoughts.

SPTSB answered her questionnaire about how she provides for specific needs in her small group and individual therapy sessions by writing: *Goals are adjusted to suit every child's specific needs. Each learner must respond to his/her level of functioning*.

Following are notes that I have made during a participant observation session, as well as from my reflective journal.

I observed participant SPTSA in a small-group therapy session. Two learners from Grade 3 were included in the group. In addition to having bilateral cochlear implants, one learner was diagnosed with a specific learning disorder with impairment in reading and written language. She completed a reading comprehension assignment that they found challenging in the classroom. They had to complete a written assignment based on the reading passage, but neither felt confident to start. SPTSA read the instructions again. She recited the first instruction and guided them with inquiries like:

- What do they inquire about?
- What should you do?

The learners were required to explain what is expected of them and how they intend to complete the work.

5.4.1.3   Discussions of Theme 1

In Chapter 2, section 2.2.7, I discussed the association between EF and various neurodevelopmental disorders, namely SLD, ASD, and ADHD. EF enable learners in the classroom to regulate their thoughts and emotions, focus their attention, plan their tasks, control, and retain and adapt the information to apply it according to various tasks (Watson et al., 2016). Cuperus et al. (2014) claim that the prevalence of EF deficits, with specific reference to inhibition, shift, working memory, and planning, is significantly higher in learners with language impairment than in their peers without it.

(a)   Knowledge and understanding of executive functioning needs

The participants' descriptions of the executive functioning challenges faced by foundation phase learners in special schools are consistent with what Watson et al. (2016) describe. Learners display disorganisation, struggle to use effective problem-solving techniques, battle

with self-control, and have difficulty remembering, analysing, organising, and applying pertinent information during classroom activities as well as task completion. One of the participants (OTSA) remarked that learners with executive functioning deficiencies are frequently viewed as incompetent, and Watson et al. (2016) corroborated this.

The participants emphasised the following difficulties experienced by the learners regarding cognitive flexibility and shift:

- Rigid thought processes make it challenging for learners to recognise that there are multiple ways to approach a given issue or that when one plan or strategy fails, they struggle to come up with a new one or choose the best course of action. This supports the assertions made by Green and Rathgeb-Schnierer (2020) that effective cognitive flexibility and shift enable learners to select the most effective approach to address a given challenge. Additionally, it keeps students from becoming accustomed to just one way.

- The participants also noted that many learners had trouble adapting to change. This claim is supported by Green and Rathgeb-Schnierer (2020), who opine that effective cognitive flexibility and shift skills are strongly related to learners' capacity to adapt to various contexts and scenarios.

- They have trouble shifting (moving on) from one activity or task to the next. According to Huizinga et al. (2014), learners who struggle with cognitive flexibility and shift problems frequently become trapped in one activity and find it difficult to move on.

All the cognitive flexibility and shift problems highlighted by the participants correspond with the literature discussed in Chapter 2, section 2.2.3.2.1.

The following are the planning challenges mentioned by the participants:

The planning impairments are also obvious in motor planning, which occupational therapists address. Learners struggle to organise not just their physical environment but also their thoughts in terms of task approach techniques and goal-directed behaviour.

The information listed above agrees with the literature. If students possess effective planning skills, they will be able to adhere to task requirements, understand how to approach a task,

and choose the best strategy to meet specific objectives (Gioia et al., 2015; Nouwens et al., 2021).

All participants agreed that most foundation phase learners at the three special schools exhibit attention deficits. They discussed how attention deficit disorder affected their ability to focus and complete tasks. Learners are easily distracted and struggle to resist responding to outside distractions. Additionally, their inability to suppress irrelevant information has an impact on this. Participants also said that poor inhibition abilities contributed to challenging behaviour.

The difficulties that learners experience due to working memory deficits are as follows:

- They find it challenging to retain and recall information
- They experience problems executing a task because they cannot recall the instructions, or only part of it, with the result that their tasks are wrong or incomplete. When learners are confronted with too much information, they feel overwhelmed, and it affects their emotions and functioning in class.

This is supported by Finch (2019), who claims that working memory can temporarily store and manipulate information. Additionally, it is said that sufficient working memory is necessary for following instructions and meeting social and academic expectations (Finch, 2019).

(b)   Impact of executive functions on teaching and learning

The complexity of the curriculum poses significant challenges for learners with SLD and calls upon sufficient executive functioning skills, such as planning, shifting, inhibition, working memory, and attention (Watson et al., 2016). One of the participants, SPTSB, mentioned that EF are comorbid to SLD and that the impact of EF on learning and teaching is severe.

The participants revealed that they are conscious of the executive functioning needs of their learners when they plan their classroom and therapy instructions based on the data gathered from the semi-structured interviews, participant observations, the questionnaires, and the notes from my reflective journal. Their therapies are reciprocal, promoting academic performance while making up for EF deficiencies. They accomplish this by fusing the therapeutic objectives with their understanding of the learners' requirements for executive functioning. Promoting optimal functioning in the classroom is, thus, a method of integrated

therapy. This coincides with Watson et al. (2016), who state that learners with executive functioning deficits require classroom evidence of structure, routine, and well-planned organisation to make provision for these needs.

The impact of EF on learning is discussed in Chapter 2, section 2.2.7. Executive functioning deficits associated with SLD, language disorder, ADHD, and ASD are discussed in detail. The literature findings discussed in Chapter 2 correlate with the information offered by the participants.

(c)   Impact of executive functions on emotions

The participants discussed how EF affect emotions. They referred to problems with suppression of emotional reactions, emotional regulation, and impulse control related to hot EF. Many participants discussed the fear learners feel when exposed to change, whether in their daily routine and structure or a new activity. These difficulties are confirmed by Huizinga et al. (2014), who found that learners with cognitive flexibility and shift challenges typically demonstrate distress when they are confronted by change.

EF are linked to emotional- and behavioural (re)actions in addition to cognitive tasks. Emotional control determines appropriate emotional responses in social relations and is connected to EF (Cuperus et al., 2014). In describing a study looking into self-regulation, Martins et al. (2016) refer to cool EFs – inhibitory control of attention behaviour and hot EF – managing inhibition of emotionally charged behaviour. The evidence proved that EF influence emotional understanding.

In this section, I reported on the findings of Theme 1 that emerged during the thematic analysis throughout the interpretation phase of this study. I presented insight regarding the *knowledge and understanding of executive functioning needs.* I made use of participants' narrative accounts and verbatim quotations to enrich and authenticate the results I presented. I presented the sub-themes and categories that emerged following a process of thematic content analysis to indicate the results I obtained. After presenting the results, I related them to the literature, validating the findings I obtained.

Following is the presentation and discussion of Theme 2, "*Addressing executive functioning needs".*

5.4.2   Theme 2: Addressing executive functioning needs

In Figure 5.2 below, I provide an overview of the inclusive- and exclusive criteria as well as the emergent sub-themes of Theme 2.

THEME 2				
Addressing executive functioning needs Participants explained their approaches to address the executive functioning needs of the foundation phase learners.				
Inclusive criteria All the information pertaining to the addressing of executive functioning needs			**Exclusive criteria** Information refers to the needs of learners in general (mainstream schools), as this study focuses on learners in special schools. The use and prescription of medication for attention deficit hyperactivity disorder (ADHD). All information pertaining to other types of learning needs.	
Sub-theme 2.1	**Sub-theme 2.2**	**Sub-theme 2.3**	**Sub-theme 2.4**	**Sub-theme 2.5**
Working memory	Cognitive flexibility (shift)	Attention	Planning	Inhibition

Figure 5.2: Overview of emerged sub-themes for Theme 2

Theme 2 captured the participants' account of how they address and respond to learners' executive functioning needs in the classroom as well as in therapy. Participants provided the information during the semi-structured interviews and questionnaires. I added the data gathered during the participant observations and my reflective journal.

Theme 2 can be described in terms of the methods the participants incorporate to address the executive functioning needs of the foundation phase learners who experience barriers to learning.

5.4.2.1   Sub-theme 2.1: Working memory

Participants from the three special schools in this study used different methods to support learners and enhance their working memory. As explained by the participants in the following excerpts, the strategies and therapeutic approaches to strengthen working memory are repetition, revision, and visual cues and associations. They highlighted the importance of linking new information to existing knowledge and multisensory teaching methods and explained that instructions must be short and precise.

The following are notes that I have made during a participant observation session. My notes illustrate the strategies incorporated by OTSA to develop and improve the working memory of the Grade 3 learners in a small group therapy session.

I observed a small group therapy session consisting of 3 Grade 3 learners of the occupational therapist at school A (OTSA). She explained to the learners what memory is by comparing it to a computer and why it is important for learning. She presented them with a tray of seven objects. They had to look at it and name the objects. She closed it, and they had to recall what objects they had seen. Afterwards, she guided them to reflect on the activity and name their strategies to remember and recall the objects. They came up with the following:

- They saw it
- They named it
- They heard the names of objects when others said it
- They could touch it
- They could use their fingers to count while naming the objects
- They could try again – repeat it
- They had to concentrate

OTSAI described the importance of repletion to enhance working memory: "*I focus a lot on repetition*" (OTSAI: 15). GR2TSBI confirms this "… *with working memory how to help them is by repetition*" (GR2TSBI: 10 – 11) and GR2TSBI added: "*Repetition is very important so we do a lot of repetition all day long.*" (GR2TSBI: 3 – 4).

Furthermore, OTSCI stated that "*A lot of repetition with our learners because they need that support.*" (OTSCI: 16 – 17). GR2TSAQ wrote in the questionnaire, answering how she addresses learners' working memory needs: "*Plenty of revision.*"

GR2TSAI elaborated that it was important to go over the information and to revise it throughout the school day: "*… I tried to throughout the day asked them if they can remember so just to go over it again and revise it again*…" (GR2TSAI: 11 – 13).

One benefit of repeating information is that it helps to carry over information to the schoolwork. This is the view of one occupational therapist: "*A lot of repetition must be done*

before you see the carrying over to functional school work" (OTSBI: 19 – 21). Furthermore, repeating information helps improve learners' working memory, especially when new concepts are introduced. For example, according to GR3TSCI: *"I use lots of repetition, and when I introduce a new concept, I do it with the whole class and then individually through various exercises."* (GR3TSCI: 1 – 4). This participant uses the strategy of repetition individually with the learner and the whole class.

The revision was another approach cited by most participants to help learners retain information and curb working memory problems. They emphasised the significance of revising and connecting new information or concepts to past knowledge. This strategy was explained by a participant, GR2TSCI: "*… I always revise previous work to establish what they can remember before I introduce new information."* (GR2TSCI: 5 – 8).

Similarly, participant GR1TSCI also uses linkages as a strategy to enhance working memory: confirmed by OTSBI saying that "*Each session is started by revising the previous session…"* (OTSBI: 12 – 14) and GR3TSAI supported the above-mentioned by stating: "*I try and link* "*I introduce new concepts by linking it to prior knowledge."* (GR1TSCI: 1 – 2), which is *whatever I'm teaching to something they already know."* (GR3TSAI: 33 – 34).

SPTSBI further highlighted that she needs to revise before a new lesson is taught: *"I need to build on that the next time I see them. So, I always go a little back and do revision".* (SPTSBI: 13 – 14).

GR3TSBI added that revision is important for consolidating the work taught: "*And then again consolidation at the end of every day and week."* (GR3TSBI: 16 – 17).

The third strategy that was mentioned by most participants was using visual cues and associations to help learners strengthen their working memory. For example, GR2TSBI explained: "*It is necessary for our learners to have visual prompts and associations that are actually obvious to help them to bring the things that you are teaching to their world."* (GR2TSBI: 27 – 31).

Accordingly, SPTSAI explained: "*But I found that if I have, like, a visible cue that I used in the previous session, then the ones that struggle will remember and recall what we did."* (SPTSAI: 44 – 47).

GR1TSCI stated that she includes demonstrations: "*I use associations and visual aids and demonstrations."* She explained: *"I use colour as an association. For example, in phonics, all the vowels are indicated in green, diagraphs or blends are indicated in red and long vowels in dark blue*" (GR1TSCI: 2 – 4; 7 – 10).

Participant SPTSCI also uses visualisation techniques as the learners tend to depend on visual cues. SPTSCI explained: "*We use various techniques in therapy to improve working memory, specifically visualisation. So, creating visual images of what was heard, such as stories. So, adding pictures to the stories. Our children here rely a lot on visuals … we do rely a lot on our visual schedules for our children*." (SPTSCI: 2 – 6, 13, 18 – 19).

The importance of incorporating visual cues and associations to enhance working memory is highlighted by two participants: GR2TSCI, who stated that" "… *and where possible I give them visual cues, like pictures…" "I always, or where possible, use associations and colour.*" (GR2TSCI: 4 – 5; 8 – 10), and GR3TSCI, who said: "*I start with a story so that the association can help them remember the sound or concept that I taught. I use songs, stories, pictures*…" (GR3TSCI: 8 – 9).

Establishing existing knowledge, what learners can recall about previously taught material, and connecting that with new information were other key ideas identified by participants as ways to support learners with working memory requirements. The participants clarified that practising previously taught material ensures it is retained and integrated with new material.

Participant GR3TSAI explained her strategy to enhance working memory is to connect previously taught information with new information: "*I try and link whatever I'm teaching to something they already know*." (GR3TSAI: 33 – 34), while OTSBI highlighted "…*so that they can link the new knowledge and skills with prior knowledge and skills."* (OTSBI: 14 – 16).

GR1TSCI confirmed that "*I introduce new concepts by linking it to prior knowledge*." (GR1TSCI: 1 – 2) and elaborated on that SPTSBI said, "*Building on existing knowledge with the new knowledge to make a connection."* (SPTSBI: 14 – 16).

My observations in the classrooms confirm the participants' views. An example from my observation notes demonstrates this:

I observed a phonics lesson in the classroom of the Grade 1 teacher at school A. The previous day, she taught the sound and letter "s". She started her lesson by revising the "s" sound, and then she asked the learners to build new words with the "s" sound. They had to build on existing knowledge to create words not used in the previous lesson.

A few participants mentioned factors such as short and clear instructions and listening skills to attend to when instructions are given to learners who experience working memory deficits. Learners with working memory deficits experience problems with the retention of information as well as information processing to execute tasks, as explained by participant OTSCI: "*…they miss instructions, also because of the working memory. Missing instructions, getting half of it so they don't know what to do. Tasks are not correct. They miss a lot of information and cannot remember from 5 minutes ago what they have heard.*" (OTSCI: 175 – 180).

OTSAI explained that "*It starts with the instructions, and work on good listening skills, so just to actually give them the information first, and then try to retain it*…" (OTSAI: 15 – 18). When giving instructions, simple language must be used, and it has to be broken up into short and simple steps. It is important to repeat instructions for those learners who have missed parts of it or cannot recall what they have to do. Some participants mentioned that they ensure the learners understand the instructions before executing a task by verbalising what they have to do. Participant OTSAI explained how she enhances listening skills: "*So really try to get them all to focus, I tell them that we listen with our ears, with our eyes with our whole body. And then I give them the instructions.*" (OTSA: 19 – 22).

The following is an excerpt from a class group observation of OTSA, as well as notes from my reflective journal:

This observation was in the Grade 3 class at school A. It was a class group session done by the occupational therapist. There were 12 learners in the class group. She gave the instructions but saw that some learners could not remember everything they had to do and how to execute the instructions. She assisted them by repeating one instruction at a time and guiding them to execute it.

The view of SPTSAI is that "… *the instructions must be short, and I make sure I have their attention.*" (SPTSAI: 14 – 15), and GR2TSCI added, "*I try to keep my instructions short.*" (GR2TSCI: 3 – 4). It seems that if instructions are structured, learners will not be

overwhelmed with too much information they may not understand or retain in their working memory.

GR2TSAI pointed the following out: "…*do it with them over again step by step, and with certain learners who struggle, I will break it down and practice until they can do it*." (GR2TSAI: 4 – 7).

This view was confirmed by SPTSAI, stating: "*I will break down the activity because a lot of them struggle to handle a lot of information at once. So, I break down the activity*." (SPTSAI: 22 – 25).

A few participants referred to a multisensory approach as a strategy to support working memory needs. As expressed by the participants, the multisensory approach involves a combination of visual-, auditory-, gross- and fine motor senses in a learning activity. Their rationale for utilising this approach is that it enhances information retention and helps the learners stay focused.

OTSAI reiterated that: "*…I think working memory starts in your body. So if you experience it with more of your body with more of your sense, then you retain that information better.*" (OTSAI: 103 – 106).

OTSBI further elaborated on the combination of visual perception and gross motor movements: "*I combine the motor and visual components.*" and explained that: *"They have to match visual movement with the motor movement, and they have to describe what they are doing. When they play a game, they must verbalise what they see on the picture, left must be red and right must be blue, and then put the blocks together*." (OTSBI: 4 – 11).

In terms of using a differentiated approach to teaching, in the questionnaire, GR1TSAQ answered the question of how she plans her class sessions in terms of the diverse needs of the learners, and she answered as follows: "*I make use of a differentiated teaching approach. I include the learners' senses and make use of multiple concrete and visual aids.*"

The following is an excerpt from my reflective journal based on my observations:

> In most of the classrooms, which include all the Grade 1 classrooms, the teachers and therapists made use of a multi-sensory approach. They incorporated pictures, movements, songs, and drawings, and the learners built their own words with sound cards and matched them with pictures.

5.4.2.2 Sub-theme 2.2: Cognitive flexibility and shift

Participants explained the importance of introducing change in a non-threatening manner to reduce anxiety. The approaches highlighted by participants are the use of games, and the learners were exposed to small changes playfully. For example, the same activity would be used but with different instructions. The participants further pointed out that as soon as the learner(s) showed signs of anxiety or discomfort, the status quo was maintained, and the change was introduced at a later stage again.

For example, OTSAI expressed the view that it was important to use different methods and to use a playful manner when different instructions are given: "*But sometimes I give the same activity, but I give different instructions. So, they would expect it and to do it in a certain way, but then today, I want you to do it in this way. So, in a playful way, they learn to be more flexible and do the same activity differently.*" She stated: "*They learn there are more ways to do the same thing and that it doesn't have to happen in a strict way. It's not I'm not disrupting the pattern of doing something or the schedule, but I'm changing little things. And hopefully, in that way, they find change less threatening.*" (OTSAI: 50 – 61).

She further elaborated on her expressed views by writing in her questionnaire that she supports learners' shifting difficulties by making use of a familiar and set structure, answering the question of how she supports learners in terms of shifting difficulties and sequence of activities. According to participant OTSAI, it makes shifting from one task to the next easier when the learners have to move physically from their desks to the carpet or outside the room. OTSAI shared her view in writing: "*Breaking up a session into clear parts and often following a set sequence helps to facilitate shifting between activities. Sometimes, these parts are also presented in different physical settings, moving from desk to carpet or having part of the session outside. The learners find it challenging to do a familiar activity differently, so we often practice that as well.*"

OTSCI agreed that physically moving from one activity to the next supports shifting needs: "*I also make use of tactile help, physical touch, where they physically have to move from one activity to another, and I will move with them, guiding them. Physical movement helps to get them out of that rut and to make shifting easier.*" (OTSCI: 40 – 44).

SPTSAI further explained how she introduces small changes to enhance cognitive flexibility in a playful manner to prevent anxiety. She expressed her approach: "*So I just start to introduce small changes. And depending on the outcome, maybe the next session, I will increase, or if it didn't go too well, then I'll stick to that one first. So I tell them that there are different ways to get to an answer or solve a problem, and we play lots of games doing the task in a playful manner, which also releases anxiety.*" (OTSAI: 82 – 90).

The following two excerpts indicate how anxiety is addressed caused by change. They described the importance of a non-threatening environment where learners are not scared to make mistakes. Incorporating play and using toys in different ways supports the development of cognitive flexibility in a relaxed atmosphere.

For example, GR1TSBI stated that "*We have to teach them that it's ok to make the mistakes and then how to make your plans.*" (GR1TSBI: 54 – 56), and according to SPTSCI "*…this is often done through play as well. For example, playing with a specific toy in different ways… so it allows for that flexibility.*" (SPTSCI: 31 – 33; 35 – 36).

Some participants agreed on the importance of providing the learners structure, routine, and predictability, enabling them to know what to expect and when one activity will end, and the next will begin. According to GR1TSBI, "*…routine is important, and I think you can use like pictures to show them this is how our day's going to go and also maybe not focus on one thing or too long.*" (GR1TSBI: 81 – 85).

GR1TSCI explained her approach: "*I use the same structure and teaching techniques so that it provides them with predictability.* (14 – 16) and similarly, GR2TSCI added, "*I try to stick to a routine and structure. I have a visual schedule in front of the class with the plan for the day so that there is a certain predictability. If they know what to expect, it prevents anxiety.*" (GR2TSCI: 17 – 20).

GR3TSBI pointed out: "*So you don't really deviate too much from your timetable, and you got to keep to it. You can't have too many things in one day.*" (GR3TSBI: 38 – 39).

GR2TSBI concurred that "…*to have structure so we all find that with our learners it is necessary. It has to be the same structure*." (GR2TSBI: 52 – 54), and OTSCI added to that "*…our ASD kids do well with routine and structure*." (OTSCI: 53 – 54).

GR2TSBI concluded, "…*so they know this is the programme for the week, and it helps them, you know. It helps them emotionally and cognitively, and it settles them, calms them*." (GR2TSBI: 87 – 91).

Visual schedules seem to be regarded as valuable to assist learners with guidelines about the activities and to inform them when to shift from one activity to the next, as explained by GR1TSAI: "*So I make use of visual cards, I've got many visual aids in my class. So, the daily routine, each activity, and everything that we're going to do is on there. They also have the visual schedule on the board. So, they know exactly what is expected of them*." (GR1TSAI: 71 – 80; 95 – 96).

The view of GR3TSBI confirmed the above-mentioned statement: "*You need to give them visual prompts or a visual routine. We use a visual routine that's either on the desk or on the board to show them this is going to follow so that they are not caught off guard. Then, introducing the next activity by using ques and a story and acting…*" (GR3TSBI: 21 – 25; 46 – 48).

GR2TSCI highlighted the following: "*We use pegs next to the activity on the visual schedule, so they remove the peg when they completed the activity and put it next to the following activity*." (GR2TSCI: 34 – 37), and OTSCI asserted that: "*So yes, visual schedules help a lot for preparation in terms of what we are doing and what we still need to do*." (OTSCI: 51 – 53).

Verbal guidelines and instructions are highlighted as a strategy to reassure and direct learners to shift from one activity to the next as well as enhance cognitive flexibility to counter rigid thinking.

OTSCI expressed her strategy as: "*Talk it through with them. What is the problem that we need to solve? What are the steps? What else can you do if plan A is not working? What is plan B? A lot of them struggle with this.*" "*So often I will prompt verbally*." (OTSCI: 21 – 25; 36).

SPTSAI pointed out, "*I will then just state the reason why it's important to move on. And maybe just explain to them the holistic picture, you know, this whole activity is three parts.*

And we cannot get to the third part if we don't move on to the next. And then I will help through prompting…" (SPTSAI: 106 – 112).

GR1TSAI elaborates on verbal instruction, stating: "*So I think if I verbalised and I showed them visually, they would be fine with it."* (GR1TSAI: 62 – 64).

Time management was another support strategy employed to address cognitive flexibility or shift needs. As explained by GR3TSAI, "*…time management is very helpful. So, most of the learners, especially the ASD kids, benefit from time management. They need to know when they must be done. So that helps with shifting to the next activity. I've got a clock in the class, and I will always say when the long arm is on that number and the short arm on that number, then you need to be done."* (GR3TSAI: 46 – 47; 62 – 65; 69 – 70; 93 – 96).

GR3TSBI confirmed by stating, "*…I will say okay guys, just five minutes left, and I also use the timer so in five minutes the alarm goes off, and we are going to move to the next assignment."* (GR3TSBI: 29 – 32). The following two extracts express the views on time checks.

GR1TSCI stated: "*I use countdown and time checks so that they know when to stop and when we are moving on."* (GR1TSCI: 21 – 23), and GR2TSCI mentioned, "*There is a big watch, and I tell them exactly how much time they have to complete the task."* (GR2TSCI: 23 – 25).

Another strategy described in addressing cognitive flexibility or shift needs was to chunk or break down tasks to enable learners to complete tasks that make shifting easier.

GR2TSAI expressed: "*I break down the task or instruction so we don't just give them a lot of work at once." "…we're going to do this now, and then we'll all do it together and then finish that."* (GR2TSAI: 29 – 31), and SPTSAI added, "*I will break down the activity, and then I make small changes to help them…"* (SPTSAI: 71 – 72).

SPTSAI explained that she provides the learners with choices as a strategy to address shifting needs. "*So, I give two options; you can choose which one they want to start with just to get them moving. I ask, 'Do you want to try it on your own or do you want me to help you?'"* (SPTSAI: 122 – 125).

OTSCI explains that she promotes cognitive flexibility by combining movement and concretely using equipment to discover different uses for the same apparatus: "*So they need*

a lot of guidance, and in the gym, we do it on a practical level where we have different equipment. So, we will discuss what are the different things that you can do with the equipment. Yes, we can sit on a swing, but what else can we do with the swing? Just to help them to get that flexibility going." (OTSCI: 28 – 34).

An excerpt from my reflective journal supports and summarises what the participants said.

In retrospect, after consulting all my observation notes from the class sessions, small group sessions, and individual therapy sessions from the teachers and therapists, it was clear that all the participants incorporated similar strategies to address the difficulty in the shift. Similarities were:

- There was definite time allocation for the tasks; some had clocks, and some counted the time and indicated it on the clock.
- There were visual schedules that indicated the different tasks and activities that they would do. They either ticked it off when completed or removed the card from the board.
- The books or activity sheets were in an inbox and put in the outbox when completed.
- There was a definite end to a task or activity – with a countdown, a warning of the time left to complete the task before moving on. The learners had to close the books, stand up, have a short movement break, and physically move to the next activity or task (they had to place their book or worksheet in the outbox).
- The learners who were distressed when they could not complete the task within the allocated time were reassured that there would be time to complete it or that what they were able to do was sufficient.

5.4.2.3   Sub-theme 2.3: Attention

SPTSCI emphasised the importance of attention for learning by stating: "*If they are not paying attention, they're not going to learn anything. We must make sure that they are paying attention from the beginning before giving their instructions."* She continues to describe the involvement of multiple senses: "*They learn to pay attention with their whole body. Use their eyes and look at the person who is talking to you, listen with your ears."* (SPTSCI: 40 – 43; 49 – 55).

OTSCI elaborated on sensory integration techniques to address attention deficits. "*I use a lot of sensory integration techniques to get them regulated and the attention going. Helping them to sit on a ball helps them to regulate themselves and pay attention because some of our kids are movement seekers and need deep pressure. In the classroom, we issue these equipment – balls and weight jackets and cushions help them to regulate themselves in the classrooms and pay attention.*" She further continued to describe the use of movement breaks as soon as it is detected that learners struggle to pay attention. She added that external stimuli in the environment must be minimised. For example: "*…as soon as you see that the majority of the learners are getting fidgety or staring out of the window, the attention is going, you know, to let them get up and do a little movement break to get their attention back. Managing their environment is important. If the learner is visually sensitive, the external stimuli must be taken away to prevent them from distraction. It can be introduced again one by one to build up tolerance because they have to learn to adjust to the outside world with visual distractions. They must learn to deal with distractions.*" (OTSCI: 56 – 68; 70 – 81).

SPTSBI pointed out the importance of managing external stimuli, time management, and breaking down the information: "*Minimising external stimuli. Activities are simple and to the point, and as the child progresses, it gets more complex. The child also sits where there are no distractions. When a learner is not focusing, his or her name is called. The activities are short and varied – a passive task, and as soon as the attention is distracted, then another activity is introduced. Timers to show them that they only have 20 minutes to finish it so they can pace themselves. Breaking up work into bite-size segments. Not giving them too much, little bit by a little bit. Incorporating learners' field of interest is important.*" "*So, you need to variate a bit and then mini breaks and attention grabbers.*" (SPTSBI: 28 – 30; 32 – 37; 65 – 69; 80 – 81).

GR2TSAI shared her view on focusing learners' attention by minimising external stimuli and added that activities must have a fun component to enhance attention. For example: "*…see their attention is somewhere else, you will obviously say the child's name to get the attention.*" "*I try to take anything away from him that can be a distraction. For example, if this colour crayon is bothering him, I'll take it away. So he knows just to focus on the work.*" "*You have to make the activity fun, or try to just be excited about it, so that they can also feel the excitement, and they can it. I think if they enjoyed that, you get their attention.*" (GR2TSAI: 53 – 55; 66 – 69; 73 – 77).

GR3TSBI confirmed the above by stating that she breaks work into smaller chunks. She also ensures that the lesson is interesting by making use of visual stimuli and variation. Furthermore, she pointed out that the content must be on the cognitive level of the learners: "*Break up work into smaller segments, not giving them too much. Incorporating learners' fields of interest is important, and work on their level. Visuals and variation in lesson presentation are important, as well as mini-breaks and attention grabbers.*" (GR3TSBI: 74 – 82).

SPTSAI confirmed the above-mentioned strategies and explained that she incorporates a multisensory method to focus learners' attention, and she also minimises external stimuli and noise: "*I will just try to minimise the background noise so that there are not many distractions, and if the attention does fluctuate, I just divert their attention back to the task. Keep eye contact, I find is important. And I just think that constant reminder to listen to my voice. We have the rule we listen with our whole body. So we teach them that if you listen, you listen with your eyes, you look at me, you listen with your ears, you listen to me. You focus on the speaker.*" (SPTSAI: 151 – 157; 186 – 192).

OTSAI reiterated the importance of limiting clutter and not confronting learners with too much information: "*…we try to limit distractions and help them to organise their space, so it's not cluttered. And you limit external distractions. And we don't expose them to a lot of information. If it's on a page, limit the information, limit the number of things I need to concentrate on one thing at a time, and then break it up into steps.*" (OTSAI: 82 – 91).

GR2TSBI pointed out the importance of breaks and physical activities in between tasks by saying: "*…to help them we give them mini breaks…like stand up run around the table those who can, for physically disabled learners, arms up and down little exercises or hug and squeeze yourself and then going back to work again.*" "*Or they work a while, and then I take them to the mat to do something practical and concrete, and then they go back to the tables to complete their work.*" "*After the little physical activity, they can focus again.*" (GR2TSBI: 145 – 149; 153 – 157; 173 – 175).

This perspective is confirmed by GR1TSAI pointing out that: "*If I see they're getting tired, we quickly get up. I give them a short break for three minutes. It's usually a by doing some physical activity for them to just move their bodies.*" (GR1TSAI: 104 – 105; 114 – 115).

OTSA wrote in the questionnaire that she addresses attention needs as follows: *"Maintain eye contact with the learners, give clear, concise instructions, and I ensure that they do understand what is required of them. I try to minimise background noise and distractions during sessions and limit the number of activities (manageable components). I redirect their attention to the task at hand when they get distracted."*

The following are notes that I have made while observing the Grade 1 teacher at school C (GR1TSC), and it also includes notes from my reflective journal:

There were 8 Grade 1 learners in the class. They were all diagnosed with either language- or global developmental delays or autism spectrum disorder. I observed a phonics lesson. The following strategies were incorporated to address attention deficits:

- In a calm and composed manner, say the learner's name to divert the focus and attention back to the task at hand.
- Provide movement breaks. For instance, she played a 3-minute action song video clip on the interactive whiteboard, and the learners sang along as they performed all the actions.
- While the learners were occupied with the written assignment, the teacher circulated and directed the focus of one learner playing with his pencil by touching his shoulder and calling his name.
- One of the learners was fidgeting in his seat while looking around and speaking. She put her hands on his shoulders as she stood behind him, and the deep pressure helped him regain focus.

5.4.2.4 Sub-theme 2.4: Planning

OTSAI describes her approach to addressing planning needs by teaching task approach strategies. She starts with the physical planning of movement: "*…help them understand how to approach a task. In individual therapy, we do a lot of body-centred work. We do the physical planning of movement and generating of ideas because it actually starts with generating an idea.*" She continued to describe using visual cues and colour associations to enhance planning and reduce anxiety. For example: *"We use colour to coordinate and sort and put things that make sense together. I also make use of visual cues and schedules. I have seen it so many times; the visual schedules help just to bring that anxiety down because then they can see the plan. So having that visual plan helps them tremendously to feel in control of*

what's going to happen, and they know where it's going to end and what will be expected of them." (OTSAI: 146 – 147; 152 – 157; 163 – 165; 168 – 175; 180 – 184).

SPTSAI further elaborated on the importance of providing structure and prompting addressing planning needs: "*…with the planning, I also just try to give them as much structure as possible. And also a lot of prompting or use whatever is familiar to them. I provide the structure and do the prompting and give the visual cues."* (SPTSAI: 266 – 269; 281 – 284).

OTSCI explained her multi-sensory approach and gave learners the opportunity to verbalise the steps of executing a task: *"I ask them to visualise all the steps of the movement, and because our learners struggle with planning, this helps. So, I teach them to break it up, talk about what they need to do, talk through the steps, and, where possible, make use of tactile stimulation, verbal and visual prompts, and do the sequence. I let them visualise the steps."* She continued to explain that her integrated approach starts with the familiar and continues to the unfamiliar, from a concrete level to the abstract. For example: *"I start with something they know and move from the familiar to the unfamiliar by slowly adding on. We do lots of obstacle courses, where they have to sit and plan it, draw it, then build it themselves and do it. We introduce novel activities to ensure that it is not splinter skills that they learn, but it is integrated."* (OTSCI: 10 – 12; 122 – 133; 138 – 142).

This aforementioned approach is confirmed by OTSBI, stating that: *"Planning is strengthened with visual cues and motor planning of physical movement activities."* (OTSBI: 51 – 52; 82 – 83).

GR1SAI explained her support of planning needs by adding that she limits instructions and provides visual guidelines in the workbooks: "*I give one instruction at a time. I prepare their books by putting dots next to the lines in which they have to write, and then slowly but surely, I let them mark the writing lines first with guidance and then independently. In the beginning, I do the task with the whole class by demonstrating on the board step by step what they must do."* (GR1TSAI: 190 – 196; 204 – 206; 211 – 212).

Furthermore, GR2TSAI highlighted the importance of an organised environment and not giving learners too much information: "*It's important to do it step by step, make sure that everything is organised on their desks and then really help them by breaking it down and not giving them too much to do at once."* (GR2TSAI: 117 – 120; 124 – 128).

GR3TSAI agreed with the previous participant and pointed the following out: "*I teach them step by step how to approach the task, how to execute the task, you give them the instruction, and now they have to plan how to execute that task. And the structure of the book is important. So, at the beginning of the year, there is a lot of guidance and structure support. And later on, I try to get them to independence. So, after I gave the instructions, we reflected. I can then see their thinking and planning process. It is important that they understand the instructions. If they are not sure what you want, they get anxious.*" (GR3TSAI: 164 – 172; 177 – 182).

In order to adjust the written assignments, GR3TSCI noted that she provides guidance and visual examples of what is expected. She issues brief instructions. Learners must explain verbally how they intend to carry out the assignments. This is how she described her support tactics: "*Learners who struggle to plan the execution of a task in their books get a worksheet, and the structure on the worksheet helps them. I give short instructions and let them do it with me while I talk them through it step by step. I let them explain to me what they must do and how they are going to do it after I have an instruction. I have examples on the board of how they have to do the task, so the visual examples and guidance help them.*" (GR3TSCI: 47 – 57).

SPTSCI added that visual schedules and mind maps are useful tools for addressing planning challenges: "…*they need visual schedules to know what they need to do and what is expected. We do brainstorming and mind mapping of the activities. We do it together on the board and then plan our thoughts while mind mapping and then do the written task. So, we have that plan of how to execute the task.*" (SPTSCI: 90 – 92; 101 – 110).

5.4.2.5   Sub-theme 2.5: Inhibition

Most of the participants referred to the behaviour aspect of inhibition. For example, GR1TSA explained that she uses reflection as a strategy to enhance inhibition: "…*if they're doing something that's not applicable… then I would ask them, 'Why do you think it's wrong?', not to make it a long discussion, or anything, but just to make them aware of the impulse control and what they are doing and that they are distracting the rest of the children.*" (GR1TSAI: 154 – 155; 158 – 162).

Similarly, GR2TSAI added that she acknowledges the feelings of learners, calming them down when they are upset and demonstrating appropriate manners to express feelings: "*I try*

to stay calm if a child is acting out or showing behaviours that are unacceptable. I talk them through it if it is an outburst and help them through it, calm them down, and then speak to them about it. I always tell my children it's okay to be angry, and it's all right to be upset, but we can't act out on it always. The way we handle it is very important." (GR2TSAI: 79 – 87; 90 – 93).

SPTSBI highlighted that she addresses inhibition challenges by delaying immediate gratification. She teaches learners socially acceptable communication skills, for example, to listen when someone is talking and not to interrupt: "*It also involves the teaching of social skills, listening to each other, looking the speaker in the eyes, only one talking at a time. That helps to teach them socially acceptable communication. Not immediate gratification of needs. Tell them to first think of the sentence structure and then to speak.*" (SPTSBI: 41 – 46). Similarly, GR1TSBI added, "*…they have to learn to be quiet when the teacher or anyone else is speaking.*" (GR1TSBI: 226 – 228).

SPTSCI shared the view of the previous two participants and stated that: "*…encouraging learners to wait and listen to the full instruction before answering. So, we often have to tell them to wait and have quiet hands before giving instructions. So, we do practice a lot of turn-taking in our activities.*" (SPTSCI: 77 – 84).

The following excerpts present similar views and elaborate on their semi-concrete approach of a traffic light teaching learners to think before acting. For example: "*We have a uniform system in the foundation phase to reinforce positive behaviour. We have a robot system, so if the behaviour is good, the learner gets a green card. When the learner does not do what is expected, a warning is issued in the form of a yellow card, and then when it is really bad, it is a red card. We do everything we can to avoid the red card because usually, that means a meltdown.*" (GR3TSCI: 33 – 42).

GR2TSCI elaborated on the explanation of the previous participant: "*We have a behaviour programme that all of us use. This helps because all the children are getting the same message from the teachers and therapists. It is a robot for every learner. The green circle indicates good behaviour, and the orange is beware. You must check yourself to avoid red, which is time out. We discuss triggers and how they can prevent their emotions from escalating to such an extent that they need time out.*" (GR2TSCI: 63 – 70; 76 – 79).

GR1TSCI stated, "*I give continuous reminders of good behaviour. It is done by using the robot. Green is good behaviour, orange is beware, and we try to avoid red, which is time out. I use an emotions card for self-regulation. They learn to express their emotions, and we try and avoid meltdowns. They learn what their triggers are. It is a positive reinforcement.*" (GR1TSCI: 35 – 43).

5.4.2.6   Discussion of Theme 2

According to Diamond and Lee (2011), teaching- and therapy-based treatments have been demonstrated to positively impact the development of EF, as was noted in Chapter 2, section 2.3.3. Because EF is composed of unique and connected structures with interrelated processes, the approaches, as reported by the participants, address more than one EF construct (Becker et al., 2014; Best & Miller, 2010; Cuperus et al., 2014). This is supported by OTSBI's justification, according to which she covers working memory, attention, planning, and inhibition in a single activity. She described EF as being "intertwined".

i)   Importance of repetition

The participants emphasised the value of repetition and revision. Every day, repetition takes place in various contexts, and as OTSBI highlighted, repetition is essential to improving the functionality of schoolwork. Repletion, in other words, enhances the internalisation of information and abilities. The information processing theory outlined by Galotti (2017) in Chapter 2, section 2.3.1.1.3 is connected to repeating information throughout the day in various contexts. The participants said that the information in the working memory is stored in the long-term memory through practice, analysis, and manipulation, as seen in the excerpts in sub-theme 1.1. Oberauer (2019) elaborates on the significance of repetition and claims that it greatly enhances working memory. Furthermore, Wirawan (2019) claims that repetition promotes the retention of information.

ii)   Visual cues, visual schedules, and associations

Incorporating visual cues as a method to address executive functioning needs refers to Vygotsky's theory of scaffolding. It entails the utilisation of pictures and concrete material to support needs, and as learning and skills are developing, the assisting material is progressively removed. Vygotsky believed that higher-order thinking skills, such as problem-solving, develop with the utilisation of signs, symbols, and language (Woolfolk, 2010). An

important factor emphasised by Vygotsky is that knowledge is transferred, and skills and thinking processes are developed in a social environment through interaction with an experienced and knowledgeable adult (Galotti, 2017; Woolfolk, 2010). This is the scenario in which all the learning and teaching described in this study occurred.

iii)   Link unfamiliar information to existing knowledge

The participants stated the importance of linking unfamiliar information (that has to be taught) to existing knowledge. As explained by the participants, this strategy is directly related to the zone of proximal development, as Vygotsky termed it. It refers to the interval between existing knowledge and skills mastered and unfamiliar information that must still be taught (Woolfolk, 2010). This is described in Chapter 2, section 2.3.3.

iv)   Instructions

The participants mentioned that instructions must be short, precise, and clear. The participants explained that learners have to be prompted step by step to execute tasks. This relates to scaffolding (Chapter 2, section 2.3.3). According to Kayi-Aydar (2013), scaffolding is utilised until the learner accomplishes the task and masters the skills. As described by the participants, the requirements for instructions also relate to one of the significant inferences of Piaget's theory: instructions must adapt to match the learners' developmental level (Leva, 2014).

v)   Multisensory method

The participants' input indicates that they use a multisensory approach to address learners' working memory, attention, and planning challenges. The employment of multisensory techniques is consistent with McGonigle-Chalmers' (2015) findings, in which EF the brain's relationship to incoming information via the senses, memory, and attention. Furthermore, according to Barutchu et al. (2017), multisensory integration considerably enhances cognitive and behavioural functioning.

vi)   Introduce small changes

Berenguer et al. (2018) explain that learners diagnosed with ASD and ADHD present problems, amongst others, related to cognitive flexibility. The most common behaviour manifestation of cognitive flexibility needs is rigid thinking patterns. Tuan (2012) refers to research suggesting that if learners use a word in different forms, it promotes more effective learning. Tuan (2012) further claims that if the same vocabulary is used in different contexts and activities, it enhances language ability, promotes the recollection of information, and expands memory processes. A number of participants described in section 5.4.1.2, sub-theme 1.2 (Cognitive flexibility and shift) how they address this by using the same activity but introducing different instructions, or the learners have to solve a problem by making use of different problem-solving strategies. The participants explained how they apply this strategy to enhance vocabulary by giving the same words taught in phonics. The learners have to use those words in different sentences.

vii)   Goal-directed behaviour

The explanations of the participants of school C on how they address inhibition needs coincide with the cognitive functional treatment therapy approach, as explained by Kim et al. (2020). The principles of cognitive functional treatment therapy relate in practice to the explanation of the GR2TSC, which described a robot system they follow at school C, where the green card indicates good behaviour, the orange card is a warning, and the red means time-out.

As described by the participants, all the interventions in the classroom or small group sessions took place in a social setting, which coincides with Vygotsky's sociocultural perspective on child development, as discussed in Chapter 2, section 2.3.3. Vygotsky proclaimed that a child needs the instructions of an adult to facilitate efficient learning. Learning, according to Vygotsky, is optimal in social settings (Woolfolk, 2010).

According to Piaget's theory, cognitive development takes place as children's logical reasoning improves, enabling them to obtain insight into their own environment. The theory implies that the succession of the stages is the same for all children, but not at the same pace. The implication is that teaching must be based on individual needs; therefore, small group and individual teaching is more effective than classroom teaching in addressing individual barriers (Leva, 2014). The small group and individual sessions which the

participants described in this study are thus supported by Piaget's theory of cognitive development.

In this section, I presented and discussed the findings of Theme 2, *addressing executive functioning needs".* In order to demonstrate rigour and trustworthiness, the narrative account and verbatim quotations of the participants were related to the literature.

In the next session, I will present the findings and discussion of Theme 3, "*Multidisciplinary team approaches to therapy and support"*.

5.4.3 Theme 3: Multidisciplinary team approaches to therapy and support

Figure 5.3 provides an overview of Theme 3, the inclusive- and exclusive criteria, the emergent sub-themes, and the categories.

THEME 3		
Multidisciplinary team approaches to therapy and support		
Multidisciplinary team members from the three special schools described their approaches to therapy and support of foundation phase learners with executive functioning needs.		
Inclusive criteria	**Exclusive criteria**	
All the information regarding executive functioning needs and all references to the English Home Language as that was the learning area for the participant observations.	Information with regards to barriers to learning not related to EFs, handwriting, and barriers in subjects other than English Home Language.	
Sub-theme 3.1	**Sub-theme 3.2**	
Integrating curriculum content with therapeutic goals	Therapeutic approaches	
Category 3.1.1	**Category 3.2.1**	**Category 3.2.2**
Advantages of integrating curriculum content	Class group therapy	Small group- and individual therapy

Figure 5.3: Overview of emerged sub-themes and categories for Theme 3

The multidisciplinary teams from the three special schools described their approaches and strategies to address the executive functioning needs of foundation phase learners.

5.4.3.1 Sub-theme 3.1: Integrating curriculum content with therapy goals

The therapists from the three special schools all incorporate the curriculum content with their therapy goals. They pointed out that the rationale for this integrated approach is to

compromise the inability of learners diagnosed with neurodevelopmental disorders to transfer and apply knowledge and skills from one context to another. For example: "*The curriculum content is integrated with the therapy. Whatever theme the teacher does in class, the speech therapist incorporates with her therapy. Many of the learners with specific learning disabilities cannot carry the skills and knowledge over, and that is why the therapy must address what they learn in class. The therapy develops skills and learns strategies that incorporate the curriculum content so that the learners can apply it.*" (SPTSBI: 98 – 108).

SPTSCFG explained their approach as they plan their therapy according to the curriculum content taught in class: "*We ask the teachers for their term planning, and according to the themes they teach in class, we plan our therapy to integrate the curriculum content so that the learners can transfer what they have learned in therapy to the classroom and to address the teachers' concerns.*" (SPTSCFG: 62 – 69).

OTSAFG pointed out that there has to be a connection between therapy and the academic work taught in the classroom. Learners with neurodevelopmental disorders find it difficult to reach the academic requirements, but if the same content they are exposed to in class is adapted to their functioning level in therapy and presented in a non-threatening manner, they can overcome anxiety and learning takes place more sufficiently. For example: "*What we are doing in therapy needs to be used as a connection to the classroom. I think the classroom and curriculum can be very anxiety-provoking for our children because that is the area where they struggle. So, if we can use that work in a playful way, in therapy on a level where they are, because they are not always at the level expected by the curriculum, but in therapy, you start at the child's level. So, you grade that information down to the level where they can achieve success, and play with it and interact with that information in a less threatening environment.*" (OTSAFG: 102 – 118). GR1TSAFG elaborated on that by adding: "*…within group sessions, I can see that the therapists looked at my planning. They incorporate what I'm busy with but in a more playful manner so that they can make the connection between what I'm teaching them and what the therapists are teaching.*" (GR1TSAFG: 132 – 139).

During the focus group discussion, SPTSAFG pointed out the importance of an integrative approach, combining the curriculum content with therapy goals. "She said, "*I think because they are required to develop academically and because there are certain goals that they need to reach academically, it's very valuable that we* (the therapists) *also zoom in on that to help*

the learners with the curriculum content. So otherwise, if we focus on something different, then they don't always see the connections." (SPTSAFG: 68 – 77).

GR1TSAI explained that the special school follows the CAPS curriculum, but it is necessary to adjust it in order to bridge the barriers to learning and to make it accessible to all learners with diverse needs. "*Even though we are a special school, we follow the normal curriculum, the CAPS curriculum, and we are allowed to adapt it according to our learners' needs."* (GR1TSAI: 393 – 396).

GR1TSAI described the communication between the teachers and therapists to ensure that there is reciprocity between the teacher and therapist in terms of the curriculum content. She explained it as follows: "*I send them* (the therapists) *my weekly planning on a Friday so that they know what I cover the week so that they can incorporate it into the lessons so that it's CAPS based but according to the child's needs."* (GR1TSAI: 289 – 293). This mode of operation is confirmed by GR3TSBI, who stated: "*So you know what the needs are that they* (therapists) *address, and they know what the curriculum is that we* (teachers) *do."* (GR3TSBI: 193 – 195).

5.4.3.1.1 Category 3.1.1: Advantages of integrating curriculum content

GR2TSCI explained that it is a challenge for learners who experience barriers to learning to follow the mainstream curriculum. She added that the multidisciplinary team is of utmost value in making the curriculum accessible. Her explanation is as follows: "*It makes it very challenging to teach CAPS, but we are fortunate to be a team."* (GR2TSCI: 96 – 98).

Participants emphasised that making the curriculum accessible to learners with executive functioning difficulties is the key benefit of integrating curricular content with therapy goals. Transferring information and skills from one setting to another is challenging for learners with neurodevelopmental disorders and executive functioning needs, but when the same content is taught in many contexts, academic performance and functionality are improved.

For example, OTSAI pointed out: *"…they can transfer the knowledge and skills from one context to another, something that our learners with special needs struggle with." "You know what they are doing in class, so you can help them in therapy to make the curriculum accessible." "But so this leads to generalisation from one context to another. And then, it makes sense, and they can apply that knowledge. They learn how to apply the same*

knowledge and skills in different contexts. So, that is how the integration of knowledge and skills takes place. This integrated approach is much better than a parallel approach in a clinical environment. Especially for our learners with developmental delays and learning disorders, especially the ASD learners who get the repetition of information in different contexts combined with different activities." She continued to explain the difference between the parallel approach and therapy in a clinical environment by saying: "*I've seen it in private practice. You have your therapy goals and work independently, but the child who is not neurotypical doesn't understand how everything is helping him at school. They struggle to apply what they have done in therapy, and there is thus no integration, and there is no transmission of knowledge or skills in different contexts.*" (OTSAI: 36 – 39; 233 – 235; 365 – 385).

OTSCI explained that by integrating the curriculum content with their therapeutic goals, they manage to make the curriculum accessible to enhance academic functioning and bridge barriers to learning. She explains: "*We all work together to get our learners functional to follow the curriculum. Our main goal is to make the curriculum accessible. If I see at the end of the term a child scored poorly in their home language, I will speak to the teacher and adjust therapy". "…I will also speak to the Speech therapist and hear what she is doing and talk about how I can supplement what she is doing.*" (OTSCI: 284 – 292).

OTSCI indicated that the collaboration between teachers and therapists is important because they use the same strategies which enable transference of knowledge and skills, not only because of the curriculum content used in therapy but also the repetition in different contexts. The multidisciplinary team members also learn from each other, contributing to best practices. She described it as follows: "*Our teachers are aware of all the techniques as well, and they have received training, so they are also using it so different people tell the kids the same thing to do. So, the kids are able to integrate it.*" (OTSCI: 106 – 111). She explained further that the teachers apply the knowledge they learned from the therapist in class. "*The teachers also know what the strategies are that we teach so they can implement it in class as well.*" (OTSCI: 237 – 239).

The advantage of an integrative approach, as opposed to a clinical or parallel approach followed by private therapists, is that learners diagnosed with SLD are enabled to integrate the knowledge and skills that they learn in therapy because the content is the same as in class and therefore, they can apply it. SPTSCI said the following: "*So you also find that you*

have more success, especially with the learners with specific learning disabilities who struggle to carry over their skills and knowledge and to work integrative and not parallel and clinical like in private practice." (SPTSCI: 139 – 143). OTSCFG further elaborated on the advantage for learners with SLD when the same curriculum content is used in therapy as taught in class. She said: *"We see that there is the transference of knowledge and skills, but it takes a lot of repetition, and because we are on the same page, we use the same strategies."* (OTSCFG: 78 – 82).

During the focus group discussion, OTSAFG pointed out that they have a holistic approach, combining curriculum content with therapy goals to address the specific needs of each learner. She highlighted the advantage of the integrative approach, namely the generalisation of knowledge as they apply it in different contexts. For example: *"…we always look at the child holistically, and you can't just teach them splinter skills. You have to look at the development, but you incorporate the curriculum into those sessions to make it relevant. And then you get the repetition for the child, you get a generalisation of knowledge, and they learn to apply the knowledge and skills that we teach in different contexts, the classroom and the therapy room."* (OTSAFG: 87 – 98).

5.4.3.2   Sub-theme 3.2: Therapeutic approaches

OTSAFG explained the therapeutic approach at school A: *"We assess the children to determine the goals, where we are heading with our individual therapy, what are the needs of each specific child, and then according to priority, we will see the whole class in a group session once a week, then we decide who in the class needs individual therapy. And then there are children who receive therapy in smaller groups if they can be grouped according to their needs."* (OTSAFG: 14 – 24).

GR2TSCI elaborated further on the therapeutic approach that they follow at school C. She said the following: *"The therapists work in our classes where they do class groups. They work in small groups and see individual learners who have very high needs."* (GR2TSCI: 113 – 117).

5.4.3.2.1 Category 3.2.1: Class group therapy

GR3TSAFG summarises the value of class group therapy: "*And there are so many children with high needs, and our therapists struggle to get to all the learners. That's why the class therapy once a week is so valuable.*" (GR3TSAFG: 366 – 370).

The fact that the therapists work in the classrooms allows them to observe the barriers to learning that learners experience. They are then able to address it in therapy. Furthermore, they adapt the work to the functioning level of the learners. GR2TSAFG explained it as follows: "*The therapists know exactly what the curriculum entails and the themes and everything the teachers are doing. So they meet them on the level where they are and enhance that with the therapy. The therapists are in the class, and they know exactly with what the learners are struggling and make sure what they struggle with in class and where to work on with the therapy. And I can see a very big difference.*" (GR2TSAFG: 178 – 189).

SPTSAI stated, "*So once a week, I have a class session.*" "*…I'm in the class with the teacher, which is really nice because she's got all the tools and all the resources, so they are now used to what she's got…*" (SPTSAI: 50; 115 – 118).

OTSCI explained classroom therapy and their collaborative multidisciplinary team approach by saying: "*We collaborate and do joint sessions as a multidisciplinary team. We also work closely with class teachers and develop functional goals in the classroom environment, which is, again, classroom therapy. Teachers choose to sit in.*" (OTSCI: 238 – 240; 243 – 247). She continued to explain the value of collaboration between teachers and therapists by saying: "*The classroom session also serves as a consultation period because the teacher will indicate a learner who is struggling with something and ask for advice.*" (OTSCI: 244 – 247). OTSCI highlights another multidisciplinary approach, as she pointed out: "*We also sometimes have combined sessions where I work with the speech therapist in the classroom.*" (OTSCI: 253 – 255).

GR2TSCFG further elaborated on the collaboration between teachers and therapists during the class group therapy. She emphasised that they learn from each other, resulting in the teachers applying the same strategies as they observed from the therapists. She explained it as follows: "*…the therapists come into the classroom and assist the learners with what they are struggling with. So, it's a hands-on therapy approach in the classroom. The teachers learn from the therapists, and the same strategies are applied in the classroom as in the*

therapy room." (GR2TSCFG: 70 – 77). During the semi-structured interview, GR2TSCI emphasised the advantage of working in collaboration. Her explanation is as follows: "*I must say we are very fortunate to have the therapists come into our classes. We learn from each other, and it helps to see what they do because we can then do the same. It helps the children if different people in different settings do the same with them.*" (GR2TSCI: 124 – 130).

SPTSAI pointed out the reciprocal learning between the teacher and therapist during the classroom sessions by saying: "*So it helps a lot, and I think if an outburst happens in the classroom, the teacher will always intervene. She has a way of handling it in the classroom, and then I will just observe. Should it happen in my individual session, then I know that's what I can do. That's how I should do it. So, we handle it in the same manner.*" (SPTSAI: 230 - 238).

GR2TSAI confirmed the reciprocal learning between teacher and therapist by stating that: "*…it's nice to see what is happening and how they do things and to ask them as well. How would you handle the certain situation?*" (GR2TSAI: 241 – 244).

OTSAI stated, "*In the class group sessions, we work more around the theme for the life skills. There is a lot of vocabulary again. So that is a bit of a different way to combine the two disciplines in a more experiential lesson, to broaden concepts and experiences.*" (OTSAI: 328 – 333).

5.4.3.2.2 Category 3.2.2: Small group- and individual therapy

Participant GR2TSB stated that there are not enough therapists in special schools to keep up with all the learners who need therapy, so they are compelled to see the learners in small groups for therapy. "*…they cannot see the learners individually because there are many learners and there are not enough therapists.*" (GR2TSBI: 576 – 579).

OTSBI indicated how she plans her individual therapy: "*If I work individually with a learner, I bring the classroom work to the therapy room and work on that.*" (OTSBI: 97 – 99).

During the focus group discussion, OTSCFG elaborated on the therapy approach followed at school C: "*The therapists have individual sessions, and we also have sessions where we go into the classes and we have sessions where we take the class and them as a whole.*" (OTSCFG: 1 – 5).

SPTSBFG explained that the therapists and teachers use the same themes as she explained: "*…we incorporate the curriculum content specifically in our group therapy where we use the same themes as the class teachers.*" (SPTSBFG: 88 – 91).

SPTSCI pointed out that the therapy strategies followed in the classroom sessions coincide with the individual- and small-group sessions. She said: "*I do a lot of classroom therapy, so when I go to the classroom, I use the same strategies that I do in my individual sessions, and some of my kids know what to do. So they do carry it over if you repeat it enough times.*" (SPTSCI: 100 – 103; 106 – 107). She continued by explaining that they observe the transmission of knowledge and skills taught in the small group- or individual sessions to the classroom. "*We can see they carry over the skills that they learn in the small group or individual therapy.*" (SPTSCI: 223 – 225).

Following are notes from my reflective journal that I have made after the focus group discussions:

I held the focus group discussion at school C on June 10, 2022. The multidisciplinary team members got along well and were comfortable with each other. It was obvious to me that they have a trusting working relationship. They collaborate closely. They're willing to share knowledge with one another. To align the curriculum content with their therapeutic objectives, the teachers share their plans with the therapist at the start of each term. One weekly class group therapy session is part of their treatment plan. Sometimes, a teacher and a therapist will teach together. While the teacher was giving instructions, the therapist moved among the learners and offered assistance where it was required. Two or three learners are in a small group therapy session. Individual therapy is provided for the learners with the highest needs.

I held the focus group discussion at school B on June 15, 2022. The multidisciplinary team members are familiar with one another and have worked together for more than eight years. Their conversation revealed a close and trusted friendship and ease with one another. They take a slightly different approach than school C. The therapists do not work in the classes. The teacher is not present when their class group therapy is conducted in the therapy department. Additionally, they offer small group therapy, in which no more than three learners are divided into groups based on their shared needs. They mostly treat high-needs learners individually. The therapists receive teaching plans from the teachers

through email on a Friday. They incorporate the curriculum content with their therapy goals.

I held the focus group discussion at school A on June 21, 2022. The multidisciplinary team members got along well with one another, and it was obvious from the positive ways they spoke about each other's roles that they had a strong working and trusting relationship. Once a week, the therapists conduct class group therapy sessions in the classroom with the teacher present and occasionally working with the therapist. The methods used at schools B and C are comparable to small group therapy sessions and individual therapy. Like schools B and C, the therapists also incorporate curriculum content into their treatment plans. The teachers send weekly planning schedules to the therapists.

5.4.3.3 Discussion of Theme 3

Multidisciplinary team approaches in terms of integrating curriculum content with therapy goals in the classroom, including small group- and individual therapy, are discussed based on the data provided by the participants.

(a) Advantages of integrating curriculum content and therapeutic goals

OTSA summarised the multidisciplinary team approaches in her questionnaire as she asserted that therapists use curriculum content to strengthen and improve essential skills. In therapy, learners' needs are addressed by incorporating the curriculum content in a non-threatening manner, which lessens anxiety brought on by demanding academic tasks in the classroom. According to all the therapists from the three special schools, using the same content in diverse settings and environments enables learners to integrate and transfer skills and knowledge. Wium and Louw (2013) confirm that therapists must be acquainted with curriculum demands to support learners while addressing their needs to empower them to meet the required learning outcomes.

According to the participants, another advantage of the integrated approach is that the team members are aware of what is expected of the learners, what is taught in class, and what needs to be addressed in therapy. The team collaborates closely since they have similar goals and methods for addressing executive functioning requirements. According to Villeneuve (2009), occupational therapists working in schools assist learners in meeting curricular requirements and give teachers the tools they need to use similar teaching

strategies. Wium and Louw (2013) also concur, pointing out that teachers must collaborate with occupational and speech-language therapists to integrate curriculum content and classroom interventions for learners who encounter learning obstacles.

The integrative approach, as defined by the participants, is consistent with the movement toward curriculum accessibility for learners who encounter barriers to learning in Romania, the USA, and Europe. Differentiation and adaptability are essential for helping learners in an inclusive curriculum, as is the flexible use of teaching and learning resources and methodologies (UNESCO, 2004; 2009; Vrasmas, 2014). As described by the participants, the instructional and curriculum modifications also coincide with guidelines stipulated in the CAPS document and White Paper 6, ensuring the accommodation of all learning needs (DoBE, 2011).

(b)   Therapeutic approaches: class group-, small group- and individual therapy

There is an increased demand for therapists to provide support to learners and teachers in special schools. In order to accommodate as many learners as possible, the expansion of support is necessary. Therefore, to meet the demand, small-group- and class-group therapy are progressively replacing individual therapy (Wium & Louw, 2013). This strategy follows the global trend for inclusive education: moving away from removing learners from a class for therapy and toward a system where learners are assisted in the classroom through individualised instruction (Fourie, 2017). Furthermore, it was evident from the descriptions of the participants that the learners are actively involved in the learning and teaching activities in class, as well as in therapy. This relates to constructivism in education, whereby an interactive teaching approach is promoted (Fernando & Marikar, 2017; Thomas et al., 2014).

In this session, I presented the views of the participants regarding the multidisciplinary team approaches to therapy and support. During the discussion, I related the findings to the literature.

Following is the presentation and discussion of Theme 4, *"Collaboration",* the emergent sub-themes and categories. The direct quotations of the participants enhanced the analysis and discussion. The findings were related to the literature and conceptual framework.

5.4.4   Theme 4: Collaboration

Figure 5.4 below provides an overview of the inclusive- and exclusive criteria, the emergent sub-themes, and the categories.

THEME 4					
Collaboration					
Participants explained the collaboration of the three multidisciplinary teams.					
Inclusive criteria			**Exclusive criteria**		
All the information about the role of teachers, occupational therapists, and speech-language therapists, the characteristics of a successful team, the challenges as well as learner discussions, and the individual support plans for learners.			Information referring to other multidisciplinary team members, e.g., social worker, school nurse, physiotherapist, and parents. Information referring to the limited space in special schools.		
Sub-theme 4.1			**Sub-theme 4.2**		
Functioning of teams			Types of collaboration		
Category 4.1.1	**Category 4.1.2**	**Category 4.1.3**	**Category 4.2.1**	**Category 4.2.2**	**Category 4.2.3**
Role of each team member	Characteristics of the multidisciplinary teams	Challenges	Informal discussions	Formal discussions	Individual support plans (ISPs)

Figure 5.4: Overview of emerged sub-themes and categories for Theme 4

The participants commented on the team members' collaboration and the team's characteristics. They explained the roles of team members, the challenges they experience, and the different types of collaboration.

OTSAI provided the following explanation of team members' reciprocity through cooperation: "*…we learn from each other. When I've observed the lesson, I also get some great ideas. I really feel there is collaborative learning amongst the team members."* (OTSAI: 325 – 328).

5.4.4.1   Sub-theme 4.1: Functioning of teams

OTSA described the team members' duties during the semi-structured interview as specialists with experience in their own professions who still work as a team, sharing information and abilities to support the learners. "*We all have our own discipline, and our*

knowledge base and our roles, but we work around the curriculum, and then you start to see how your knowledge and skills fit in, and at the end, I think that that helps to unite and, in the process, everyone's not pulling in different directions." (OTSAI: 264 – 280). She further elaborated on the reciprocity by saying: "*So everybody sees what the other team members are doing. So, we're working towards a common goal, but each one, each team member, also has their own therapy goals."* (OTSAI: 306 – 309).

One of the participants mentioned the cohesion in the team by saying: "*I experience that I am part of the team and involved in all the processes."* (GR3TSBFG: 233 – 235).

5.4.4.1.1 Category 4.1.1: Role of each team member

The participants pointed out that they acknowledge and appreciate each other's role in the team. They are willing to learn from each other, ask for advice, and share ideas. A Grade 2 teacher explained it as follows: *"I sometimes quickly ask the therapists who come to my class for advice. They, as therapists, will also talk to the teacher after they have seen a child and discuss with you what they have done or seen."* (GR2TSAI: 227 – 232). A speech therapist confirmed that they learn from each other: *"…the therapists learn a lot from the teachers because they are with the learners for a longer period of time."* (SPTSAI: 240 – 242). She emphasised that they work to share resources and employ similar approaches to support learners according to best practices. *"If a teacher uses a certain strategy or resource that works, then I will use the same to help the children to plan and move forward. We share with each other."* (SPTSAI: 269 – 272; 274 – 275).

In addition to having similar goals, team members often have individual therapy goals based on their own fields of expertise. As one of the Grade 1 teachers described it: *"Most of our goals overlap, but some apply to me in the classroom and some to the occupational therapist and others to the speech therapist."* (GR1TSAI: 339 – 342).

They discuss the issues that learners face and provide one another guidance from the perspective of their various professions and areas of specialisation. For example: *"After a therapy session, the speech therapist will tell me this one still struggles with this or that and give me guidelines on what to do. Or the therapist would ask me if there is something that I would like her to focus on in the individual session."* (GR1TSAI: 283 – 289).

One of the occupational therapists highlighted trust, respect, and good communication as characteristics to ensure sufficient teamwork. "*We know each other, respect each other's roles, and we have good communication. If there is a problem, we discuss it.*" (OTSBI: 125 – 127). One of the Grade 2 teachers expounded on it, stating that they are free to argue and debate a subject to promote the learners' best interests. *"We don't take offence when someone does not agree with you. We can discuss it. We are open to each other's opinions. We respect the fact that we have different perspectives of the learners."* (GR2TSCFG: 117 – 119; 122 – 126).

Another occupational therapist emphasised the importance of effective teamwork and dwelt on the importance of excellent communication. This is what she said: *"Good communication and we all have a good relationship with each other. We are all very open with each other."* The therapists are made to feel welcome in the classrooms, the occupational therapist continued, adding: "*We as therapists feel comfortable to go into a class. When we fetch a child, the teacher will ask other learners as well who experience problems without feeling I am disrupting or wasting your time.*" (OTSCFG: 108 – 116).

The aforementioned was corroborated by a Grade 3 teacher, who went on to explain that team members are open to receiving advice, eager to assist one another, and happy to share information and knowledge to advance the learners' interests. She described it as such: "*Everyone is easily approachable. There is an open-door policy, and you can get help and support from whomever you need it from. Everyone is willing to listen and to help.*" (GR3TSBFG: 257 – 259).

A speech therapist highlighted the importance of cohesion: "*We are all working together. Nobody is on an island.*" (SPTSBI: 89 – 90).

Participants commented that team members from various specialities do not make them feel intimidated. They acknowledge their shared objective and have mutual respect for one another. For example: *"The teachers do not feel threatened by the therapists, and we all work very well together. We are not working separately. We are all working together for a common goal."* (SPTSBI: 114 – 116). Similarly, a Grade 2 teacher added that the therapists are welcome to observe in the classroom. *"The therapists know that they are welcome at any*

time to just come into the classroom and observe a learner. We do not feel threatened by each other." (GR2TSCFG: 129 – 133).

The participants shared team traits that they find important, and this contributes to the effectiveness of their team(s). Every team member is valued, and they respect one another. They have open communication and mutual trust. They reciprocate and acknowledge each other's duties, which helps to build best practices. They maintain cooperation and value unity. For example: *"We appreciate each other."* (GR3TSBFG: 279). *"There is that willingness to help each other, to ask for help."* (OTSCFG: 136 – 137). *"We try and empower everyone with skills."* (GR2TSCFG: 141 – 142). *"We have respect for each other's fields."* (OTSCFG: 143 – 144). *"…we all work together. Everybody has a role to play. Nobody makes a recommendation without consulting the team."* (SPTSCFG: 2; 11 – 12). *"We communicate well and we support each other."* (GR3TSAI: 296 – 297). *"…always work together towards the best interest of the child."* (GR2TSAI: 177 – 178).

The importance of good and continuous communication is emphasised by a Grade 3 teacher and confirmed by another Grade 3 teacher: *"The multidisciplinary team needs to be in constant communication with each other so that we know we are moving to the same targets. Feedback is important."* (GR3TSAI: 249 – 253). *"Communication is very important. If there is a break in communication, the whole system kind of breaks down."* (GR3TSBI: 196 – 198).

Participants acknowledged feeling at ease approaching one another for advice or queries. For example: *"The teachers feel free to talk to us, to ask questions, and we ask them. At the end, we all have a common goal, and it's to help the child."* (SPTSAI: 331 – 335).

The shared objective of multidisciplinary teams to work in the best interests of learners, assist them in overcoming barriers to learning, and help them realise their full potential was another trait that was mentioned. For example: *"We are all really working together to help the children, and that's something very special about us."* (GR1TSAI: 426 – 429).

5.4.4.1.3   Category 4.1.3: Challenges

Participants agreed that time constraints and their full schedules are challenges that influence effective communication. For example, GR3TSBI mentioned that there is only enough time for quick feedback after a therapy session, not a thorough discussion. "*Time is a problem because they* (therapists) *come to talk to you, and you rush, and they rush, and then the*

quick feedback is not a thorough discussion." GR3TSBI: 207 – 212). Participant OTSA elaborated by saying: *"…communication sometimes is a problem because we cannot find the time to get together."* (OTSAI: 387 – 389).

A Grade 2 teacher mentioned that their full schedules pose a challenge for sufficient time for discussions: *"…everybody really has a full schedule. I think time is the biggest challenge."* (GR2TSAI: 202 – 203). Another participant elaborated on the effect the limited time has on communication, as she pointed out: *"Time is the biggest challenge with regard to miscommunication. It happens, but it is not intentional."* (GR1TSAI: 402 – 405).

Another teacher agreed that they do not have enough time for formal discussions but that informal feedback helps to ensure that everybody is up to date with the progress and needs of learners. She stated: "*We as a team experience time as a problem to meet and have formal discussions, but the informal meetings help a lot. After a therapy session, when the therapist brings the learner back to class, she quickly gives feedback or asks how he is doing in class, and we are then both aware of what to do.*" (GR3TSCI: 112 – 118).

5.4.4.2   Sub-theme 4.2: Learner discussions

The value of learner discussions was pointed out by a Grade 3 teacher during a focus group discussion, saying that the discussions not only contribute to her knowledge and best practice but also enhance her professional growth. "*I as a teacher need those discussions because I learn so much. Not only about the learner, but I grow professionally, and I can use that with other learners in my class as well.*" (GR3TSBFG: 235 – 239).

Although learner discussions have scheduled times, they can be established at short notice if necessary. Formal discussions occur when the entire team plans to meet, while informal discussions occur when only a few team members get together. For example: "*We have set dates for our case discussions every second week, but sometimes there is a need identified by a teacher that must be discussed urgently, and then a team meeting is arranged. It is not always formal meetings. We also have informal meetings where we discuss concerns that we experienced that particular day.*" (GR2TSCFG: 83 – 91).

The OTSAI defined the reciprocal learning process as the benefit of learner discussions as follows: "*When we have a learner discussion, and we can hear the other disciplines' point of*

view, what they're working on, what they're finding, then you also have an idea how you can incorporate that." (OTSAI: 283 – 287).

The following are notes from my reflective journal regarding the different approaches to learner discussions at the three special schools.

Learner discussions happen once a week at school A. Any team member who is concerned can refer learners. The psychologist facilitates the recommendations by creating an agenda. Each week, two to three learners are discussed. The psychologist records the agreed-upon interventions on the ISP after the discussion.

School C adopts an analogous strategy.

Team members at both schools regularly communicate with one another in what is referred to as informal chats.

School B has just one formal learner discussion, which takes place at the beginning of the school year when the ISP is created. They hold unofficial meetings and conversations throughout the year.

My notes regarding the approach to learner discussions at school B are confirmed by the Grade 2 teacher, who said, "*…we have case discussions at the beginning of the year where the whole team discusses the learner, the diagnosis, barriers, and set goals. Before we had the team discussion, every team member had a chance to evaluate the learner, then we sat together and discussed what everyone found, and we decided on the plan."* (GR2TSBFG: 51 – 58).

5.4.4.2.1 Category 4.2.1: Informal discussions

Not all informal discussions take place in a team context. During the focus group discussion, the occupational therapist explained that she sometimes consults the speech therapist to discuss a particular problem she observed, or vice versa. For example: "*We consult each other individually also. If I see a child doesn't understand instructions, I will consult with the speech therapist, and when she sees something about the child that concerns me, she will discuss it with me."* (OTSBFG: 92 – 99).

The informal discussion takes place when the therapist takes a learner back to class after therapy. The teacher gives feedback about the learner's functioning in class. In some cases, the therapist draws the teacher's attention to a particular problem and gives guidelines on how to support the learner. Sometimes, the therapists will request to do a class observation to get a better understanding of the learner's functioning and needs. For example: "*Other than the regular formal meetings, there are constant informal discussions. When we take a child back to class or fetch a child, we quickly give feedback to the teacher. You know, I saw he struggles with this, and maybe you can keep an eye on it and give me feedback, or you can try that and see how it works. Or we will ask to do a classroom observation and schedule a time for the observation.*" (OTSCI: 215 – 223).

The above mentioned is confirmed by a Grade 1 teacher who said: "*…we also have informal discussions like after a therapy session the therapist will quickly give feedback or tell me what to look out for.*" (GR1TSAI: 335 – 338).

5.4.4.2.2   Category 4.2.2: Formal discussions

The multidisciplinary team's main purpose is for the learners to be fully functioning in the classroom, but each team member also has personal treatment objectives. A formal multidisciplinary team meeting will cover the subject of goals and an ISP. This is explained as follows by a speech therapist: "*We discuss with each other our common goals. The goal is for the learner to be fully functional according to his or her own potential. This is all decided in a multidisciplinary team meeting.*" (SPTSBI: 86 – 89).

A formal multidisciplinary team meeting is held when a teacher or therapist is concerned about a learner. The team decides on a plan and sets goals and a time range after discussing the difficulties the learner is experiencing. On the ISP, all of this information is recorded. For example: "*We also have formal meetings which involve the whole team. At that meeting, an ISP is drawn up or updated with the discussion of the problem, the learner experience, the plan and strategies, the goals, and the timeframe before it must be revised again.*" (GR3TSCI: 86 – 94).

An occupational therapist confirmed the above-mentioned and elaborated that they have weekly discussions about the therapeutic interventions needed to address the barriers to learning and decide on the therapy that must be done in the classroom to assist the teacher and support the learner. "*We have regular meetings every Wednesday where we discuss the*

high-needs learners. We discuss what the issues in class are, what therapeutic interventions are necessary, what therapy the therapist can do in the classroom, and which therapists will be involved. We discuss how the therapists can assist in class and what the teacher can do differently from a therapeutic point of view to assist the child." (OTSCI: 203 – 211).

At the conclusion of each school year, formal meetings take place where information about the learners is shared with the teacher who will teach them in the following grade. GR2TSBFG pointed out that: "*At the end of the year, we have meetings with the teachers who will have the learners in the next year. The therapists are also part of those discussions where we hand over the information to the next teacher."* She went on to say that receiving crucial information about therapeutic interventions and barriers to learning that learners face helps the new teacher be prepared. "*We will then discuss what was being done to address the barriers to learning, but the teacher will have all the details on the ISP."* (GR2TSBFG: 145 – 151).

5.4.4.2.3 Category 4.2.3: Individual Support Plan (ISP)

According to the participants, the ISP is a working document listing the intervention plans, goals, deadline for revisions, and responsible specialists. The ISP is accessible to any team member working with the specific learner. For example: *"…The ISP functions as a working document and is accessible to everyone who deals with the specific learner."* (GR2TSCFG: 32 – 34).

A Grade 2 teacher confirmed the above-mentioned and stated: "*We use the ISP as the basis to share the needs and goals. All our interventions are written on the ISP."* (GR2TSCFG: 104 – 107). Furthermore, a Grade 3 teacher elaborated: *"The ISP is a working document, and all the team members have access to it. It includes all our strategies and goals and who is responsible for the timeframe."* (GR3TSAI: 269 – 272; 276 – 277).

A speech therapist explained that all the multidisciplinary team members at school B assess a new learner, and feedback is given during a team discussion. Their individual- and common goals are stipulated in the ISP. "*When the child is assessed, we give feedback, and we compile an individual support plan. We decide on our common goals and our individual goals. We all work together towards the common goal, even though it is from different disciplines."* (SPTSBI: 79 – 84).

Participants explained the value of the ISP during a focus group discussion as they mentioned that all the interventions are stipulated in the ISP, and all the team members involved with the learner have access to it. That ensures that everybody knows exactly what is done and what the goals are. For example: "*We all keep up to date with our notes on the ISP. What is really helpful is when you have a learner who experiences a certain problem, you can go back and read what was done the previous year to address that problem.*" (GR1TSBFG: 134 – 139). The speech therapist continued to explain that the ISP is valuable and informative, especially at the beginning of the year when the teacher is not familiar with the barriers that each learner experiences. "*I agree, especially at the beginning of the year, the teacher can read the ISP and know exactly what was done and who the team members were that was involved with the learner.*" (SPTSBFG: 140 – 144).

5.4.4.3   Discussion of Theme 4

(a)   Collaboration

Collaboration between teachers and support services to address barriers to learning and support learners who have special educational needs is based on the inclusive educational guidelines stipulated in the policies, such as White Paper 6 (Nel et al., 2014). Hernandez (2013) describes collaboration as "co-labour", which means "working together" (Hernandez, 2013, p. 482). All the participants emphasised that teamwork and collaboration contribute to the efficiency of multidisciplinary teams.

(b)   Multidisciplinary teams

Participants' descriptions of how the multidisciplinary teams functioned are consistent with Saint-Pierre et al.'s (2018) definition of how a group of people with comparable competence cooperates while pursuing common objectives. In order to address the demands of the learners, professionals collaborate and share their knowledge and skills in order to work as a team rather than as individuals (Barbra & Mutswanga, 2015; Cauevas et al., 2012).

(c)   Individual support plan (ISP)

The participants brought up the fact that every learner at the special schools has an ISP. The ISP was created as a working document following learner assessments and discussions. This strategy follows the trend in the USA, Canada, Austria, Australia, and New Zealand,

where learners with special educational needs are evaluated and educated according to their ISP in order to fulfil their unique demands (Fourie, 2017).

5.5   SUMMARY OF THE CHAPTER

In this chapter, I presented and discussed the themes that emerged from the thematic analysis of this study, namely: Knowledge and understanding of executive functioning needs, Addressing executive functioning needs, Multidisciplinary team approaches to therapy and support, and Collaboration. The narrative portrayals and verbatim quotations of the participants presented enriched and authenticated the results I presented. I analysed and discussed the results against the background of the literature study and the conceptual framework of this study.

Chapter 6 is dedicated to the findings, conclusions, and recommendations of this study.

CHAPTER SIX

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

6.1 INTRODUCTION

Chapter Five presented and discussed the study's findings after analysing the data generated using semi-structured interviews, questionnaires, participant observations, focus group discussions, and notes from my reflective journal. I considered the findings given the literature study and conceptual framework of this study to gain an understanding of the therapeutic approaches followed by the multidisciplinary teams addressing the executive functioning needs of foundation phase learners at three special schools in Cape Town, South Africa.

In this chapter, I summarise the study and answer the research questions. In addition to that, I discuss this study's contributions to research and practice in the field of Educational Psychology. Thereafter, I outline the strengths and limitations of this study. Finally, I make recommendations for practice and research in education.

6.2 SUMMARY OF THE STUDY

The study aimed to understand and identify multidisciplinary teams' therapy approaches and strategies to support learners in the foundation phase with their executive functioning needs. This approach seeks to make the curriculum more accessible and to bridge barriers to effective learning.

I provided a thorough description and interpretation of the participants' experience, knowledge, and viewpoints regarding the executive functioning demands of learners in special schools by utilising a qualitative research approach. Furthermore, the qualitative approach allowed me to use a variety of data collection techniques to address the research questions. Data was collected through questionnaires, semi-structured interviews, participant observations, and focus group discussions and complemented with notes from my reflective journal (Cohen et al., 2018; Creswell, 2013; Creswell & Poth, 2018; Rahman, 2017). The context of this study necessitated the use of a multiple case study design in which the three multidisciplinary teams serve as the three cases. Participants and research sites (three

special schools) were purposefully chosen because of their extensive knowledge and expertise as well as the characteristics of the special schools as they pertained to the purpose of this study (Patton, 2002). The interpretivist paradigm was selected for this particular study because its central theme is social interaction, in which the participants could create their surroundings and attach meaning to them (Bailey, 2007; Smith, 2015).

The data were analysed through the thematic content analysis method. Four themes, with sub-themes and categories, were generated from the data analysis. The four main themes were (1) Knowledge and understanding of executive functioning needs, (2) Addressing executive functioning needs, (3) Multidisciplinary team approaches to therapy and support, and (4) Collaboration. During the data analysis process, I conducted member-checking by revisiting the participants to verify my interpretation and analysis. This member-checking enhanced rigour and the study's credibility. I provided the participants with the transcribed data for their approval. The verbatim quotations of the participants were analysed and related to the literature study, Chapter 2, and the conceptual framework, Chapter 3.

6.3   FINDINGS ACCORDING TO THE RESEARCH QUESTIONS

This study aimed to understand and describe the therapeutic approaches and strategies employed by multidisciplinary teams that work collaboratively to address the executive functioning needs of foundation phase learners. Such an approach aims to enhance accessibility to the curriculum and overcome barriers to learning. This coincides with the core principle of inclusive education: quality education for all and supporting learners to reach their full potential.

I outlined the research goals and objectives for this study in Chapter 1. The primary research question, "How do collaborative multidisciplinary teams approach therapy and support to address the executive functioning needs of foundation phase learners in special schools?" will be addressed in this section as I address the secondary questions and objectives.

6.3.1 Addressing secondary research questions

6.3.1.1 *What collaborative multidisciplinary team approaches are employed in the foundation phase in special schools?*

Objective: To explore the different collaborative multidisciplinary team approaches in the foundation phase of special schools.

The participants emphasised that there must be a link between therapy and the academic material covered in the classroom. The academic requirements can be challenging for learners with neurodevelopmental disorders, but if the same material they are exposed to in class is modified to fit their functioning level in therapy and presented in a non-threatening way, they are able to overcome anxiety, and learning occurs more effectively. Participants stressed that the main advantage of fusing curriculum objectives with therapeutic objectives is that it makes the curriculum accessible to learners who struggle with executive functioning. Although it might be difficult for learners with neurodevelopmental disorders and executive functioning issues to transfer knowledge and abilities from one environment to another, academic performance and functionality are enhanced when the same material is taught in many contexts. Collaboration contributes to multidisciplinary team members benefiting from one another's knowledge, which advances best practices.

There are not enough therapists in special schools to care for everyone who needs therapy, and therefore, small-group- and class-group therapy approaches are utilised to address the needs of more learners. This practice is also in line with inclusive educational practices, which are to render therapeutic services in the classroom. The therapists' involvement in the classrooms allows them to see the obstacles learners face when trying to learn. They can then address it in therapy. Additionally, they adjust the work to the learners' level of functioning during the therapy sessions. There is reciprocity in the methods, strategies, and approaches the multidisciplinary team members follow, which enhances teaching and learning practices.

Two or three learners are grouped for small-group therapy based on similar needs and learning barriers. It is typically learners with more complex needs requiring more frequent therapy sessions and more individualised care than just once a week in the classroom. The therapy room is where the small-group therapy is conducted. Individual therapy is offered to learners with a serious need for occupational therapy and/or speech-language therapy. The

small-group therapy is usually conducted once a week. In contrast, each learner who requires individual therapy is seen twice a week over and above the small-group- and classroom therapy. The methods employed and the content taught in the classroom are the same as those used in small-group and individual therapy to enhance academic functioning.

6.3.1.2 What are the executive functioning needs of foundation phase learners in special schools?

Objective: To determine the executive function needs (manifestations) of foundation phase learners in special schools.

According to all the participants, the three special schools' foundation phase learners had a very high prevalence of executive functioning needs. EF is intimately related to neurodevelopmental disorders, which affect learning, emotions, general functioning, and academic performance in the classroom, as addressed in Chapters 2 and 5. Deficits in EF directly impact how learners behave in the classroom, leading to issues with inattention, incomplete tasks, controlling internal and external distractions, and trouble responding to change. These named barriers are related to attention, inhibition, and cognitive flexibility needs. Following are the executive functioning needs of the foundation phase learners as experienced by the participants.

(a)   Cognitive flexibility and shift needs

It is challenging for the learners to adjust to change and select and use the proper problem-solving techniques. It is common to see learners with rigid thought processes who obsess over a single task, activity, or solution to a problem even when it fails. Rigid thought patterns influence task approach tactics and, in some situations, create resistance to carrying out a task. When the time allotted for an activity has passed, and the task at hand is still unfinished, they find it extremely tough and challenging to go on to the next one. Some learners are unable to finish the assignment and move on, which frequently leads to a meltdown. Anxiety arises when the routine is disrupted, or learners encounter an unexpected change.

(b)   Planning needs

Problems with planning are observed in difficulty with task approach strategies and the execution of a task. Planning needs also manifest in the physical planning of movement and

time. Learners find it difficult to plan the time allocated for completing a task. Furthermore, it affects goal-directed behaviour.

(c)   Attention

The symptoms of attention deficiencies include trouble focusing on the task at hand, maintaining attention long enough to complete a task, and having trouble retaining and recalling information. Learners struggle to maintain sufficient attention and, therefore, experience problems following instructions. Working memory is impacted by insufficient attention. In all three special schools, the majority of foundation phase learners struggle with attention deficit in varying degrees.

(d)   Inhibition

Inhibition needs of the foundation phase learners in special schools are described in terms of inhibiting internal- or external stimuli to concentrate and focus on the task at hand, eliminating irrelevant information, and concentrating on the essential information. It is also described as inhibiting undesirable behaviour usually caused by impulsive behaviour, which causes reciprocal behaviour problems, as one learner's action influences another. Learners who experience difficulty with inhibition often feel overwhelmed, especially when confronted with multiple instructions and external stimuli that distract them.

(e)   Working memory

The majority of foundation phase learners at the three special schools struggle with working memory. A limited working memory capacity causes information overload. The obvious symptom is the inability to remember instructions when a task needs to be completed. Anxiety and frustration are brought on by difficulties recalling knowledge and applying instructions to executing tasks. Learners experience anxiety and frustration when they have trouble recalling the instructions and feel overwhelmed because their working memory capacity is limited, and they have concentration problems, which affect information retention and recall.

6.3.1.3   *What methods are used by multidisciplinary teams to develop executive functioning skills of foundation phase learners in special schools?*

Objective: To determine the methods multidisciplinary teams use to develop executive functioning skills of foundation phase learners in special schools.

The participants in this study provided a detailed explanation of the methods they employ to address the executive functioning needs of the foundation phase learners in the classroom, as well as their development in small group- and individual therapy. Important requirements for multidisciplinary teams to ensure effective support in terms of curriculum accessibility and bridging the barriers to learning is to be flexible and continuously adapt teaching and support strategies to meet the needs of the learners.

All multidisciplinary team members apply the techniques for improving working memory in various settings. Throughout the course of the school day, repetition and revision of knowledge and abilities are introduced in many contexts. As much as possible, a multisensory teaching method is used. Utilising associations and visual cues, all new information is augmented with knowledge already known. Special care is taken to ensure that instructions are clear and concise to satisfy the demands of working memory.

One of the most important methods to enhance cognitive flexibility and shift needs is to introduce change in a non-threatening way to lower anxiety. This is done by making use of games and introducing minor adjustments in an entertaining manner. For instance, the same exercise may be used with different instructions. As soon as learners display any signs of anxiety or discomfort, the status quo must be preserved, and the change must be reintroduced at a later stage. Learners' shifting needs are supported by providing structure, routine, and predictability. Visual schedules appear to be valued for instructing learners on the tasks and notifying them when to switch from one activity to the next. Offering them the opportunity to move physically from one activity to the next proves to make switching between tasks easier. In order to comfort and direct students to move from one activity to the next and to improve cognitive flexibility to combat rigid thinking, verbal guidance and instructions are emphasised. The chunking or breaking down of activities to enable learners to finish them in a way that simplifies shifting was another method mentioned in addressing cognitive flexibility or shift needs.

Attention needs are addressed by minimising external stimuli and clutter. Instructions and tasks are divided into smaller portions. Using visual stimulation and variety ensures that the learners are engaged. In order to enhance focus and attention, it is important that the content is appropriate for the learners' cognitive level.

Addresses planning requirements are done by imparting task approach techniques. Furthermore, the use of visual cues, colour correlations, and a multisensory teaching method

was already discussed in addressing attention- and working memory needs. The value of a structured environment and avoiding providing learners with too much information also apply to supporting working memory, attention and cognitive flexibility, and shift needs. The methods coincide with enhancing and addressing more than one executive functioning need.

In terms of methods to address inhibition needs, delaying immediate gratification, and teaching socially appropriate communication techniques, like listening to others speak and refraining from interrupting, are implemented by the participants of this study.

6.3.1.4   *How do the multidisciplinary teams collaborate to render a therapeutic service in special schools?*

Objective: To explore the collaboration of multidisciplinary teams in rendering a therapeutic service in special schools.

Each team member has a role, e.g., the teachers are responsible for teaching the curriculum, and the therapists support the teachers and learners in terms of adaptations, support strategies, the development of EFs, and how to address barriers to learning.

The participants indicated what team characteristics they value and believe improve their teams' effectiveness. They appreciate and trust one another and communicate openly. They recognise and reciprocate each other's responsibilities, which promotes best practices. They uphold unity and cooperation. Another emphasised characteristic was the united goal of multidisciplinary teams to work in learners' best interests, help them overcome learning obstacles, and help them reach their full potential. They are open to exchanging ideas, seeking counsel, and learning from one another. From the vantage point of their varied occupations and areas of speciality, they converse about the difficulties that learners confront and offer one another advice. The fact that co-teaching occurs benefits professional growth and best practices as the multidisciplinary team members learn from each other. While the therapist is working in the class, the teacher has the opportunity to consult with her on how to address individual learners' needs. The multidisciplinary team members value and appreciate being able to collaborate since they recognise the benefits of their own knowledge expansion and best practices while serving the students' interests.

They have formal discussions when the complete team plans to get together, whereas informal discussions occur when only a small number of team members gather. A formal

multidisciplinary team meeting is held when a teacher or therapist is worried about a learner and requests a multidisciplinary team meeting or when a new learner is enrolled, the multidisciplinary team meets to determine the learner's needs and compiles an ISP. The team deliberates the challenges the learner is facing before deciding on a strategy, setting objectives, a time frame for interventions, and the review of objectives.

Many of the informal discussions happen after therapy when the therapist returns a learner to class. Regarding the learner's performance in class, the teacher provides feedback. In certain instances, the therapist alerts the teacher to a specific issue and provides instructions on how to support the learner. The therapists may occasionally ask to observe a class to understand the learner's functioning and needs better.

According to the participants, the intervention plans, goals, modification deadline, and accountable professionals are listed on the ISP, a working document. Any team member collaborating with the specific learner has access to the ISP. This guarantees that everyone is fully aware of what is being done and the intended outcomes.

6.3.2 Responding to the primary research question: How do collaborative multidisciplinary teams approach therapy and support to address the executive functioning needs of foundation phase learners in special schools?

According to the information provided by each participant, there is consistency in the therapeutic and support strategies used to integrate the curriculum content with the therapeutic goals. The three multidisciplinary teams' therapists all agreed that learners with neurodevelopmental disorders have trouble transferring their knowledge and skills from one situation to another, so they took an approach to integrating curriculum content with their therapeutic objectives. They all discovered that learners may apply the knowledge and skills they acquire in therapy to the classroom if they all employ the same curriculum content. The fact that team members collaborate in terms of their teaching and support strategies, the content taught in the classroom is similar to that used in therapy, and they have common goals, distinguishing them from a clinical and parallel approach where teachers and therapists work independently.

The third sub-research question explored the various approaches to address the executive functioning requirements of the foundation phase learners. The therapists deliver therapy in

the classroom while collaborating with the teachers to reach as many learners as possible with therapy and support. They work with learners with significant needs in small groups of two to three learners and with individuals in therapy. In order to improve their executive functioning, learners need individualised accommodations because their needs for executive functioning are distinct. EF knowledge and expertise are needed to respond to individual requirements as they occur. The multidisciplinary team members are able to respond to individual needs. If their communication is effective, they collaborate in terms of flexible and adaptive strategies and approaches, as well as their common goals.

The multidisciplinary teams communicate through regular informal discussions or formal, scheduled learner discussions. During the informal discussions, they give feedback regarding the learners' barriers, current functioning, and improvement or lack thereof. The informal discussions take place between two or three team members and usually occur when they are co-teaching in the class or when a therapist takes the learner(s) back to class after individual or small-group therapy. The formal learner discussions are scheduled on the term- and year planner and usually take place once a week. At these discussions, the complete multidisciplinary team is present. The ISP, a working document available to all accountable team members, contains all interventions, therapeutic objectives, learner support measures, and a timeframe.

6.4   REVISITING THE CONCEPTUAL FRAMEWORK

In this section, I connect the results and the conceptual framework to substantiate it with data and not rely only on the concepts discussed in the literature.

In Chapter 3, the conceptual framework outlined inclusive education in terms of learners' diverse educational needs and the right of all learners to receive efficient and adapted education based on their specific needs. The core principles of inclusive education, namely the differentiation of the curriculum, adaptive teaching strategies, adaptations of the classroom environment and teaching, learning, and support material, constitute the foundation of the therapy and support offered by the multidisciplinary teams as described in this study. The individual needs of the learners, the appropriate interventions for each learner, and the required adaptations are based on the characteristics of the social-ecological model of inclusive education, as described in Chapter 3, section 3.2.5. External factors, with special reference to the curriculum, methodology, and classroom environment, are adapted to

accommodate the needs of each learner. Since every learner is viewed as unique, the focus is on how their functioning in the classroom can be enhanced and developed rather than on their diagnoses or barriers to learning. This principle is based on the bio-ecological theory of Bronfenbrenner.

As discussed in Chapter 3, section 3.3, constructivism favours interactive teaching methods whereby learners are actively involved in the learning process. The participants in this study made it clear that they all incorporated interactive teaching and therapeutic methods. Another principle of educational constructivism that the participants of this study emphasised is the importance of being aware of what the prior knowledge of learners is before it is expanded by teaching new information. The value of this approach is that learners construct their own understanding of the information, and it is not solely the memorisation of facts. The participants' approaches, which included being aware of each learner's potential, barriers, and prior knowledge and extending that by modifying their teaching- and therapeutic methods to help each learner overcome those barriers and make the curriculum content accessible, perfectly align with Vygotsky's zone of proximal development. The participants explained how they use scaffolding through differentiated instructional methods, multiple media, and teaching material and curriculum adaptations.

Collaboration is another concept pertaining to this study, as discussed in Chapter 3, section 3.4, referring particularly to individuals from different fields of expertise working together to achieve common goals (Hernandes, 2013). Multidisciplinary collaboration, or the cooperation of experts working concurrently but also in tandem, interacting with one another, is the key characteristic of this study. While the teacher is present, the therapists conduct therapy in the classrooms, which allows them to learn from one another and advance their respective professions. They both gain professionally from sharing knowledge, but learners benefit as well because the therapist can monitor their classroom requirements and instruct the teachers on how to best support and accommodate them.

It is clear from the description of the participants that inclusive special education is complex, and the diverse needs of learners pose huge challenges to teachers and therapists to provide quality education and support learners to reach their full potential despite all their challenges and barriers. The multidisciplinary approaches that the participants reported appear to be the most effective means of promoting inclusion and working together to meet the requirements of the foundation phase learners in the special schools in terms of executive functioning. The

success in the collaboration of multidisciplinary teams is in the combination of the different fields of expertise working towards a common goal. The participants highlighted that effective communication, group decision-making, problem-solving, shared responsibility, and accountability are essential components of multidisciplinary teams' success.

The multidisciplinary team members engage in formal communication through scheduled learner discussions that take place on a regular basis, during which they create an ISP for each learner. The learner's barriers to learning, the intervention plan, the team members' goals, and the timeline are all included in the ISP, a working document. Daily informal communication among team members is also frequent. The therapists see learners one-on-one, in small groups, and in classes to provide effective and sufficient services and reach as many learners as possible. Academic content taught in class is incorporated with therapy to enable learners to integrate the knowledge and skills learned in therapy and to apply it in the classroom.

6.5 DELIMITATIONS AND LIMITATIONS OF THE STUDY

This study is delimited in the following ways:

The participants of this research study were delimited to the professionals on the multidisciplinary teams supporting foundation phase learners at three public special schools. Participants included speech-language therapists, occupational therapists, and foundation phase teachers. Other multidisciplinary team members, such as the educational psychologist, social worker, and school nurse, were not included as they do not address executive functioning needs in a classroom or therapeutic context. The participants were purposefully selected from public special schools. The three special schools were purposefully selected from a population of different special schools based on the fact that the schools are classified as special schools for learners with SLD.

The following are the limitations of this study:

I have made a personal choice not to disclose the race of the participants. All the participants were females. The majority were Afrikaans-speaking, although all the interviews, focus group discussions, and lessons observed were in English.

It was not the purpose of this study to extend results beyond generalisations of the specific populations from which the sample was drawn. Therefore, the number of participants who took part in the study was limited to three cases and fifteen participants.

6.6   POSSIBLE CONTRIBUTIONS OF THE STUDY

This research study intends to contribute to the sparse research information regarding an understanding of multidisciplinary team approaches accommodating foundation phase learners in special schools regarding their executive functioning needs to inform and share best therapeutic practices. At the special schools where this study was conducted, therapists and teachers work collaterally to ensure accessibility of the CAPS curriculum for the learners who experience barriers to learning. The multidisciplinary approach explored in this study could inform and enrich inclusive education practices as the focus of the therapists and teachers is on the functional needs of learners and the manifestation of the barriers to learning rather than on diagnosis and deficiencies. The approach of the multidisciplinary team could serve as guidelines for other special schools where the focus is still on deficiencies and individual therapy. Private practitioners could benefit from learning best practices followed by their peers in special schools, especially with regard to collaboration, an integrative approach rather than a parallel clinical approach. Executive functioning deficits are not exclusive to learners in special schools. This study can contribute to informing ordinary mainstream schools about interventions to address executive functioning needs in foundation phase learners.

The majority of the foundation phase learners in the three special schools present with executive functioning needs comorbid to neurodevelopmental disorders. All the learners are inclusively accommodated and supported to reach their full potential. The accommodations include adaptive teaching methods, adaptation of teaching, learning and support material, and therapeutic interventions by a multidisciplinary team.

Another contribution is the study's practical examples of support solutions to address foundation phase learners' executive functioning needs in a classroom context. This study contributes because I have not yet come across research papers that describe the multidisciplinary team techniques used in special schools to address difficulties with executive functioning and accommodate learners with special educational needs.

6.7 RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made to inform: (a) best practices, (b) professional training institutes, and (c) further research.

6.7.1 Best practices

The multidisciplinary team members and their colleagues in private practice must exchange best practices regarding integrating curriculum content for therapeutic interventions for learners with executive functioning problems. This approach enables learners to transfer the knowledge and skills taught in therapy enabling them to apply it in different contexts. When supporting learners in mainstream schools, the DBSTs should use strategies comparable to those used by their counterparts in special schools.

6.7.2 Professional training institutes

At all institutions that train professionals, academic programmes and practical instruction should include multidisciplinary collaboration with a focus on incorporating curriculum content and therapeutic goals in supporting learners with neurodevelopmental disorders and, in particular, needs for executive functioning.

6.7.3 Further research

Professionals who participated in this study perceived skills transference between therapists and classroom teachers as essential for an inclusive education system and supporting learners with special educational needs, particularly executive functioning. Further research is required to investigate multidisciplinary team collaboration in other settings, such as private therapists delivering a service in mainstream schools.

To investigate and prove that non-neurotypical learners find it difficult to transfer knowledge and skills from one context to another, they need the content they are taught to be incorporated with therapy to ensure transference.

6.8   CONCLUSION

The significance of this study lies in the focus on multidisciplinary team collaborative approaches in special schools supporting the executive functioning needs of foundation phase learners.

The findings of this study indicate that multidisciplinary teams in special schools adapted their approaches to combine curricular content with their therapeutic goals because learners with neurodevelopmental disorders have problems applying their knowledge and skills in different contexts. The multidisciplinary teams communicate with regular informal discussions or formal, scheduled learner discussions. They use the ISP to document the intervention plans, and the therapists see the learners for therapy in classroom-, small group- and individual therapy sessions.

LIST OF REFERENCES

Adolt-Silva, K. H. (2021). *Supporting the Teaching of Executive Functioning Skills Using Social Cognitive Theory in Arts Classroom.* Walden University.

Akbar, M., Loomis, R., & Paul, R. (2013). The Interplay of Language on Executive Functions in Children with ASD. *Research in Autism Spectrum Disorders,* 7(2013), 494-501.

Al-Ababneh, M. M. (2020). Linking Ontology, Epistemology and Research Methodology. *Science & Philosophy,* 8(1), 75-91.

Al'Omairi, T., & Balushi, H. A. (2015). The Influence of Paying Attention in Classroom on Students' Academic Achievement in Terms of Their Comprehension and Recall Ability. *Proceedings of INTCESS15-2nd International Conference on Education and Social Sciences.* 2-4 February 2015- Istanbul, Turkey

Al-Saadi, H. (2014). Demystifying Ontology and Epistemology in Research Methods. *Academia.* 1 – 11.

Amineh, R. J., & Asl, H. D. (2015). Review of Constructivism and Social Constructivism. *Journal of Social Sciences, Literature and Language,* 1(1), 9-16.

Anderson, P. J., & Reidy, N. (2012). Assessing Executive Function in Preschoolers. *Neuropsychology,* 22, 345-360. doi:10.1007/s11065-012-9220-3

Astalin, P. K. (2013). Qualitative Research Designs: A Conceptual Framework. *International Journal of Social Science & Interdisciplinary Research,* 2(1), 118-124.

Babchuk, W. A. (2019). Fundamentals of Qualitative Analysis in Family Medicine. *Family Medicine and Community Health.* Retrieved from http://fmch.bmj.com/

Bada, S. O. (2015). Constructivism Learning Theory: A Paradigm for Teaching and Learning. *IOSR Journal of Research & Method in Education,* 5(6), 66-70.

Baddeley, A. (2012). Working Memory: Theories, Models, and Controversies. *Annual Reviews Psychology.* 2012.63: 1- 29. Doi:10.1146/annurev-psych-120710-100422

Baggetta, P., & Alexander, P. A. (2016). Conceptualization and Operationalization of Executive Function. *International Mind, Brain, and Education Society and Wiley Periodicals Inc.,* 10(1), 10-33.

Bailey, B. A., Andrzejewski, S. K., Greif, S. M., Svingos, A. M., & Heaton, S. C. (2018). The Role of Executive Functioning and Academic Achievement in the Academic Self-Concept of Children and Adolescents Referred for Neuropsychological Assessment. *Child,* 5(83), 1-13.

Bailey, C. A. (2007). *A Guide to Qualitative Field Research.* (2nd ed.). California: Sage Publications.

Barbey, A. K., Colom, R., & Grafman, J. (2013). Dorsolateral Prefrontal Contributions to Human Intelligence. *Neuropsychologia,* 5(17), 1361-1369. doi: 10.1016/j.neuropsychologia.2012.05.017

Barbra, M., & Mutswanga, P. (2015). The Effectiveness of the Multi-Disciplinary Approach (MDA) for Learners with Intellectual Disabilities (IDS). *International Journal of Research in Humanities and Social Studies,* 2(4), 27-36.

Barutchu, A., Spence, C., & Humphreys, G. W. (2018). Multisensory Enhancement Elicited by Unconscious Visual Stimuli. *Experimental Brain Research,* (2018)236, 409-417. doi: http://doi.org/10.1007/s00221-017-5140-z

Becker, D. R., Miao, A., Duncan, R., & McClelland, M. M. (2014). Behavioral Self-regulation and Executive Function Both Predict Visuomotor Skills and Early Academic Achievement. *Early Childhood Research Quarterly,* 29(4), 411-424.

Becker, N., Lopes-Silva, J. B., De Almeida Gomides, M. E., Paiva, G. M., Haase, V.G., & De Sailes, J. F. (2020). Are "Cool" Executive Function Impairments More Salient in ADHD Symptoms than in Reading Disability? *Dementia & Neuropsychologia,* 14(1), 1-12.

Bell, J., & Waters, S. (2019). *Doing Your Research Project. A Guide for First-time Researchers.* (7th ed.). London: McGraw Hill Education.

Bental, B., & Tirosh, E. (2007). The Relationship between Attention, Executive Functions and Reading Domain Abilities in Attention Deficit Hyperactivity Disorder and Reading Disorder: A Comparative Study. *Journal of Child Psychology and Psychiatry,* 48(5), 455-463. doi:10.1111/j.1469-7610.2006.01710.x

Benzing, V., Schmidt, M., Jäger, K., Egger, F., Conzelmann, A., & Roebers, C. M. (2019). A Classroom Intervention to Improve Executive Functions in Late Primary School Children: Too "Old" for Improvements? *British Journal of Educational Psychology,* 89, 225-238. doi:10.1111/bjep.12232

Berenguer, C., Rosello, B., Colomer, C., & Baixauli, A. M. (2018). Children with Autism and Attention Deficit Hyperactivity Disorder. Relationships between Symptoms and Executive Function, Theory of Mind, and Behavioral Problems. *Research in Developmental Disabilities,* 83(2018), 260-269.

Bernier, A., Whipple, N., & Carlson, S. M. (2010). From External Regulation to Self-Regulation: Early Parenting Precursors of Young Children's Executive Functioning. *Child Development,* 81(1), 326-339.

Berri, H. M., & Al-Hroub, A. (2016). Assessment, Diagnosis, and Treatment of ADHD in School-Aged Children. *ADHD in Lebanese Schools.* pp. 7-19. doi:10.1007/978-3-319-28700-3_2

Best, J. R., & Miller, P. H. (2010). Developmental Perspective on Executive Function. *Child Development,* 81(6), 1641-1660.

Biamba, C. (2016). Inclusion and Classroom Practices in a Swedish School: A Case Study of a School in Stockholm. *Journal of Education and Practice,* 7(3), 119-124.

Bierman, K. L., & Torres, M. (2016). Promoting the Development of Executive Functions through Early Education and Prevention Programs. In J. Griffin, L. Freund, & P. McCardle (Eds.), *Executive Function in Preschool Age Children: Integrating Measurement, Neurodevelopment and Translational Research.* Washington D.C.: American Psychological Association.

Bines, H., & Lei, P. (2011). Disability and Education: The Longest Road to Inclusion. *International Journal of Educational Development,* 31(2011), 419-424. doi:10.1016/j.ijedudev.2011.04.009

Blair, C., & Razza, R. P. (2007). Relating Effortful Control, Executive Function, and False Belief Understanding to Emerging Math and Literacy Ability in Kindergarten. *Child Development,* 78(2), 647-663.

Braun, V., & Clarke, V. (2006). Using Thematic Analysis in Psychology. *Qualitative Research in Psychology,* 3(2), 77-101.

Braun, V., & Clarke, V. (2012). Thematic Analysis. In: H. Cooper, P.M. Camic, D.L. Long, D.L., Panter, A.T., Rindskopf, D., Sher, K.J. (eds.) *APA Handbook of Research Methods in Psychology, Research Designs,* 2, 57-71. Washington: American Psychological Association.

Braun, V., & Clarke, V. (2013). *Successful Qualitative Research: A Practical Guide for Beginners.* Thousand Oaks: Sage Publications.

Brydges, C. R., Fox, A. M., Reid, C. L., & Anderson, M. (2014). The Differentiation of Executive Functions in Middle and Late Childhood: A Longitudinal Latent-variable Analysis. *Intelligence,* 47(2014), 34-43. doi:doi.org/10.1016/j.intell.2014.08.010

Bryman, A. (2016). *Social Research Methods.* International edition. New York: Oxford University Press.

Burgers, H. M. (2018). Implementing the Asset-based Approach in a Resource Constrained Special School Resource Centre. *Inclusion in Education. Perspectives on Inclusive Education in South Africa,* 1(1), 1-33.

Buli-Holmberg, J., & Jeyaprathaban, S. (2016). Effective Practice in Inclusive and Special Education. *Internation Journal of Special Education,* 31(1), 119-134.

Byrne, D. (2022). A Worked Example of Braun and Clarke's Approach to Reflexive Thematic Analysis. *Quality & Quantity,* 56, 1391-1412. doi: https://doi.org/10.1007/s11135-021-01182-y

Carrea, V. I., Jones, H. J., Thomas, C. C., & Morsink, C. V. (2005). *Interactive learning: Enhancing Programs for Students with Special Needs.* Saddle River, N.J.: Pearson Merrill-Prentice Hall.

Chai, W. J., Hamid, A. I. A., & Abdullah, J. M. (2018). Working Memory from the Psychological and Neurosciences Perspective: A Review. *Frontiers in Psychology,* 9(401), 1-16.

Charmaz, K. (2006). *Constructed Grounded Theory: A Practical Guide Through Qualitative Analysis.* Thousand Oaks: Sage Publications.

Chowdhury, M. F. (2014). Interpretivism in Aiding Our Understanding of the Contemporary Social World. *Open Journal of Philosophy,* 4, 432-438.

Chun, M. M., & Turk-Browne, N.B. (2007). Interaction Between Attention and Memory. *Current Opinion in Neurobiology.* 17, 177-184.

Cicekci, M. A. & Sadik, F. (2019). Teachers' and Students' Opinion About Students' Attention Problems During the Lesson. *Journal of Education and Learning,* 8(6), 15-30. doi: doi.org/10.5539/jel.v8n6p15

Cirino, P. T., Ahmed, Y., Miciak, J., Taylor, W. P., & Gerst, H. (2018). A Framework for Executive Function in the Late Elementary Years. 2018. *Neuropsychology,* 32(2), 176-189. doi: http://dx.doi.org/10.1037/neu0000427

Cristofori, I., Cohen-Zimerman, S., & Grafman, J. (2019). *Executive Functions. Chapter 11. Handbook of Clinical Neurology.* 163 (3rd series). *The Frontal Lobes.* doi: https://doi.org/10.1016B978-0-12-804281-6.00011-2

Cohen, L., Manion, L., & Morrison, K. (2018). *Research Methods in Education.* (8th ed.). New York: Routledge.

Colbry, S., Hurwitz, M., & Adair, R. (2014). Collaboration Theory. *Journal of Leadership Education,* 13(4), 63-75. doi:10.12806/V13/14/C8

Cook, C. J. (2019). *Executive Function and Physical Activity in Preschool Children from Low-income Settings in South Africa.* University of Cape Town.

Cook, C.J ., Howard, S. J., Scerif, G., Twine, R., Kahn, K., Norris, S. A., & Draper, C. E. (2018). Associations of Physical Activity and Gross Motor Skills with Executive Function in Preschool Children from Low-income South African Settings. *Developmental Science,* 2019(22), e12820. doi: https:///doi.org/10.1111/desc.12820

Creswell, J. W. (2007). *Educational Research: Planning, Conducting and Evaluating.* Thousand Oak: Upper Saddle River.

Creswell, J. W. (2013). *Qualitative Inquiry and Research Design. Choosing among Five Approaches.* (3rd ed.). California: Sage Publications.

Creswell, J. W. (2014). *Research Design. Qualitative, Quantitative and Mixed Methods Approaches.* (4th ed.). California: Sage Publications.

Creswell, J. W., & Clark, V. L. (2011). *Designing and Conducting Mixed Methods Research.* (2nd ed.). California: Sage Publications.

Creswell, J. W., & Poth, C. N. (2018). *Qualitative Inquiry and Research Design. Choosing Among Five Approaches.* 4th ed. California: Sage Publications.

Cuevas, H. M., Bolstad, C. A., Oberbreckling, R., LaVoie, N., & Mitchell, D. K. (2012). Benefits and Challenges of Multidisciplinary Project Teams: "Lessons Learned" for Researchers and Practitioners. *The ITEA Journal (International Test and Evaluation Association)*, 33(1), 58-65. Retrieved from http:commons.erau.edu/publication/108

Cuperus, J., Vugs, B., Scheper, A., & Hendriks, M. (2014). Executive Function Behaviours in Children with Specific Language Impairment (SLI). *International Journal of Developmental Disabilities,* (60)3, 132-143.

Dagar, V., & Yadav, A. (2016). Constructivism: A Paradigm for Teaching and Learning. *Arts and Social Sciences Journal,* 7(4), 1-4. doi:10.4172/2151-6200.1000200

Dalton, E. M., Mckenzie, J. A., & Kahonde, C. (2012). The Implementation of Inclusive Education in South Africa: Reflections Arising from a Workshop for Teachers and Therapists to Introduce Universal Design for Learning. *African Journal of Disability,* 1(13), 1-7.

DelGiudice, M. (2018). Middle Childhood: An Evolutionary-Development Synthesis. In: N. Halfon, C.B. Forrest, R.M. Lerner, E.M. Faustman (Eds.), *Handbook of Life Course Health Development.* Cham (CH): Springer. doi:10.1007/978-3-319-47143-3_5

De la Questa Benjumea, C. (2015). The Quality of Qualitative Research: From Evaluation to Attainment. *Text Context Nursing,* 24(3), 883-890. doi: http://dx.doi.org/10/1590/0104-070720150001150015

Demetriou, E. A., DeMayo, M. M., & Guastella, A. J. (2019). Executive Function in Autism Spectrum Disorder: History, Theoretical Models, Empirical Findings, and Potential as an Endophenotype. *Frontiers,* 2, 1-32.

Deng, M., Cai, D., Zhou, X., & Leung, W. S. (2022). Executive Function and Planning Features of Students with Different Types of Learning Difficulties in Chinese Junior Middle School. *Learning Disability Quarterly,* 45(2), 134-143. doi:10.1177/0731948720929006

Department of Education (DoE). (2001). *Education White Paper 6. Special Needs Education. Building an Inclusive Education and Training System.* Pretoria: Department of Education. Directorate Inclusive Education.

Department of Education (DoE). (2007). *Guidelines to Ensure Quality Education and Support in Special Schools and Special Schools Resource Centres.* Pretoria: Department of Education Directorate Inclusive Education.

Department of Education (DoE). (2008). *National Strategy on Screening, Identification, Assessment and Support.* Pretoria: Department of Education.

Department of Basic Education (DoBE). (2010a). *Guidelines for Full-Service / Inclusive Schools.* Pretoria: Department of Basic Education. Directorate Inclusive Education.

Department of Basic Education (DoBE). (2010b). *Guidelines for Inclusive Teaching and Learning.* Pretoria: Directorate Inclusive Education. Department of Basic Education.

Department of Basic Education (DoBE). (2014). *Policy on Screening, Identification, Assessment and Support.* Pretoria: Department of Basic Education

Desk Reference to the Diagnostic Criteria From DSM-5. (2013). Washington: American Psychiatric Publishing.

Diamond, A., & Lee, K. (2011). Interventions shown to Aid Executive Function Development in Children 4-12 Years old. *Science,* 333(6045), 959-964. doi:10.1126/science.1204529

Dias, N. M., & Seabra, A. G. (2017). Intervention for Executive Functions Development in Early Elementary School Children: Effects on Learning and Behaviour, and Follow-up Maintenance. *Educational Psychology,* 37(4), 468-486.

Dillenburger, K., Röttgers, H., Dounavi, K., Sparkman, C., Keenan, M., Thyer, B., & Nikopoulos, C. (2014). Multi-disciplinary Teamwork in Autism: Can One Size Fit All? *The Australian Educational and Developmental Psychologist,* 31(2), 97-112.

Dillon, S., Armstrong, E., Goudy, L., Reynolds, H., & Scurry, S. (2021). Improving Special Education Service Delivery Through Interdisciplinary Collaboration. *Teaching Exceptional Children,* 54(1), 36-43.

Donald, D., Lazarus, S., & Moolla, N. (2014). *Educational Psychology in Social Context.* 5th Edition. Oxford: Goodwood, South Africa.

Donohue, D., & Bornman, J. (2014). The Challenge of Realising Inclusive Education in South Africa. *South African Journal of Education,* 34(2), 1-14.

Downes, M., Bathelt, J., & De Haan, M. (2017). Event Related Potential Measures of Executive Functioning from Preschool to Adolescence. *Developmental Medicine & Child Neurology,* 59(6), 581-590.

Dowling, R., Lloyd, K., & Suchet-Pearson, S. (2016). Qualitative Methods 1: Enriching the Interview. *Progress in Human Geography,* 40(5), 679-686.

Eccleston, S. T. (2010). Successful Collaboration: Four Essential Traits of Effective Special Education Specialists. *The Journal of International Association of Special Education,* 11(1), 40-47.

Engelbrecht, P. (2020). Inclusive Education: Development and Challenges in South Africa. *Prospects (2020),* 49, 219-232. doi: http://doi.org/10.1007/s11125-020-09499-6

Engelbrecht, P., Nel, M., Nel, N., & Tlale, D. (2015). Enacting Understanding of Inclusion in Complex Contexts: Classroom Practices of South African Teachers. *South African Journal of Education,* 35(3), 1-10.

Engel de Abreu, P. M., Abreu, N., Nikaedo, C. C., Puglisi, M. L., Tourinho, C. J., Miranda, M. C., Befi-Lopes, D. M., Bueno, O. F. A., & Martin, R. (2014). Executive Functioning and Reading Achievement in School: A Study of Brazilian Children Assessed by their Teachers as "Poor Readers". *Frontiers in Psychology,* 5(550), 1-13.

Fadaei, E., Tavakoli, M., Tahmasebi, A., Narimani, M., Shiri, V., & Shiri, E. (2017). The Relationship Between Executive Functions with Reading, Difficulties in Children with Specific Learning Disorders. *Archives of Neuroscience*, 4(4), e13989.

Fernández, T. G., Gonzales-Castro, P., Areces, D., Cueli, M., & Perez, C. R. (2014). Executive Functions in Children and Adolescents: The Types of Assessment Measures Used and Implications for Their Validity in Clinical and Educational Contexts. *Papeles del Psicologo,* 35(3), 215-223.

Fernando, S. Y. J. N., & Marikar, F. M. M. T. (2017). Constructivist Teaching / Learning Theory and Participatory Teaching Methods. *Journal of Curriculum and Teaching,* (6)1, 2017. doi:10.5430/jct.v6n1p110

Finch, J.E. (2019). Do Schools Promote Executive Functions? Differential Working Memory Growth Across School-Year and Summer Months. *AREA Open*, 5(2), 1-14. doi: 10.1177/2332858419848443

Flick, U. (2014). *An Introduction to Qualitative Research.* (5th ed.). Los Angeles: Sage.

Florian, L. (2014). What Counts as Evidence of Inclusive Education? *European Journal of Special Needs Education,* 29(3), 286-294. doi: http://dx.doi.org/10.1080/08856257.2014.933551

Fogel, Y., Rosenblum, S., Hirsh, R., Chevignard, M., & Josman, N. 2020. Daily Performance of Adolescents with Executive Function Deficits: An Empirical Study Using a Complex-Cooking Task. *Wiley Hindawi,* 2020(3051809), 1-11.

Fourie, J. V. (2017). *School Based Collaborative Support Networks in Fostering Inclusive Education in Selected South African Schools.* University of Johannesburg: Faculty of Education.

Francisco, M. P. B.; Hartman, M., & Wang, Y. (2020). Inclusion and Special Education. *Education Sciences,* 10(238), 1-17.

Friedman, N. P., Miyake, A., Altamirano, L. J., Corley, R. P., Young, S. E., Thea, S. A., & Hewitt, J. K. (2016). Stability and Change in Executive Function Abilities from Late Adolescence to Early Adulthood: A Longitudinal Study. *Developmental Psychology,* 52(2), 326-340.

Gajda, R. (2004). Utilizing Collaboration Theory to Evaluate Strategic Alliances. *American Journal of Evaluation,* 25(1), 65-77.

Galotti, K. M. (2017). *Cognitive Development. Infancy Through Adolescence.* (2nd ed.). Los Angeles: Sage Publications.

Garcia-Molina, A. (2012). Phineas Gage and the Enigma of the Prefrontal Cortex. *Neurologia,* 27(6), 370-375.

Gioia, G. A., Isquith, P. K., Guy, S. C., & Kenworthy, L. (2015). *BRIEF 2. Behavior Rating Inventory of Executive Function.* 2nd Edition. Florida: PAR.

Gilmore, C., & Cragg, L. (2014). Teachers' Understanding of the Role of Executive Functions in Mathematics Learning. *International Mind, Brain, and Education Society and Wiley Periodicals Inc.,* 8(3), 13-135.

Goldstein, S. & Naglieri, J. A. (2014). *Handbook of Executive Functioning.* New York: Springer.

Gray, J. A. (1982). *The Neuropsychology of anxiety: An Enquiry Into the Functions of the Septo-hippocampal System.* New York: Oxford University Press.

Green, M. & Rathgeb-Schnierer. (2020). Summing Up: Cognitive Flexibility and Mental Arithmetic. *Journal of Mathematics Education,* 13(1), 1-17. doi: http://doi.org/10.26711/007577152790051

Goldberg, E. (2009). *The New Executive Brain. Frontal Lobes in a Complex World.* New York: Oxford University Press.

Goldstein, S., & Naglieri, J. A. (2014). *Handbook of Executive Functioning.* New York: Springer.

Gooch, D., Thompson, P., Nash, H. M., Snowling, M. J., & Hulme, C. (2016). The Development of Executive Function and Language Skills in the Early School Years. *Journal of Child Psychology and Psychiatry,* 57(2), 180-187.

Gottwald, J. M., Achermann, S., Marciszko, C., Lindskog, M., & Gredebäck, G. (2016). An Embodied Account of Early Executive Function Development: Prospective Motor Control in Infancy is Related to Inhibition and Working Memory. *Psychological Science,* 27(12), 1600-1610.

Green, M. & Rathgeb-Schnierer. (2020). Summing Up: Cognitive Flexibility and Mental Arithmetic. *Journal of Mathematics Education,* 13(1), 1-17. doi: http://doi.org/10.26711/007577152790051

Grbich, C. (2013). *Qualitative Data Analysis: An Introduction.* California: Sage Publications*.*

Guerra, A., Hazin, I., Guerra, Y., Roulin, J., Le Gail, D., & Roy, A. (2021). Developmental Profile of Executive Functioning in School-Age Children from Northeast Brazil. *Frontiers in Psychology,* 11(75), 1-21.

Haegele, J. A., & Hodge, S. (2016). Disability Discourse: Overview and Critiques of the Medical and Social Models. *Quest,* 68(2), 193-206. doi: http://dx.doi.org/10/1080/00336297.2016.1143849

Hammer, L. M. (2020). *Considering the needs of Mexican immigrant students: An Examination of Special School Education Practices in Mexico and the United States.* University of Arizona.

Hargreaves, A. T., Nakhooda, R., Mottay, N., & Subramoney, S. (2012). The Collaborative Relationship between Teachers and Occupational Therapists in Junior Primary Mainstream Schools. *South African Journal of Occupational Therapy,* 42(1), 7-10.

Harms, M. B., Zayas, V., Meltzoff, A. N., & Carlson, S. M. (2014). Stability of Executive Function and Predictions of Adaptive Behaviour from Middle Childhood to Pre-adolescence. *Frontiers in Psychology,* 5(331), 1-11.

Haven, T. L., & Van Grootel, L. (2019). Preregistering Qualitative Research. *Accountability in Research,* 26(3), 229-244.

Hay, J. (2018). Educational and Psycho-social Service Rendering by District-based Support Teams in Two Provinces of South Africa: Supporting Inclusive Education? *Inclusive Education. Perspectives on Inclusive Education in South Africa,* 1(1), 4-8.

Hays, D. G., & Singh, A. A. (2012). *Qualitative Inquiry in Clinical and Educational Settings.* The Guilford Press.

Hebe, H. N. (2017). Towards a Theory-driven Integration of Environmental Education: The Application of Piaget and Vygotsky in Grade R. *International Journal of Environmental & Science Education,* 12(6), 1525-1545.

Hernández, M. M., Eisenberg, N., Valiente, C., Spinrad, T. L., Johns, S. K., Berger, R. H., Silva, K. M., Diaz, A., Gal-Szaba, D. E., Thompson, M. S., & Southworth, J. (2018). Self-Regulation and Academic Measures Across the Early Elementary School

Grades: Examining Longitudinal and Bidirectional Associations. *Early Education Development,* 29(7), 914-938. doi:10.1080/10409289.2018.1496722

Hernandez, S. J. (2013). Collaboration in Special Education: Its History, Evolution, and Critical Factors Necessary for Successful Implementation. *US-China Education Review,* 3(6), 480-498.

Hernández-Torrano, D., Somerton, M., & Helmer, J. (2020). Mapping Research on Inclusive Education since Salamanca Statement: A Bibliometric Review of the Literature Over 25 Years. *Journal of Inclusive Education,* 26(9), 893-912. doi:10.1080/13603116.2020.1747555

Hesjedal, E., Iversen, A. C., Bye, H. H., & Hetland, H. (2016). The Use of Multidisciplinary Teams to Support Child Welfare Clients. *European Journal of Social Work,* 19(6), 841-855. doi: http://dx.doi.org/10.1080/13691457.2015.1084268

Heyl, V., & Hintermair, M. (2015). Executive Function and Behavioral Problems in Students with Visual Impairments at Mainstream and Special Schools. *Journal of Visual Impairment & Blindness,* 109(4), 251-263. doi: https://doi.org/10.1177/0145482X1510900402

Hogan, A. J. (2019). Social and Medical Models of Disability and Mental Health: Evolution and Renewal. *CMAJ,* 191(1), 16-18. doi:10.1503/cmaj.181008

Hongwanishkul, D., Happaney, K. R., Zelazo, W. S. C. L., & Zelazo, P. D. (2005). Assessment of Hot and Cool Executive Function in Young Children: Age-Related Changes and Individual Differences. *Developmental Neuropsychology,* 28(2), 617-644.

Hopkins, S. (2017). Lessons Learned through Reflection on a Classroom Observation. *Links to Health and Social Care,* 2(1), 77-86.

Hove, N. (2014). The Effectiveness of Special Schools in the Teaching of Children with Learning Disabilities in South Africa. *Mediterranean Journal of Social Sciences,* 5(20), 1903-1907. doi:10.5901/mjss.2014.v5n20p1903

Howitt, D. (2019). *Introduction to Qualitative Research Methods in Psychology. Putting Theory in Practice.* 4th Edition. New York: Pearson.

https://wcedonline.westerncape.gov.za/western-cape-education-department,2022

https://www.ncbi.nim.nih.gov/books/NBK545214/?report=printable

Huizinga, M., Smidts, D. P., & Ridderinkhof, R. R. (2014). Changing Minds: Cognitive Flexibility in the Classroom. *Perspectives on Language and Literacy,* 40(2), 31-35.

Ishak, N. M., & Abu Bakar, A. Y. (2014). Developing Sampling Frame for Case Study: Challenges and Conditions. *World Journal of Education,* 4(3), 29-35.

Jenson, K. (2018). Discourses of Disability and Inclusive Education. *He Kupu. The Word,* 5(4), 1-8.

Jewsbury, P. A., Bowden, S. C., & Stauss, M. E. (2016). Integrating the Switching, Inhibition, and Updating Model of Executive Function with the Cattell – Horn – Carroll Model. *Journal of Experimental Psychology: General,* 145(2), 220-245. doi: http://dx.doi.org/10/1037/xge000119

Kaliampos, G. (2021). Constructivism in the Shade of Racial, Ethnic, and Special Needs Diversity Students. *Journal of Research in Science, Mathematics, and Technology Education,* 4(2), 93-105. doi: 10.31756/jrsmte.423

Kaman, Z. K., & Othman, Z. (2016). Validity, Reliability and Triangulation in Case Study Method: An Experience. *Qualitative Research Conference (QRC) 24 – 26 May 2016:350-356.* Retrieved from http://www.qualitative-research-conference.com

Kamenopoulou, L. (2016). Ecological Systems Theory: A Valuable Framework for Research on Inclusion and Special Educational Needs/Disabilities. *Inclusion of Children with Special Educational Needs,* 88(4), 515-527.

Kapa, L. L., & Plante, E. (2015). Executive Function is SLI: Recent Advances and Future Directions. *Cur Dev Disord Rep,* 2, 245-252. doi:10.1007/S40474-051-0050-X

Karbach, J., & Unger, K. (2014). Executive Control Training from Middle Childhood to Adolescence. *Frontiers in Psychology,* 5(390), 1-14.

Kaufman, C. (2010). *Executive Function in the Classroom. Practical Strategies for Improving Performance and Enhancing Skills for All Students.* Baltimore: Paul H. Brookes Publishers.

Kayi-Aydar, H. (2013). Scaffolding Language Learning in an Academic ESL Classroom. *ELT Journal,* 76, 324-334.

Kefallinou, A., Symeonidou, S., & Meijer, C. J. W. (2020). Understanding the Value of Inclusive Education and its Implementation: A Review of the Literature. *Prospects,* 49, 135-152. doi: https://doi.org/10.1007/s11125-020-09500-2

Khasawneh, M. A. S. (2021). Cognitive Flexibility of Students with Learning Disabilities in English Language and its Relationship to Some Variables. *Shanlax International Journal of Education,* 9(3), 49-56. doi: https://doi.org/10.34293/education.v9i3.4003

Khairuddin, K. F., Dally, K., & Foggett, J. (2016). Collaboration Between General and Special Education Teachers in Malaysia. *Journal of Research in Special Education Needs,* 16(s1), 909-913.

Khumalo, S., & Hodgson, T. F. (2017). *Basic Education Rights Handbook – Education Rights in South Africa.* Chapter 5. Retrieved from http://section27.org.za/wp-content/uploads/2017/02/chapter-5pdf

Kiger, M. E., & Varipio, L. (2020). Thematic Analysis of Qualitative Data: AMGEE Guide No. 131. *Medical Teacher,* 42(8), 846-854. doi:10.1080/0142159X.2020.1755030

Kihlstrom, J. F. (2010). Social Neuroscience: The Footprints of Phineas Gage. *Social Cognition,* 28(6), 757-783.

Kim, M. J., Park, J. Y., Yoo, E., & Kim, J. (2020). Effects of a Cognitive-Functional Intervention Method on Improving Executive Function and Self-Directed Learning in School-Aged Children with Attention Deficit Hyperactivity Disorder: A Single-Subject Design Study. *Occupational Therapy International.* 2020 Jul 10; 2020:1250801. doi:10.1155/2020/1250801. PMID: 32728351; PMCID: PMC7368929.

Klaassen, R. G. (2018). Interdisciplinary Education: A Case Study. *European Journal of Engineering Education,* 43(6), 842-859. doi:10.1080/03043797.2018.1442417

Korpa, T., Skaloumbakas, C., Katsounas, M., Papadopoulou, P., Lytra, F, & Karagianni S. (2020). EF Train: Development of an Executive Function Training Program for Preschool and School-aged Children with ADHD. *International Journal of Psychology and Psychological Therapy,* 20(1), 13-27.

Kotowicz, Z. (2007). The Strange Case of Phineas Gage. *History of the Human Science,* 20(1), 115-131.

Kuhn, L. J., Willoughby, M. T., Wilbourn, M. P., Vernon-Feagans, L., Blair, C. B., & Family Life Project Key Investigators. (2014). Early Communicative Gestures Prospectively Predict Language Development and Executive Function in Early Childhood. *Child Development,* 85, 1898-1914.

Landorf, H., & Nevin, A. (2007). Inclusive Global Education: Implications for Social Justice. *Journal of Education and Administration,* 45(6), 711-723. doi:10.1108/09578230710829892

Lee, K., Bull, R., & Ho, R. M. H. (2013). Developmental Changes in Executive Functioning. *Child Development,* 84(6), 1933-1953. doi:10.1111/edev.12096

Lebona, T. G. (2013). *The Implementation of Inclusive Education in Primary Schools in the Lejweleputswa Education District.* Bloemfontein: Central University of Technology, Free State.

Lehohla, M., & Hlalele, D. (2012). Inclusive Classrooms: An Ecosystemic Perspective. *J Hum Ecol,* 37(3), 189-201.

Leung, R. C., Vogan, V. M., Powell, T. L., Anagnostou, E., & Taylor, M. (2016). The Role of Executive Functions in Social Impairment in Autism Spectrum Disorders. *Child Neuropsychology,* 22(3), 336-344.

Leva, B. (2014). The Piaget Theory of Cognitive Development: An Educational Implications. *Educational Psychology*, 1(1): 1 – 8. Available on line at https://www.researchgate.net/publication/265916960

Liasidou, A., & Antoniou, A. (2013). A Special Teacher for a Special Child? (Re)Considering the Role of the Special Education Teacher Within the Context of an Inclusive Education Reform Agenda. *European Journal of Special Needs Education,* 28(4), 494-506. doi:10.1080/08856257.2013.820484

Liew, S. B. (2015). *The Right of Children with Learning Disabilities to an Adequate Standard of Living and Social Protection.* Aberystwyth University. Research Gate. doi:10.13140/RG.2.1.2346.8004. Retrieved from http://www.researchgate.net/publication/281712036

Loreman, T., McGhie-Richmond, D., Kolupayeva, A., Taranchenko, O., Mazin, D., Crocker, C., & Petryshyn R. (2016). A Canadian-Ukraine Collaborative Initiative for Introducing Inclusive Education for Children with Disabilities in Ukraine: Participant perspectives. *School Effectiveness and School Improvement. An International Journal of Research, Policy and Practice,* 27(1), 24-44. doi:10.1080/09243453.2015.1018912

Longo, C. A., Kerr, E. N., & Smith, M. L. (2012). Executive Functioning in Children with Interactable Frontal Lobe or Temporal Lobe Epilepsy. *Epilepsy and Behaviour,* 26(1), 102-108. doi: http://dx.doi.org/10.1016/j.yebeh.2012.11.003

Louw, D., & Louw L. A. (2014). *Child and Adolescent Development.* (2nd ed). Bloemfontein: Psychology Publications.

Magoge, B. (2018). Inclusive Perspectives in South Africa. *Inclusive Education. Perspectives on Inclusive Education in South Africa,* 1(1):3.

Mahlo, D. (2013). Theory and Practice Divide in the Implementation of the Inclusive Education Policy: Reflections through Freire and Bronfenbrenner's Lenses. *Mediterranean Journal of Social Sciences,* 4(13), 163-170 doi:10.5901/mjss.2013.v4n13p163

Makoelle, T. M., & Burmistrova, V. (2020). Funding Inclusive Education for Equity and Social Justice in South African Schools. *South African Journal of Education,* 40(4), 1-9. doi: http://doi.org/10.15700/saje.v40n4a2037

Maree, K. (2015). *First Steps in Research.* Pretoria: Van Schaik Publishers.

Marcus, M. L. (2018). *Multidisciplinary Team Collaboration During the Special Education Evaluation Process.* St. Johns University, New York.

Martins, E. C., Osório, A., Verissimo, M., & Martins, C. (2016). Emotion Understanding in Preschool Children: The Role of Executive Functions. *International Journal of Behavioural Development,* 40(1), 1-10. doi:10.1177/0165025414556096

Mason, J. (1996). *Qualitative Researching.* London: Sage Publications.

Mason, J. (2009). *Qualitative Researching. (*2nd ed.). London: Sage Publications.

Meaux, A. B., & Norris, J. A. (2018). Curriculum-Based Language Interventions: What, Who, Why, Where, and How? *Language, Speech, and Hearing Services in Schools,* 49, 165-175.

Mertens, D. M. (2015). *Research and Evaluation in Education and Psychology: Integrating Diversity with Quantitative, Qualitative, and Mixed Methods. (4th ed.).* Thousand Oaks: Sage.

McDonald, P. A., & Berg, D. H. (2018). Identifying the Nature of Impairments in Executive Functioning and Working Memory of Children with Severe Difficulties in Arithmetic. *Child Neuropsychology,* 24(8), 1047-1062*.*

McGonigle-Chalmers, M. (2015). *Understanding Cognitive Development.* Los Angeles: Sage Publications.

McGuirk, P. M., & O'Neill, P. (2016). Using Questionnaires in Qualitative Human Geography. In: I. Hay (Ed.), *Qualitative Research Methods in Human Geography,* 246-273). Don Mills, Canada: Oxford University Press.

McKenzie, J. A., & Dalton, E. M. (2020). Universal Design for Learning in Inclusive Education Policy in South Africa. *African Journal of Disability,* 9, a776. doi: https://doi.org/10.4102/ajod.v9i0.776

McKim, C. A. (2017). The Value of Mixed Methods Research: A Mixed Methods Study. *Journal of Mixed Methods Research,* 11(2), 202-222.

McMillan, J. H., & Schumacher, S. (2010). *Research in Education: Evidence-Based Inquiry.* 6th ed. Boston: Pearson Education.

McMillan, J. H., & Schumacher, S. (2014). *Research in Education: Evidence-Based Inquiry.* 7th ed. Boston: Pearson Education.

Miles, M. B., & Huberman, A. M. (1994). *An Expanded Sourcebook. Qualitative Data Analysis.* 2nd ed. California: Sage Publications.

Miles, S., & Singal, N. (2010). The Education for All and Inclusive Education Debate: Conflict, Contradiction or Opportunity? *International Journal of Inclusive Education,* 14(1), 1-15. doi:10.1080/13603110802265125

Miyake, A. & Shah, P. (1999). *Models of Working Memory. Mechanisms of Active Maintenance and Executive Control.* Cambridge: Cambridge University Press.

Morgan, D. L., & Morgan, R. K. (2008). *Single-Case Research Methods for Behavioural and Health Sciences.* California: Sage Publications.

Morra, S., Panesi, S., Traverso, L., & Usai, M. C. (2018). Which Tasks Measure What? Reflections on Executive Function Development and a Commentary on Podjarny, Kamawar, and Andrews. *Journal of Experimental Child Psychology*, 167, 246-258.

Moriguchi, Y., & Hiraki, K. (2013). Prefrontal Cortex and Executive Function in Young Children: A Review of NIRS Studies. *Frontiers in Human Neuroscience,* 7(867), 1-9. doi:10.3389/fnhum.2013.00867

Naicker, S. (2006). From Policy to Practice: A South African Perspective on Implementing Inclusive Education Policy. *International Journal of Whole Schooling,* 3(1), 1-6.

Nel, M., Engelbrecht, P., Nel, N., & Tlale, D. (2014). South African Teachers' Views of Collaboration within an Inclusive Education System. *International Journal of Inclusive Education,* 18(9), 903-917.

Nel, M., & Grossner, M. M. (2016). An Appreciation of Learning Disabilities in the South African Context. *Learning Disabilities: A Contemporary Journal,* 14(1), 79-92.

Nieto, M.; Ros, L., Medina, G., Ricarte, J. J., & Latorre, J. M. (2016). Assessing Executive Functions in Pre-Schoolers Using Shape School Task. *Frontiers in Psychology,* 7(1489), 1-11.

Nigg, J. T. (2000). On Inhibition/Disinhibition in Developmental Psychology: Views from Cognitive and Personality Psychology and a Working Inhibition Taxonomy. *Psychological Bulletin.* 126(2): 220 – 246.

Nigg, J. T. (2001). Is ADHD an Inhibitory Disorder? *Psychological Bulletin.* 127(5): 571 – 598.

Nouwens S., Groen, M.A., Kleemans, T., & Verhoeven L. (2021). How Executive Functions Contribute to Reading Comprehension. *British Journal of Educational Psychology,* 91, 169-192.

Nutley, S. B., & Söderqvist, S. (2017). How is Working Memory Training Likely to Influence Academic Performance? Current Evidence and Methodological Considerations. *Frontiers in Psychology,* 8(69), 1-11. doi:10.3389/fpsyg.2017.0009

Oberauer, K. (2019). Is Rehearsal an Effective Maintenance Strategy for Working Memory? *Trends in Cognitive Science,* 23(9), 798-809. doi: http://doi.org/10.1016/j.tics.2019.06.002

Obradovic, J., Sulik, M.J., Finch, J. E., & Tirado-Strayer, N. (2018). Assessing Students' Executive Functions in the Classroom: Validating a Scalable Group-based Procedures. *Journal of Applied Developmental Psychology,* 55, 4-18.

O'Toole, L., Hayes, N., & Mhathuna, M. M. (2013). A Bio-ecological Perspective on Educational Transition. *Procedia – Social and Behavioural Sciences,* 140(2014), 121-127.

Panopoulos, N., & Drossinou-Korea, M. (2020). Bronfenbrenner's Theory and Teaching Intervention: The Case of Student with Intellectual Disability. *Journal of Language and Linguistic Studies,* 16(2), 537-551.

Papalia, D. E., Wendkos Olds, S., & Duskin Feldman, R. (2006). *A Child's World: Infancy through Adolescence.* 10th ed. New York: McGraw-Hill Companies.

Patton, M. Q. (2002). *Qualitative Research and Evaluation Methods.* 3rd ed. London: Sage Publications.

Perone, S., Palanisamy, J., & Carlson, S. M. (2017). Age-Related Change in Brain Rhythms from Early to Middle Childhood: Links to Executive Function. *Developmental Science,* 21(6), e12691. doi: https://doi.org/10.1111/desc.12691

Petasis, A. (2019). Discrepancies of the Medical, Social and Biopsychosocial Models of Disability; A Comprehensive Theoretical Framework. *The International Journal of Business Management and Technology,* 3(4 July – August 2019), 1-13.

Pham, L. T. M. (2017-2018). *Qualitative Approach to Research. A Review of Advantages and Disadvantages of Three Paradigms: Positivism, Interpretivism and Critical Inquiry.* M Ed Program 2017-2018. University of Adelaide.

Podolskiy, A. I. (2012). Zone of Proximal Development. *Encyclopedia of the Sciences of Learning.* doi:10.1007/978-1-4419-1428-6

Ponelis, S. R. (2015). Using Interpretive Qualitative Case Studies for Exploratory Research in Doctoral Studies: A Case of Information Systems Research in Small and Medium Enterprises. *International Journal of Doctoral Studies,* 10, 536-550.

Poon, K. (2018). Hot and Cool Executive Functions in Adolescence: Development and Contributions to Important Developmental Outcomes. *Frontiers in Psychology,* 8(2311), 1-18.

Polly, D., & Byker, E. (2020). Considering the Role of Zone of Proximal Development and Constructivism in Supporting Teachers' TRACK and Effective Use of Technology. *Revista de Educación a Distancia,* 64(20), 5, doi: http://dx.koi.org/10.6018/red.408661

Ponelis, S. R. (2015). Using Interpretive Qualitative Case Studies for Exploratory Research in Doctoral Studies: A Case of Information Systems Research in Small and Medium Enterprises. *International Journal of Doctoral Studies,* 10, 535-550.

Posner, M. I., & Rothbart, M. K. (2014). Attention to learning of School Subjects. *Trends Neurosci Educ,* 3(1), 14-17. doi:10.1016/j.tine.2014.02.003.

Queiros, A., Faria, D., & Almeida, F. (2017). Strengths and Limitations of Qualitative and Quantitative Research Methods. *European Journal of Education Studies,* 3(9), 1-18.

Rabiner, D. L., Murray, D. W., Skinner, A. T., & Malane, P. S. (2010). Traial of Two Promising Computer-Based Interventions for Students with Attention Difficulties. *Journal of Abnormal Child Psychology.* 38: 131 – 142.

Rahi, S. (2017). Research Design and Methods: A Systematic Review of Research Paradigms, Sampling, Issues and Instruments Development. *International Journal of Economics & Management Sciences,* 6(403), 1-5.

Rapp, A. C., & Corral-Granados, A. (2021). Understanding Inclusive Education – A Theoretical Contribution from System Theory and the Constructionist Perspective. *International Journal of Inclusive Education.* doi:10.1080/13603116.2021.1946725.

Rahman, M. S. (2017). The Advantages and Disadvantages of Using Qualitative and Quantitative Approaches and Methods in Language "Testing and Assessment" Research: A Literature Review. *Journal of Education and Learning,* 6(1), 2-112. doi:10.5539/jel.v6n1p102

Ridder, H. (2017). The Theory Contribution of Case Study Research Designs. *Business Research,* 10, 281-305.

Rinquest, E. (2021). *The Place-Making Pedagogical Practices of Teachers in an Inclusive High School.* University of Stellenbosch.

Roebers, C. M. (2017). Executive Function and Metacognition: Towards a Unifying Framework of Cognitive Self-regulation. *Developmental Review.* 45:31-51.

Rose, S. A. Feldman, J. F., & Jankowski, J. J. (2012). Implications of Infant Cognition for Executive Functions at Age 11. *Psychological Science,* 23(11), 1345-1355. doi: 10.1177/0956797612444902

Röthlisberger, M., Neuenschwander, R., Cimeli, P., Michel, E., & Roebers, C. M. (2012). Improving Executive Functions in 5- and 6-year-olds: Evaluation of a Small Group Intervention in Prekindergarten and Kindergarten Children. *Infant and Child Development,* 21(4), 411-429.

Saint-Pierre, C., Herskovic, V., & Sepúlveda, M. (2018). Multidisciplinary Collaboration in Primary Care: A Systematic Review. *Family Practice,* 35(2), 132-141. doi:10.1093/fampra/cmx085

Sasser, T. R., Bierman, K. L., & Heinrichs, B. (2015). Executive Functioning and School Adjustment: The Mediational Role of Pre-Kindergarten Learning-related Behaviors. *Early Childhood Research Quarterly,* 30(2015), 70-79.

Saunders, M. N. K., Lewis, P., & Thornhill, A. (2019). *Research Methods for Business Students.* 8th edition. United Kingdom: Pearson Education Limited.

Schoemaker, K., Bunte, T., Andrews Espy, K., Dekovic, M., & Matthys, W. (2014). Executive Functions in Preschool Children with ADHD and DBD: AN 18-Month Longitudinal Study. *Developmental Neuropsychology.* 39(4): 302 – 315.

Scotland, J. (2012). Exploring the Philosophical Underpinnings of Research: Relating Ontology and Epistemology to the Methodology and Methods of the Scientific, Interpretive, and Critical Research Paradigms. *English Language Teaching,* 5(9), 9-16.

Sefotho, M. M. (2015). A Researcher's Dilemma: Philosophy in Crafting Dissertations and Theses. *Journal Social Science.* 42(1,2): 23 – 36.

Seng, G., Tseng, W., Chiu, Y., Tsai, W., Wu, Y., & Gau, S. (2019). Executive Functions in Youths with Autism Spectrum Disorder and their Unaffected Siblings. *Psychology Medicine,* 51, 2571-2580.

Serpell, Z. M. & Esposito, A. G. (2016). Development of Executive Functions: Implications for Educational Policy and Practice. *Policy and Insights from the Behavioral and Brain Sciences,* 3(2), 203-210.

Shakespeare, T., Watson, N., & Alghaib, O. A. (2017). Blaming the Victim, All Over Again: Waddell and Aylward's Biopsychosocial (BPS) Model of Disability. *Critical Social Policy,* 37(1), 22-41.

Shenton, A. K. (2004). Strategies for Ensuring Trustworthiness in Qualitative Research Projects. *Education for Information,* 22(2004), 63-75.

Shyman, E. (2015). Towards a Globally Sensitive Definition of Inclusive Education Based in Social Justice. *International Journal of Disability, Development and Education,* 62(4), 351-362. doi: http://dx.doi.org/10.1080/1034912X.2015.1025715

Smagorinsky, P. (2018). Learning, Culture and Social Interaction. *Learning, Culture and Social Integration,* 16(2018), 70-75. doi: http://kd.doi.org/10.1016/j.lcsi.2017.10.009

Smith, J. A. (2015). *Qualitative Psychology. A Practical Guide to Research Methodology.* 3rd Edition. London: Sage Publications Ltd.

Somekh, B., & Lewin, C. (2005). *Research Methods in the Social Sciences.* London: Sage Publications.

South Africa. (1996). Constitution of the Republic of South Africa, Act No 108 of 1996. Pretoria: Government Printer.

Spiegel, J. A., Goodrich, J. M., Morris, B. M., Osborn, C. M., & Lonigan, C. J. (2021). Relations Between Executive Functions and Academic Outcomes in Elementary School Children: A Meta-Analysis. *Psychological Bulletin,* 147(4), 329-351.

Stake, R. E. (2006). *Multiple Case Study Analysis.* New York: The Guilford Press.

Steinhoff, E. (2015). The Role of Occupational Therapy in Implementing Inclusive Education in a Residential Care Facility: A Case Study. *Independent Study Project (ISP) Collection.* 2159. Retrieved from https://dgitalcollections.sit.edu/isp_collection/2159/

Sternberg, R. J. (2006). *Cognitive Psychology.* 4th Ed. Belmont: Thomson Higher Education.

Stock, P., & Burton, R. J. (2011). *Defining Terms for Integrated (Multi-inter-transdisciplinary) Sustainability Research.* Retrieved from http://www.mdpi.com/2071-1050/3/8/1090. doi:10.3390/su3081090

Straub, R., Kulin, S. & Ehmke, T. (2021). A Transdisciplinary Evaluation Framework for the Assessment o,f Integration in Bounday-Crossing Collaborations in Teacher Education. *Studies in Educational Evaluation,* 68(2021), 1-10. doi: http://doi.org/10.1016/j.stueduc.2020.100952

Suchy, Y. (2009). Executive Functioning: Overview, Assessment, and Research Issues for Non-Neuropsychologists. *The Society of Behavioral Medicine,* 37, 106-116. doi:10.1007/s12160-009-9097-4

Sutinen, A. (2007). *Constructivism and Education: Education as an Interpretative Transformational Process.* doi:10.1007/s11217-007-9043-5

Tamnes, C. K., Østby, Y., Walhovd, K. B., Westlye, L. T., Due-Tønnessen, P., & Fjell, A. M. (2010). Neuroanatotomical Correlates of Executive Functions in Children and Adolescents: A Magnetic Resonance Imaging (MRI) Study of Cortical Thickness. *Neuropsychologia.* 48(2010): 2496 – 2508.

Thomas, A., Menon, A., Boruff, J., Rodriguez, A. M., & Ahmed, S. (2014). Application of Social Constructivist Learning Theories in Knowledge Translation for Healthcare professionals: A Scoping Review. *Implementation Science,* 9, 54. Doi:10.1186/1748-5908-9-54

Tibbitts, F. L. (2017). Revisiting "Emerging Models of Human Rights Education". *International Journal of Human Rights Education,* 1(1), 1-24. Retrieved from http://repository.usfca.edu/ijhre/vol1/2

Travers, M. (2020). Multidisciplinary Collaboration in the Development of Individual Education Plans: Crossing Boundaries – the Challenges and Opportunities for the Teaching Profession. *REACH Journal of Special Needs Education in Ireland,* 33.2(2020), 61-81.

Tuan, L.T. (2012). Vocabulary Recollection through Games. *Theory and Practice in Language Studies,* 2(2), 257-264. doi:10.4304/tpls.2.2.257-246

Tufford, L., & Newman, P. (2010). Bracketing in Qualitative Research. *Qualitative Social Work,* 11(1), 80-96.

UNESCO. (1994). *The Salamanca Statement and Framework for Action on Special Needs Education.* Spain: UNESCO.

United Nations, General Assembly. (2011). *United Nations Declaration on Human Rights Education and Training.* GA 66/127, Art. 2, paras. 1 – 2. Geneva: United Nations.

Uzun, K. (2016). Critical Investigation of a Qualitative Research Article from Ontological and Epistemological Perspectives. *International Journal of Social Sciences and Education Research,* 2(3), 836-842.

Varvara, P., Varuzza, C., Sorrentino, A. C. P., Vicari, S., & Menghini, D. (2014). Executive Functions in Developmental Dyslexia. *Frontiers in Human Neuroscience,* 8(120), 1-8.

Vandenbroucke, L., Verschueren, K., & Baeyens, D. (2017). The Development of Executive Functioning Across the Transition to First Grade and its Predictive Value for Academic Achievement. *Learning and Instruction,* 49, 103-112.

Villeneuve, M. (2009). A Critical Examination of School-Based Occupational Therapy Collaborative Consultation. *Canadian Journal of Occupational Therapy,* 76, 206-218.

Vrasmas, T. (2014). Curriculum for Children with Disabilities in Inclusive Education. A Literature Review. *Procedia – Social and Behavioral Sciences,* 127(2014), 336-341. doi:10.1016/j.sbspro.2014.03.26

Wahyuni, D. (2012). The Research Design Maze: Understanding Paradigms, Cases, Methods and Methodologies. *Research Note,* 10(1), 69-80.

Waitoller, F. R., & Artiles, A. J. (2013). A Decade of Professional Development Research for Inclusive Education: A Critical Review and Notes for a Research Program. *Review of Educational Research,* 83(3), 319-356. doi:10.3102/0034654313483905

Walk, L. M., Evers, W. F., Quante, S., & Hille, K. (2018). Evaluation of a Teacher Training Program to Enhance Executive Functions in Preschool Children. *PLoS ONE,* 13(5), 1-20. doi: https://doi.org/10.1371/journal.pone.0197454

Walliman, N. (2011). *Research Methods. The Basics.* New York: Routledge.

Walton, E. (2018). Decolonising (Through) Inclusive Education? *Educational Research for Social Change (ERSC),* 7, 31-45.

Wass, R., & Golding, C. (2014). Sharpening a Tool for Teaching: The Zone of Proximal Development. *Teaching in Higher Education,* 19(6), 671-684. Available online at: http://dx.doi.org/10.1080/13562517.2014.901958

Watson, S. M. R., Gable, R. A., & Morin, L. L. (2016). The Role of Executive Functions in Classroom Instruction of Students with Learning Disabilities. *International Journal of School and Cognitive Psychology,* 3(1), 1-5.

Watson, S. M. R., Michalek, A. M. P., & Gable, R. A. (2016). Linking Executive Functioning and Written Language: Intervention for Students with Language Learning Disorders. *International Journal of School and Cognitive Psychology,* 3(3), 1-8.

Wehmeyer, W. (2014). *Investigating a Transdisciplinary Collaborative Service Delivery Approach in Addressing Learners Experiencing Barriers to Learning.* Doctoral thesis. Pretoria: University of South Africa.

Weismer, S. E., Kaushanskaya, M., Larson, C., Mathée, J. & Bolt, D. (2018). Executive Function Skills in School-Age Children with Autism Spectrum Disorder: Association with Language Abilities. *Journal of Speech, Language, and Hearing Research,* 61, 2641-2658.

Williams, J. N. (2013). *Attention, Awareness, and Noticing in Language Processing and Learning.* Department of Theoretical and Applied Linguistics. University of Cambridge. U.K.

Wirawan, N. G. (2019). Effect of Repetition Method on Teaching English Process in Classroom. *International Journal of Social Sciences and Humanities,* 3(3), 143-146. doi: https://doi.org/10.29332/ijssh.v3n3.368

Witteman, H. O., & Stahl, J. E. (2013). Facilitating Interdisciplinary Collaboration to Tackle Complex Problems in Health Care: Report from an Exploratory Workshop. *Health Systems,* 2, 162-170.

Wium, A. M., & Louw, B. (2013). Revisiting the Roles and Responsibilities of Speech-Language Therapists in South African Schools. *SAJCD.* 60, 31-37. doi:10.7196/sajcd.247

Wolfe, M. E. (2004). *Executive Function Processes: Inhibition, Working Memory, Planning and Attention in Children and Youth with Attention Deficit Hyperactivity Disorder.* Texas A&M University.

Woolfolk, A. (2010). *Educational Psychology.* 11th ed. New Jersey: Pearson Education.

Xia, Z., Hancock, R., & Hoeft, F. (2017). *Neurobiological Bases of Reading Disorder Part 1: Etiological Investigations.* doi:101111/lnc3.12239

Yilmaz, K. (2008). Constructivism: Its Theoretical Underpinnings, Variations, and Implications for Classroom Instruction. *Educational Horizons,* 86(3), 161-172.

Yin, R. K. (2012). *Application of Case Study Research.* California: Sage.

Yin, R. K. (2014). *Case Study Research: Design and Methods.* Los Angeles: Sage.

Yukhymenko, M. A., Brown, S. W., Lawless, K. A., Brodowinska, K., & Mullin, G. (2014). Thematic Analysis of Teacher Instructional Practices and Student Responses in Middle School Classrooms with Problem-based Learning Environment. *Global Education Review,* 1(3), 93-109.

Zelazo, P. D., Müller, U., Frye, D., Marcovitch, S., Argitis, G., Boseovski, J., Chiang, J. K., Hongwanishkul, D., Schuster, B. V., Sutherland, A., & Carlson, M. (2003).

The Development of Executive Function in Early Childhood. *Monographs of the Society for Research in Child Development,* 68(3), 1-151.

APPENDIX A: ETHICAL CLEARANCE FROM THE UNIVERSITY OF SOUTH AFRICA (UNISA)

UNISA | university of south africa

UNISA COLLEGE OF EDUCATION ETHICS REVIEW COMMITTEE

Date: 2022/02/09

Dear Ms MME Van Niekerk

Decision: Ethics Approval from 2022/02/09 to 2027/02/09

Ref: **2022/02/09/42008360/17/AM**
Name: Ms MME Van Niekerk
Student No.: 42008360

Researcher(s): Name: Ms MME Van Niekerk
E-mail address: 42008360@mylife.unisa.ac.za
Telephone: 079 8964085

Supervisor(s): Name: Prof K Mohangi
E-mail address: mohank@unisa.ac.za
Telephone: 012 337 6169

Title of research:

Therapeutic multidisciplinary team approaches in addressing learner's executive functioning needs in Cape Town special schools

Qualification: PhD Psychology of Education

Thank you for the application for research ethics clearance by the UNISA College of Education Ethics Review Committee for the above mentioned research. Ethics approval is granted for the period 2022/02/09 to 2027/02/09.

*The **medium risk** application was reviewed by the Ethics Review Committee on 2022/02/09 in compliance with the UNISA Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.*

The proposed research may now commence with the provisions that:

1. The researcher will ensure that the research project adheres to the relevant guidelines set out in the Unisa Covid-19 position statement on research ethics attached.

2. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.

University of South Africa
Preller Street, Muckleneuk Ridge, City of Tshwane
PO Box 392 UNISA 0003 South Africa
Telephone: +27 12 429 3111 Facsimile: +27 12 429 4150
www.unisa.ac.za

APPENDIX B: TURN-IT-IN REPORT

Thesis Turnitin copy

23%	20%	15%	9%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	hdl.handle.net Internet Source	2%
2	uir.unisa.ac.za Internet Source	2%
3	repository.up.ac.za Internet Source	1%
4	scholar.sun.ac.za Internet Source	1%
5	repository.nwu.ac.za Internet Source	1%
6	researchspace.ukzn.ac.za Internet Source	1%
7	ujcontent.uj.ac.za Internet Source	1%
8	etd.uwc.ac.za Internet Source	<1%
9	Submitted to University of South Africa Student Paper	<1%

APPENDIX C: CERTIFICATE OF LANGUAGE EDITING

Le Roux Academic Consulting

Editing & Proofreading Services

Dr Suzaan le Roux
Artillery Road
Door De Kraal
Bellville
7530
✉ proofreading@mweb.co.za
☎ +27 (0)82 3210 484

01 November 2023

To whom it may concern

DECLARATION OF LANGUAGE EDITING: MARIËTTE VAN NIEKERK

This letter confirms that I have proofread/edited the thesis of Ms Mariëtte van Niekerk titled "Therapeutic multidisciplinary team approaches in addressing learners' executive functioning needs in Cape Town special schools".

The editing service focused on improving the accuracy of language, overall readability, structure, and style, as well as checking spelling, grammar, and punctuation.

The editing service excluded re-writing any part of the research assignment or re-editing after editor comments were addressed.

Yours sincerely

Dr Suzaan Le Roux

Contributing towards your success
Moneyline 1838 CC, Reg. No. 1999/056460/23, trading as *Le Roux Academic Consulting*
Members: S le Roux, PD le Roux

APPENDIX D: DECLARATION OF TECHNICAL EDITING

23 4TH STREET

MENLO PARK

PRETORIA

0102

11th November 2023

TO WHOM IT MAY CONCERN

This letter declare that I have done the technical editing of the thesis titled:

"THERAPEUTIC MULTIDISCIPLINARY TEAM APPROACHES IN ADDRESSING LEARNERS' EXECUTIVE FUNCTIONING NEEDS IN CAPE TOWN SPECIAL SCHOOLS" by **Martha Maria Elizabeth van Niekerk,** Student number 42008360, submitted in accordance with the requirements for the degree of Philosophy Doctor in Psychology of Education at the University of South Africa.

The technical formatting focused on general layout of the thesis.

Yours sincerely,

Sharon Baxter

Private Email: nbaxter@lantic.net

Cell: 0722502075

APPENDIX E: LETTER REQUETING PERMISSION FROM THE WESTERN CAPE EDUCATION DEPARTMENT TO CONDUCT RESEARH AT THE THREE SCHOOLS

LETTER OF PERMISSION FOR RESEARCH AT XXX SCHOOL, XXX SCHOOL, AND XXX SCHOOL
_____

Request for permission from the Western Cape Education Department to conduct research at XXX, XXX and XXX.

Title of thesis:

Therapeutic multidisciplinary team approaches in addressing learners' executive functioning needs in Cape Town special schools

17 February 2022

Mr. M. Kanzi
The Director: Research Services
Western Cape Education Department
Private Bag X9114
CAPE TOWN
8000
021-4672350

Dear Mr. Kanzi

I, Mariëtte van Niekerk, am doing research under Professor Mohangi from the Department of Psychology of Education towards a PhD at the University of South Africa.

The aim of the study is to explore and gain an understanding of the different approaches followed by the multidisciplinary teams at XXX School, XXX School, and XXX School. This

case study is thus an in-depth exploration of the multidisciplinary collaborative approaches followed at three special schools in addressing the executive functioning needs of foundation phase learners.

The procedures of the research study will be as follows:

The multidisciplinary team members (occupational therapists, speech- and language therapists, Grade 1, 2, and 3 teachers) who voluntarily sign the informed consent will take part in the study for the duration of five months, from March to August 2022, excluding school holidays. It will be expected of the participants to complete a questionnaire, to take part in one individual semi-structured interview, and one focus group discussion with each of the three multidisciplinary teams. The meetings will take place after school and will not infringe on teaching- or therapy time.

The researcher will do five classroom observations (one for each participant), two small group observations (one for the occupational therapist and one for the speech- and language therapist), and two individual therapy session observations (one for the occupational therapist and one for the speech- and language therapist) at each school to observe the approaches followed in addressing executive functioning needs of learners who experience a diverse spectrum of barriers to learning. The observations in the learning area, English Home Language, will take place during school hours at a time convenient for the teachers and therapists. Parents will be informed and asked to voluntarily sign a consent form giving permission for the researcher to be present during a classroom session, small group session, and individual therapy session. The parents will be informed that the therapists and teachers, as participants, are the focus of the observations and not the learners.

There are no anticipated risks involved in this study. Participants are welcome to withdraw from the research at any stage.

The benefits of the research study regarding the multidisciplinary collaborative team approach will contribute to the literature and inform future best practices, specifically in addressing executive functioning needs while incorporating therapeutic intervention strategies with curriculum content.

Participants will not receive any remuneration for taking part in this research study. The participants will get a copy of their signed consent. They will have access to all audio

recordings of interviews and multidisciplinary team discussions to review or edit if applicable. Feedback to the participants will be given verbally, and they will have access to all the field notes.

Confidentiality will be maintained throughout this research study. The confidentiality of the schools and the participants will be protected. The participants will be identified by means of their professions and the schools by means of numbers.

Should you have any questions or concerns, you are welcome to contact me. My contact details are:
0798964085
mariettevn1968@gail.com

The contact details of my supervisor, Professor Mohangi, are:
012-3376169
mohank@unisa.ac.za

Yours sincerely

Mariëtte van Niekerk
PhD student

APPENDIX F: LETTER OF APPROVAL FROM THE WESTERN CAPE EDUCATION DEPARTMENT TO CONDUCT RESEARCH AT THE THREE SCHOOLS

Western Cape Government
Education

Directorate: Research

meshack.kanzi@westerncape.gov.za
Tel: +27 021 467 2350
Fax: 086 590 2282
Private Bag x9114, Cape Town, 8000
wced.wcape.gov.za

REFERENCE: 20220222-4
ENQUIRIES: Mr M Kanzi

Ms Martha Van Niekerk
13 Schoongezicht Park
Brackenfell
Cape Town
7560

Dear Ms Martha Van Niekerk,

RESEARCH PROPOSAL: MULTIDISCIPLINARY TEAM APPROACHES ADDRESSING LEARNERS' EXECUTIVE FUNCTIONING NEEDS IN CAPE TOWN SPECIAL SCHOOLS.

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

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educators' programmes are not to be interrupted.
5. The Study is to be conducted from **23 February 2022 till 31 August 2022**.
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Mr M Kanzi at the contact numbers above quoting the reference number.
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:

> **The Director: Research Services**
> **Western Cape Education Department**
> **Private Bag X9114**
> **CAPE TOWN**
> **8000**

We wish you success in your research.

Kind regards,
Meshack Kanzi
Directorate: Research
DATE: 23 February 2022

1 North Wharf Square, 2 Lower Loop Street,   Private Bag X 9114, Cape Town, 8000
Foreshore, Cape Town 8001   Safe Schools: 0800 45 46 47
tel: +27 21 467 2531   wcedonline.westerncape.gov.za

236

APPENDIX G: LETTER REQUESTING PERMISSION FROM THE PRINCIPALS AT THE THREE SCHOOLS

UNISA | university of south africa

LETTER OF PERMISSION FOR RESEARCH AT XXX SCHOOL
_____

Request for permission from the Principal to conduct research at XXX School

Title of thesis:

Therapeutic multidisciplinary team approaches in addressing learners' executive functioning needs in Cape Town special schools

February 2022

Mr. XXX

Principal of XXX School

XXX@XXX.co.za

XXXXXXX

Dear Mr. XXXX

I, Mariëtte van Niekerk, am doing research under Professor K. Mohangi from the Department of Psychology of Education towards a PhD at the University of South Africa.

The aim of the study is to explore and gain an understanding of the approach followed by the multidisciplinary team at XXXX. This case study is an in-depth exploration of the multidisciplinary collaborative approaches followed at three special schools in addressing the executive functioning needs of foundation phase learners.

The procedures of the research study will be as follows:

The multidisciplinary team members (occupational therapists, speech- and language therapists, Grade 1, 2 and 3 teachers) who voluntarily sign the informed consent will take

part in the study for the duration of five months, from March to August 2022, excluding school holidays. It will be expected of the participants to complete a questionnaire, to take part in one individual semi-structured interview, and one focus group discussion. The meetings will take place after school and will not infringe on teaching or therapy time.

The researcher will do five classroom observations (one for each participant), two small group observations and two individual therapy session observations (one for each of the two therapists) to observe the approaches followed in addressing the executive functioning needs of learners who experience a diverse spectrum of barriers to learning. Observations in the learning area, English Home Language, will take place during school hours at a time convenient for the teachers and therapists. Parents will be informed and asked to voluntarily sign a consent form giving permission for the researcher to be present during two classroom sessions, two small group sessions and two individual therapy sessions. The parents will be informed that the therapists and teachers, as participants, are the focus of the observations and not the learners.

There are no anticipated risks in this study. Participants are welcome to withdraw from the research at any stage.

The benefits of the research study regarding the multidisciplinary collaborative team approach will contribute to the literature and inform future best practices, specifically in addressing executive functioning needs while incorporating therapeutic intervention strategies with curriculum content.

Participants will not receive any remuneration for taking part in this research study. The participants will get a copy of their signed consent. They will have access to all audio recordings of interviews and multidisciplinary team discussions to review or edit if applicable. Feedback to the participants will be given verbally, and they will have access to all the field notes.

Confidentiality will be maintained throughout this research study. The confidentiality of the schools and the participants will be protected. The participants will be identified by means of their professions and the schools by means of numbers.

Should you have any questions or concerns, you are welcome to contact me. My contact details are:

0798964085

mariettevn1968@gail.com

The contact details of my supervisor, Professor Mohangi, are:

012-3376169

mohank@unisa.ac.za

Yours sincerely

Mariëtte van Niekerk

PhD student

APPENDIX H: LETTER OF CONSENT FOR THE PARTICIPANTS

UNISA | university of south africa

LETTER OF CONSENT FOR PARTICIPANTS
_____

February 2022

Title of thesis:

Therapeutic multidisciplinary team approaches in addressing learners' executive functioning needs in Cape Town special schools

You are asked to participate in a research study conducted by **Mariëtte van Niekerk** towards a PhD degree under the supervision of Professor K. Mohangi from the Department of Psychology of Education at the University of South Africa (UNISA).

You are invited to participate in this study because you are a member of the multidisciplinary team working with the foundation phase learners at XXX School.

The aim of the research study

The aim of this research study is to explore and gain an understanding of the approach followed by the multidisciplinary team at XXX school. This case study is thus an in-depth exploration of the multidisciplinary collaborative approach addressing executive functioning needs of foundation phase learners.

The procedure of the research study

You will be asked to volunteer to participate in the study for the duration of five months, from March to August 2022, excluding school holidays.
If you volunteer to participate, the following will be expected of you:

- **Completing a questionnaire, one semi-structured interview, and one focus group (multidisciplinary team) discussion:**

One semi-structured individual interview will be conducted with you, as well as one multidisciplinary team discussion (focus group discussion) with regard to addressing the executive functioning needs of foundation phase learners. You will receive an outline of the potential questions that will arise in the interview prior to it being conducted. The following topics will be covered individually and in multidisciplinary team discussions: your biographical information, professional practice, knowledge of executive functions and addressing executive functioning needs in an integrative manner.

Observations

The researcher will do one classroom observation (of English Home Language), one small group observation, and one individual therapy session observation to observe your approach to addressing the executive functioning needs of learners who experience a diverse spectrum of barriers to learning.

Potential risks and discomfort

There should be no risks involved in this study. Participants are welcome to withdraw from the research at any stage without any consequences.

Potential benefits

I believe the description of the multidisciplinary collaborative team approach will contribute to the literature and inform future best practices, specifically in addressing executive functioning needs.

Payment for participation

Participants will not receive any remuneration for taking part in this research study.

Confidentiality

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of:

- Individual interviews and multidisciplinary team discussions will be audio-recorded. The sole purpose of this is to enable the researcher to focus on what is being said during the interviews and discussions and not to be distracted while making notes.

The audio recording will be used with utmost caution and confidentiality. After the interviews and team discussions, the researcher will make notes.

- Participants will have access to any audio recordings of interviews conducted and multidisciplinary team discussions held to review or edit if necessary or applicable. The audio recordings will be deleted after the thesis has been written.

- All data produced and gathered as a result of this research study will be safeguarded in a password-protected safe as well as electronically in a password-protected folder.

- Confidentiality will be maintained throughout this research study. The confidentiality of the school and the participants will be protected. The participants will be identified by means of their professions and the schools by means of numbers.

Contact details of student and supervisor

The student conducting this research study is Mariëtte van Niekerk, a registered Educational Psychologist (HPCSA Registration number: PS0131270). If you would like to be informed about the final research findings, which should be available by November 2022, or should you have any questions or concerns, you are welcome to contact me.

My contact details are:

0798964085

mariettevn1968@gail.com

Should you have any concerns about the manner in which the research is conducted, you are welcome to contact my supervisor, Professor Mohangi, from the Department of Educational Studies (Educational Psychology) at UNISA. Her contact details are:

012-3376169

mohank@unisa.ac.za

You will be given a copy of the full Informed Consent and Agreement for Confidentiality Form after you have signed.

Thank you for taking the time to read this information sheet and for participating in this research study.

Yours sincerely

Mariëtte van Niekerk

PhD student

APPENDIX I: LETTER REQUESTING PARENTAL CONSENT FOR OBSERVATIONS

UNISA | university of south africa

LETTER REQUESTING PARENTAL CONSENT FOR OBSERVATIONS IN RESEARCH STUDY
_____

February 2022

Dear Parent

I, Mariëtte van Niekerk, am doing research under Professor K. Mohangi from the Department of Psychology of Education towards a PhD at the University of South Africa. The title of my thesis is: **Therapeutic multidisciplinary team approaches in addressing learners' executive functioning needs in Cape Town special schools.**

The aim of this case study is to gain an in-depth understanding of the multidisciplinary collaborative approaches followed at three special schools in addressing the executive functioning needs of foundation phase learners. The participants in this study are occupational therapists, speech- and language therapists, and Grade 1, 2 and 3 teachers.

The researcher will conduct five classroom observations (observing one English Home Language lesson of the Grade 1, 2 and 3 teachers and one classroom session of the occupational therapist and one of the speech- and language therapist), two small group observations (one of the occupational therapist and one of the speech- and language therapist) and two individual therapy session observations (one of each therapist) to observe the approaches followed in addressing executive functioning needs of learners who experience a diverse spectrum of barriers to learning. I hereby request your consent to be present in the classroom and therapy room to observe the participants.

No information obtained in this study will be identified with your child. There are no expectations from your child. Your child will receive no benefit, or any risk, or any payment.

The benefits of the research study regarding the multidisciplinary collaborative team approach will contribute to the literature and inform future best practices, specifically in

addressing executive functioning needs while incorporating therapeutic intervention strategies with curriculum content.

Should you have any questions or concerns, you are welcome to contact me. My contact details are:
0798964085
mariettevn1968@gail.com

The contact details of my supervisor, Professor Mohangi, are:
012-3376169
mohank@unisa.ac.za

Yours sincerely

Mariëtte van Niekerk
PhD student

APPENDIX J: QUESTIONNAIRE COMPLETED BY A PARTICIPANT

UNISA
university
of south africa

Questionnaire for participants

Biographical information	
Occupation	Occupational Therapist
Age	38 yrs
Qualifications	BSc. Occupational Therapy
Years' experience working with learners who has special educational needs	8 yrs
Experience as a member in a multi-disciplinary team	
Your function in the multi-disciplinary team	Occupational Therapist in the Foundation Phase (Grade R-3)
Your experience of the functionality of the multi-disciplinary team	It is fundamental to the holistic support of learners. Functionality relies on communication, teamwork and quality leadership.
Experience as a therapist working in the Foundation phase of a special school	
How many individual foundation phase learners do you see for therapy?	30
How many small groups do you see?	5
How many foundation phase learners are in a small group?	12 (total) 2 per group
How many class groups do you see in the foundation phase?	5
How many learners are there in a foundation phase class?	6 – 12 learners

How do you plan your class session in terms of the diverse needs of learners? The aim of class sessions are to support the curriculum through repetition, consolidation and incidental learning to help learners general-ise academic knowledge. This is done through	a multisensory approach while training and stimulating the developmental skills that support academic learning, especially fine motor and visual perception skills. Diverse needs of individual learners are considered and facilitated within sessions with regard to processing speed,
How do you combine the therapeutic interventions with the curriculum content in the individual sessions, small group sessions and class sessions? Firstly by prioritising developmental skills that are needed for academic learning and are specifically implicated in the learning barriers of the learners.	Secondly, by using academic tasks, such as sight words or numbers, as the activity while strength-ening and developing foundational skills. E.g. using sight words for a gross motor activity. Engaging with schoolwork in a non-threatening, playful way helps to reduce anxiety toward challenging work.
How do you provide for the following specific needs in your individual sessions, small group sessions and class sessions? • Attention Sensory modulation knowledge and techniques are used to facilitate optimal focus and attention. Either by limiting overwhelming input or by enhancing	input to promote registration. Older children are also trained to become aware of and monitor their attention through self-regulation.
• Cognitive flexibility (shift) By breaking up a session into clear parts and often following a set sequence, helps to facilitate shifting between	activities. Sometimes these parts are also presented in different physical settings, moving from desk to carpet or having part of the

memory, anxiety, motor planning and social skills. Activities that a learner found very challenging in the gra is then al revisited i. individual or small groups sessions

session outside.
The learners find it challenging to do a familiar activity in a different way, so we often practice that as well.

• Working memory Firstly by optimising attention by clearing away clutter, getting organized and alert to learning and limiting	distractions. For older children I teach explicitly how to use their whole body to enhance multisensory learning and promote retention of information. Practice and train following multi step instructor Memory games
• Planning Starting on a concrete level to plan and organize physical space and movement. Learning to sequence movement and activities. Learning to break up big tasks into	smaller parts. Learning about timing and rhythm in order to facilitate time management. By emphasizing writing and working direction. (Lefte to Right) (Top to Bottom)
• What other problems regarding executive functioning do you see / experience? Some learners struggle with task initiation. Instructions are missed or forgotten due to	failure to start. It is linked to planning and organization, and understanding where to start. Self-monitoring is can also be problematic and learners are not eager to re-read or check their answers. This is linked to focus and attention that could cause careless mistakes.

Self-concept and self-esteem I support by noticing and encouraging individual talents and strengths and by recognising and praising effort and intent. And promoting positive self-talk.

APPENDIX K: QUESTIONNAIRE

UNISA | university of south africa

Questionnaire for the participants

Biographical information	
Occupation	
Age	
Qualification(s)	
Years of experience working with learners who have special educational needs	
Experience as a member of a multidisciplinary team	
Your function in the multidisciplinary team	
Your experience with the functionality of the multidisciplinary team	
Experience as a therapist working in the foundation phase of a special school	
How many individual foundation phase learners do you see for therapy?	
How many small groups do you see?	
How many foundation phase learners are in a small group?	
How many class groups do you see in the foundation phase?	
How many learners are there in a foundation phase class?	

How do you plan your class session in terms of the diverse needs of learners?	
How do you combine the therapeutic interventions with the curriculum content in the individual sessions, small group sessions, and class sessions?	
How do you provide for the following specific needs in your individual sessions, small group sessions, and class sessions? • Attention	
• Cognitive flexibility (shift)	
• Working memory	
• Planning	
• What other problems regarding executive functioning do you see/experience?	

APPENDIX L: QUESTIONS FOR THE INTERVIEWS

QUESTIONS FOR THE INTERVIEWS (INTERVIEW GUIDE)

1.   How do you address the following executive functions

   - Working memory
   - Cognitive flexibility
   - Attention
   - Inhibition
   - Planning

2.   What is the impact of the above-mentioned executive functions on the general functioning of learners?

3.   In your experience, what is the prevalence of executive functioning needs of learners in special schools?

4.   Describe the collaborative approach of the multidisciplinary team addressing foundation phase learners' needs.

5.   What are the challenges that you experience?

APPENDIX M: : FOCUS GROUP DISCUSSION

QUESTIONS FOR THE INTERVIEWS (INTERVIEW GUIDE)

1.   How do you address the following executive functions

- Working memory
- Cognitive flexibility
- Attention
- Inhibition
- Planning

2.   What is the impact of the above-mentioned executive functions on the general functioning of learners?

3.   In your experience, what is the prevalence of executive functioning needs of learners in special schools?

4.   Describe the collaborative approach of the multidisciplinary team addressing foundation phase learners' needs.

5.   What are the challenges that you experience?

APPENDIX N: OBSERVATION SCHEDULE

OBSERVATION SCHEDULE

Observations (of English Home Language lessons) will take place during the school day at a time convenient for the teacher/therapist. The observations will be as follows for each of the three multidisciplinary teams:

- Grade 1 teacher: one classroom observation
- Grade 2 teacher: one classroom observation
- Grade 3 teacher: one classroom observation
- Occupational therapist: one classroom observation, one small group observation and one individual therapy session observation
- Speech- and language therapist: one classroom observation, one small group observation and one individual therapy session observation

The focus will be on the following:

1.   Planning

- Do they plan their sessions to make the curriculum content accessible and bridge the diverse barriers to learning, especially the executive functioning needs – attention, cognitive flexibility (shift), working memory, and planning?
- How do they incorporate curriculum content with therapy?
- Content from which learning area do they use?
- When they plan a lesson or therapy session, do they consciously plan for the accommodation of learners with executive functioning needs, or do they respond to the needs as they arise?

2.   During the sessions (class presentation, small groups, and individual sessions)

- The strategies of the different therapists and teachers to address attention, cognitive flexibility, working memory, and planning needs of learners while they are busy with therapy and/or teaching.

Are they flexible while teaching or busy with therapy to address executive functioning needs?

APPENDIX O: OBSERVATION TEMPLATE

OBSERVATION TEMPLATE

Classroom observation / Small group observation / Individual therapy session

Participant: _____

Date of observation: _____

Lesson: HL (English)

- **Number of learners:**

Executive functions	Strategies
Attention	
Cognitive flexibility (shift)	
Working memory	
Planning	

APPENDIX P: TRANSCRIPT OF A FOCUS GROUP DISCUSSION AND DATA ANALYSIS

FOCUS GROUP DISCUSSION OF SCHOOL A

Grade 1 teacher: **GR1TSAFG**

Grade 2 teacher: **GR2TSAFG**

Grade 3 teacher: **GR3TSAFG**

Occupational therapist: **OTSAFG**

Speech therapist: **SPTSAFG**

Codes

1.   <mark style="background-color: cyan">Collaboration</mark>

- Functioning of teams (roles of members, characteristics, challenges)
- Learner discussions (informal discussions, formal discussions: ISP, referrals)

2.   <mark style="background-color: lime">Multidisciplinary team approaches</mark>

- Integration of the curriculum content (value/advantages)
- Therapeutic approaches (class groups, small groups, individual therapy)

3.   <mark style="background-color: yellow">Knowledge and understanding of learners' executive functioning needs</mark>

- Impact on learning

- Response to needs

- Prevalence of EF needs in special schools

4.   Executive functioning needs

- EF needs of foundation phase learners in (SLD) special schools (emotional/behavioural functioning, academic functioning)

- Addressing executive functioning needs

- Strategies to support working memory

- Strategies to support cognitive flexibility (shift)

- Strategies to support attention needs

- Strategies to support inhibition

- Strategies to support planning

Research question	Line no	Transcript	Coding
Reacher: Okay, so this is the focus group discussion of school A. Thank you so much for your time and your willingness to participate. So, if we can start with the first question, please? So, it is to establish the functioning and approach of the multidisciplinary team in the foundation phase in	1 2 3 4 5 6 7 8 9	**OTSAFG:** I think because we've been working together a long time, we understand each other's roles and areas. So, the speech therapists work a lot with the language curriculum. The physiotherapist works a lot on physical education and development, and the occupational therapist looks more at the fine motor and visual perception. So	Collaboration / Roles Collaboration / Roles

school A. Could you please describe your team approach in terms of service delivery and therapy in the foundation phase?	10	we kind of understand everyone's area.	
	11	So initially, we do work a little bit	
	12	independently because there isn't a lot	
	13	of time to start off collaboratively. So we	Multidisciplinary team
	14	assist the children in determining the	approach/therapeutic approaches (class
	15	goals, where we are heading with our	group, small group, individual therapy)
	16	individual therapy, what are the needs	
	17	of each specific child, and then,	
	18	according to priority, we will see the	
	19	whole class in a group session once a	
	20	week. Then, we decide who in the class	
	21	needs individual therapy. And then,	
	22	there are children who receive therapy	
	23	in smaller groups if they can be	
	24	grouped according to their needs. And	
	25	if they are able, and sometimes it's in	
	26	their best interest to work in groups so	
	27	that we can work on social skills as well.	
	28	And then, when a teacher is worried, or	Collaboration/functioning of team
	29	there is a specific concern, any team	(referral)
	30	member can refer a child for a learner	

	31	discussion, but it's usually the teacher	Collaboration/functioning of
	32	that would refer a child that is really	team/referral/formal discussion
	33	struggling, and then we all get around	
	34	the table. We have a team discussion,	
	35	which is then again a group approach,	
	36	and then we all bring our information	
	37	from assessment and treatment and	
	38	what we've been doing. And then, we,	
	39	as a team, brainstorm and plan for the	
	40	child. So once you've assessed, you	
	41	put your individual goals on the IEP,	
	42	and then you can also see what other	
	43	team members, especially the teacher,	
	44	are worried about or working on. And	
	45	then we collaborate in that way. But the	
	46	first time we really talk about a child is	
	47	in a learner discussion once they have	
	48	been referred.	
	49	**SPTSAFG:** And I can maybe just add	
	50	that it's closely linked to the curriculum.	
	51	So, we will use the outcomes of the	

Researcher: You mentioned the curriculum; what would you say are the advantages of using the curriculum content in your therapy sessions?	52 curriculum to set up our therapy goals. 53 And also as time goes on, we will then 54 also decide whether the child should 55 stay in a small group or whether he still 56 requires individual therapy. So, it's an 57 ongoing assessment. And I think I just 58 want to add that our collaboration is 59 actually about the best interest of the 60 child. I think all of us realise what our 61 role is. And we all try our very best to 62 accommodate that child. And I think 63 what is really nice for me is that I like 64 the way the teachers will come to the 65 therapist and say listen, this is what I 66 find. Do you also see it? You know? So, 67 that collaboration has been invaluable. 68 **SPTSAFG:** I think because they are 69 required to develop academically and 70 because there are certain goals that 71 they need to reach academically. I think 72 that it's very valuable that we (*the*	Multidisciplinary team approach/integration of curriculum content Collaboration/therapeutic approaches/class group, small group, individual therapy Collaboration/roles Collaboration/informal discussions Collaboration

	73	*therapists)* also zoom in on that to help	Multidisciplinary team
	74	the learners with the curriculum	approach/Integration of the curriculum
	75	content. So otherwise, you know, if we	content
	76	focus on something different, then they	Multidisciplinary team
	77	don't always see the connection.	approach/Integration of the curriculum
	78	Whereas if the teacher works on a	content
	79	certain language area, per se, and I go	
	80	back to therapy, and I focus on that as	
	81	well as their specific language needs,	
	82	then they see the connection. After the	Multidisciplinary team
	83	assessment, you see where the areas	approach/Integration of the curriculum
	84	of difficulty are, and then you can focus	content
	85	on that. But you obviously incorporated	
	86	into the curriculum what the teacher	
	87	does.	
	88	**OTSAFG:** Yes, it's never in isolation.	
	89	We always look at the child holistically,	
	90	and you have to; you can't just teach	
	91	them splinter skills. You have to look at	
	92	the development, but you incorporate	
	93	the curriculum into those sessions to	

259

	94	make it relevant. And then you get the	Multidisciplinary team
	95	repetition for the child, you get a	approach/integration of curriculum
	96	generalisation of knowledge, and they	content/advantage (value)
Researcher: So do I understand it	97	learn to apply the knowledge and skills	
correctly that especially for the	98	that we teach in different contexts, the	
learners with specific learning	99	classroom and the therapy room.	
disorders, if you incorporate the	100	**SPTSAFG:** Yes, that is why we find this	
curriculum content in your therapy,	101	method of collaboration works best for	
then the child finds it easier to	102	our learners.	
transfer that skill and knowledge to	103	**OTSAFG:** What we're doing in therapy	
the classroom where they do the	104	needs to be used as a connection to the	
CAPS curriculum? Whereas if you	105	classroom. And I think what is very	
work parallel, and it's a more	106	valuable about therapy … I think the	
clinical approach in your therapy	107	classroom and the curriculum can be	
room, without you knowing what	108	very anxiety-provoking for our children	
the teacher does in the classroom	109	because that is the area where they	Multidisciplinary team
and you do your own thing, then	110	struggle. So, if we can use that work in	approach/integration of curriculum
there won't be any transference of	111	a playful way, in therapy on a level	content
knowledge and skills?	112	where they are, because they are not	
	113	always at the level expected by the	
	114	curriculum, but in therapy, you start at	

	115	the child's level. So you grade that	
	116	information down to the level where	Multidisciplinary team
	117	they can achieve success, and play	approach/integration of curriculum
	118	with it and interact with that information	content
	119	in a less threatening environment. And	
	120	then they can overcome that anxiety,	Multidisciplinary team
	121	hopefully, in the classroom as well.	approach/integration of curriculum
	122	**GR1TSAFG:** If I can just add to that. So	content
	123	weakly, I send my planning to the	
	124	therapists so that they can see that	
	125	we're focusing on syllables, for	
	126	instance, with the home language, or	
	127	we will be focusing on using capital	
	128	letters and full stops, or we will be doing	Multidisciplinary team approach/group
	129	comprehension or in mathematics for	sessions and individual therapy
	130	the occupational therapists. So there, I	
	131	make use of that so that they know	
	132	what I'm busy with, but that we	
	133	incorporated together so within group	
	134	sessions, I can see that the therapists	
	135	looked at my planning, they incorporate	

| Researcher: Okay, I heard now that the therapists work individually, in small groups and in class groups. What do you experience as the value of the class groups and the small groups? Because I suppose that the teachers are present when the therapists work in the class? So then you and the therapist are collaborating in those sessions. And so, what would you say is the value of that? | 136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156 | ==what I'm busy with, but as the OT said, in a more playful manner so that they can make the connection between what I'm teaching them and what the therapist is teaching me.== **GR3TSAFG:** Well, I would say definitely that it helps them afterwards. I can definitely see a change in their emotions and the way that they are reacting afterwards; they're happier; excited. So they look forward to therapy. They know which day which therapist is coming in, and they really look forward to that. And when the therapists come to fetch the smaller groups, they always ask why can't I go? So, it is a release. It helps with anxiety as well, especially. And they are self-assured when they come back. They're like, Oh, I know what to do. Now I understand what the teacher's trying to | |

	157	teach me. Sometimes you have that	
	158	lightbulb moment. So yeah, it's I can	
	159	actually work with them after a therapy	
	160	session, where, for example, on	
	161	Mondays, I didn't have any therapists,	
	162	and I struggle with my kids after the first	
	163	break, you can actually see them	
	164	struggling, and the energy levels are	
	165	dropping very quickly. The ASD kids	
	166	become a little bit more fidgety and	
	167	emotional and things like that, whereas,	
	168	with therapy, I didn't really have that	
	169	struggle. So that's, I find value in that.	
	170	They definitely help, and without	
	171	therapy sessions, I think our special	
	172	needs kids would definitely struggle.	
	173	**GR2TSAFG:** Yes, I agree. Our children	
	174	definitely enjoy the therapy very much.	
	175	They always want to know which days	
	176	they have to go to therapy. ==And I think==	
	177	==there's a lot of value to this therapy with==	

	178	group sessions and individual	
	179	sessions, as well. The therapists know	
	180	exactly what the curriculum entails - the	
	181	themes and everything the teachers	Multidisciplinary team
	182	are doing. So they meet them on the	approach/integration of curriculum
	183	level where they are and enhance that	content/value/advantages
	184	with the therapy. The therapists are in	
Researcher: So, do you, as a	185	the class, and they know exactly with	
team, compile the individual	186	what the learners are struggling and	
support plans for the learners	187	make sure what they struggle with in	
together? And how do you use it	188	class and where to work on with the	
as a working document? And is	189	therapy. And I can see a very big	
that your primary source of	190	difference.	
communication with each other?	191	**GR1TSAFG:** So, currently, we've got	
In a written form, like a document?	192	all our ISPs on teams in a documents	
Or do you incorporate that in your	193	folder. So, everyone who works with a	
communication?	194	child has access to it. At first, it is an	
	195	individualised plan, what the child	
	196	struggles with in class, especially after	Collaboration/Learner discussions/ISP
	197	assessment, and the plan of action for	
	198	the deficits.	

	199	Then, the therapists will look at it, and	
	200	after their assessment they will add on	
	201	the ISP their plan and goals. So, initially	
	202	it is individualised plan that the teacher	
	203	starts. And then, when as soon as we	
	204	have a learner discussion, we will make	Collaboration/Learner discussions/ISP
	205	plans together and then we will say	
	206	okay, so the OT will be responsible for,	
	207	for instance, launching the child in the	
	208	morning, and what the speech therapist	
	209	will do. Yes, if a child has a meltdown,	
	210	then this is the person who's	
	211	responsible for just bringing the child	
	212	towards themselves again. So at first	
	213	we do it on our own. So after baseline	
	214	assessment, we would identify the	
	215	problem areas of assessments from the	
	216	therapist, they put down the problem	
	217	areas, and then, as well, what they've	Collaboration/functioning of team/roles of
	218	been working with. So, for instance,	members
	219	after an assessment at the end of the	

	220	term, I would look through their	
	221	assessment, and I would identify where	
	222	they struggle with sentence building,	
	223	creative writing, and then how we	
	224	would work on it. And then, obviously, if	
	225	someone is responsible for that area, I	
	226	would notify them and not just let it be	
	227	a surprise and say "Ta-da" at the end of	
	228	the year. You're supposed to do this,	
	229	but it never happened. And so I think it's	
	230	very collaborative. And we talk a lot.	
	231	So, for instance, I'm worried about the	
	232	child in my class, I would go to the OT,	
	233	and I would say his pencil grip is still a	
	234	big problem. And I've tried this, I've tried	
	235	that; do you have any other	Collaboration/informal discussion
	236	suggestions? And then, if it's still a big	
	237	concern, we do put it on the ISP. Because we need to work on it. And we	
	238	need to develop the child's skills so that	
	239	they would feel comfortable or have the	

	240	self-confidence to write with a pencil	Collaboration/Learner discussions / ISP
	241	and not feel anxious if they have to do	
	242	written work because they know they	
	243	write slowly because of the pencil grip,	
	244	for instance,	
	245	**GR2TSAFG:** I also want to say that our	
	246	main way of communication is through	
	247	the learner discussion. We have the	
	248	written document that we use, but I	Collaboration/learner discussion
	249	don't think that's the main way always,	
	250	although it is a working document. So,	
	251	the ISP can change depending on what	
	252	the child's needs are, and we also	
	253	communicate a lot with each other	Collaboration/Learner discussions/ISP
	254	informally. Quickly. Even if there isn't	
	255	always time, we quickly talk or send an	
	256	email. I think we all get together	Collaboration/learner discussions /
	257	depending on how important it is. It	informal discussion
	258	works better to sometimes just talk to	
	259	each other and say what you think, and	
	260	then we go from there.	

	261	**GR3TSAFG:** So yeah, we kind of have,	Collaboration/learner discussions / informal discussion
	262	depending on the situation and how	
	263	much attention it needs, we first	
	264	discuss it, and then they will maybe	
	265	decide, okay, now we need to send an	
	266	email and ask for a learner discussion,	
	267	and then so it climbs. But I think our	
	268	primary source of communication	
	269	would most likely be the ISPs. And	
	270	that's definitely a working document	
	271	accessible to anybody who works with	
	272	the child.	Collaboration / Learner discussions / ISP
	273	**OTSAFG:** What we've started to do	
	274	because I think it's a relatively new	
	275	system to us. I think there are still	
	276	growing pains and things we can	
	277	improve on. But what we have started	
Researcher: Do you all put your	278	doing is with the learner discussion,	
individual goals on there? And do	279	that document is then open, and we	Collaboration / Learner discussions / ISP
you also have one or two common	280	add on to that document in that	
	281	meeting. So, we are incorporating more	

goals? And do you also put in the timeframe and when it must be revised again?	282	to make it relevant. And during learner	Collaboration/Learner discussions/ISP
	283	discussions, there's usually someone	
	284	that takes minutes of what was said	
	285	and all those things. And that's added	
	286	to the file. If it's printed out, all main	
	287	captions are basically put on their ISP	
	288	as well.	
	289	**GR3TSAFG:** At the discussion, we	Collaboration/Learner discussion
	290	identify an area or the main areas that	
	291	are a concern. We will add the names	
	292	of the therapists or teachers who must	
	293	work in certain areas because we are	
	294	working in different areas. But I think if	
	295	you read the document, like if there's a	
	296	child really struggling with social skills,	
	297	it's not a main aim for anyone, but	
	298	everyone will mention it and attend to it	
	299	in their therapy or in the class. Yes, we	
	300	are trying to help him with the	
	301	socialisation in the group or, you know,	
	302	those kinds of things. There is a time	

Researcher: How often do you as a team have team discussions, formal discussions or informal discussions?	303	frame for each individual goal. It is	Collaboration/Formal learner discussions/ISP
	304	usually between three and six months,	
	305	and then we revise it anyway,	
	306	**GR2TSAFG:** On the document, there	
	307	are also columns for comments. Yeah,	
	308	so maybe you're halfway through, you	
	309	say this is not working, we are doing	
	310	something else now, or it has improved,	
	311	or we need to give it an extra couple of	
	312	months. So that is open there as well,	
	313	and you don't edit the ISP; you just add	
	314	to it.	
	315	**GR1TSAFG:** Our formal discussions	
	316	are weekly but not necessarily about	Collaboration/Formal learner discussions
	317	each child. So I think depending on the	
	318	need, I know there are children that you	
	319	discuss more often than others if	
	320	there's a child that doesn't have any	
	321	major needs that need to be discussed	
	322	in a learner discussion. I have children	
	323	that went a year through not having a	

	324	discussion about them, but it's just
	325	because their needs are not as big as
	326	the others. But informal discussions, I	Collaboration/Informal learner discussion
	327	think, take place more often, mostly on
	328	a daily basis. Daily discussions
	329	between the teacher and the therapists
Researcher: How does your referral system work?	330	take place. If a child went out for
	331	therapy, say, for instance, the child's
	332	medication was adapted, or the child's
	333	on new medication, or he didn't have
	334	his medication for the day, you would
	335	ask, how did you experience the child?
	336	How was he or she today? Did you see
	337	a difference? So I think, like ultimately
	338	said, it's daily, or as often as possible in
	339	formal discussions, but our formal
	340	discussions are weekly, mostly on a
	341	Wednesday afternoon.
	342	**OTSAFG:** There is a referral meeting	Collaboration/Learner discussions /
	343	every two weeks when teachers refer	formal discussions/referrals
	344	children, and then that is discussed

	345	with some of the group members just to	
	346	identify the need. For instance, is it just	Collaboration/referrals
	347	a phone call to the parent, or does it	
	348	need a learner discussion? And also to	
	349	determine who needs to be present at	
	350	the discussion. It is always the team	
	351	members who work with the child, but	
	352	sometimes, it also involves the nurse or	
	353	the social worker. The psychologist is	
	354	always the facilitator of the meetings.	
	355	So, as we said on Wednesday	
	356	afternoons, we have learner	Collaboration/formal learner discussion
	357	discussions. We discuss one or two	
	358	learners at a time. We feel that is	
	359	sufficient and definitely a start with the	
	360	time constraints. It is difficult to always	
	361	get together more often, but our system	
	362	is working.	
	363	**GR3TSAFG:** One of the things that I	
	364	find, if there's a child that you had a	
	365	learner discussion about or an informal	

	366	discussion, and that is a child with	
	367	needs to see a therapist, depending on	
	368	the therapy sessions, and they vary,	
	369	there isn't always space to help and the	
	370	child. I think that's one of the biggest	
	371	problems, especially for emotional	
	372	support. So we rely quite a lot on the	
	373	therapist to help out as the psychologist	
	374	is not always available because there's	
	375	just one for the whole school. The	Multidisciplinary team approach/class
	376	therapy sessions are definitely very full.	group
	377	And there are so many children with	
	378	high needs, and our therapists struggle	
	379	to get to all the learners. That's why the	
	380	class therapy once a week is so	
	381	valuable. Sometimes, the parents are	
	382	also an obstacle, as they don't always	
	383	cooperate with us.	Collaboration/Functioning of
		GR2TSAFG: Yeah. And I sometimes	teams/challenges
	384	feel sorry that we didn't have a group	
	385	discussion before the child was in so	

	386	much trouble that he needed to be	Collaboration/Functioning of
	387	referred. So, it would be ideal to	teams/challenges
	388	actually have learner discussions at the	
	389	onset of it. To pick up problems before	
	390	they actually need to come to me so	
	391	that you can work preventatively, but	
	392	that is the ideal. It's not possible with	
	393	the time constraint and the amount of	
Researcher: Okay, so what is the	394	learners with high needs who need to	
approach that you follow to share	395	get helped immediately.	Collaboration/Learner discussions/ISP
and therapy aims, interventions,	396	**SPTSAFG:** And then, of course, we	
outcomes and recommendations	397	also get together at the end of June and	
with each other?	398	November when we discuss the	
	399	progression and promotion after formal	
	400	assessments. So, at least twice a year,	
	401	every learner is discussed, and then we	
	402	will see if there is a child who needs to	
	403	be followed up. That will then be	
	404	documented on the ISP.	
	405	**GR3TSAFG:** Basically, the ISP but also	
	406	formal and informal discussions.	

	407	**GR1TSAFG:** I think individual sessions with the therapists or the teachers, so,	Collaboration/informal discussions
	408	for instance, if I'm worried about the	
	409	child, I could go to OT or the speech	
	403	therapist and we could discuss the child	
	404	and work towards the same thing. But	Collaboration/formal learner
	405	we basically use the ISP and learner	discussions/ISP
	406	discussions to communicate.	
	407	**OTSAFG:** What is nice about being all	Collaboration/roles of team members
	408	at the school together as opposed to	
	409	private therapists working outside of	
	410	school? We are there, so even if it's not	
	411	a specific time or day for a child or a	
	412	class, I can be called, and we can	
	413	immediately intervene if there is a	
	414	need. We can attend to emergencies	
	415	when there is a meltdown or when a	
	416	child needs time out and needs help to	
		be regulated and calmed. We can also	
	417	help when a child needs a fidget toy or	
	418	a device to assist or any	

	419	accommodation. We are available to do	
	420	that immediately rather than waiting,	
Researcher: What are the	421	and the problem gets worse. So, it is	
characteristics of an effective	422	good to be available to have a	
multidisciplinary team to provide	423	preventative strategy.	
sufficient service or support?	424	**GR2TSAFG:** We have an open-door	
	425	approach. If I can call it like that, and	
	426	you can approach each other any time	
	427	when there's a need, and it's lovely to	
	428	have these sorts of brainstorming and	
	429	making plans together in the moment	
	430	where it's needed. And it's very helpful.	Collaboration/functioning of the
	431	**SPTSAFG:** Good management,	team/characteristics
	432	transparency and respect for each	
	433	other's knowledge and skill.	
	434	**OTSAFG:** Good communication.	
	435	**GR1TSAFG:** I agree. Yes, it is	Collaboration/functioning of the
	436	important; I think to know that someone	team/characteristics
	437	else's skills are important, and we know	
	438	about and respect the different fields	
	439	we are working in. We respect each	

276

	440	other and know the therapists are specialists, and we, as teachers, appreciate them.	Collaboration/functioning of the team/characteristics
	441	**OTSAFG:** But the same applies to the	
	442	teachers. Absolutely. It goes both	
	443	ways. There is respect from our side for	
	444	what you are doing in the classrooms.	Collaboration/functioning of the team/
	445	**SPTSAFG:** I think everyone in this	characteristics
	446	team feels valued and respected. We	
	447	listen to each other and work together.	Collaboration/functioning of the
	448	**GR3TSAFG:** I'm very comfortable with	team/characteristics
	449	this team at this very moment. It's nice	
	450	to have therapists and teachers on your	
	451	side because they know what you're	
	452	going through. They actually know the	
	453	child. So that is nice.	
	454	**GR2TSAFG:** I think at the grassroots	
	455	level, everyone working with the child,	Collaboration/functioning of the
	456	we have a very good working	team/characteristics
	457	relationship. And supportive, I really	Collaboration/functioning of the team
	458		

	459	feel it's never only my problem. We
	460	really work together.	Collaboration/learner discussions
		GR1SAFG: We are all there to help the
	461	child, and we are all there to act in the
	462	best interest of the child. And I think
	463	that's the most important thing, that we	Collaboration/functioning of the
	464	are all there for the child's best interest.	team/characteristics
	465	And we want the child to benefit from
	466	the meetings and the outcomes of the
	467	meeting. So I think that that's also very
	468	important, the fact that we've got
	469	respect for each other and that there is	Collaboration/functioning of the
	470	respect for your knowledge and my	team/characteristics
	471	knowledge. And so for instance, I'm the
Researcher: Thank you so much.	472	teacher, so the child is in my class for
It was nice speaking to you, and	473	most of the day. And then I would say,
thank you for sharing your	474	this would not work. We can try it, but
knowledge with me. I could	475	this might not work because x y & z it
experience that all the	476	and then the therapist would come up
characteristics that you named	477	with another idea and say, okay, but	Collaboration/functioning of the
	478	let's maybe try this, so I think it's	team/characteristics

now are truly part of your team. So thank you so much.	479 480	important to be flexible. Yes, we're very flexible. So I think the fact that we're all flexible, and we've got mutual respect for each other. That way, it helps the child and for the child to benefit from the team and what we're actually doing at our school because we don't lose sight of the common goal.

APPENDIX Q: TRANSCRIPT OF AN INTERVIEW AND DATA ANALYSIS

Interview with the Occupational therapist from school A (OTSAI)

Codes

1. ==Collaboration==

    *   Functioning of teams (roles of members, characteristics, challenges)
    *   Learner discussions (informal discussions, formal discussions: ISP, referrals)

2. ==Multidisciplinary team approaches==

    *   Integration of the curriculum content (value/advantages)
    *   Therapeutic approaches (class groups, small groups, individual therapy)

==Knowledge and understanding of learners' executive functioning needs==

    *   Impact on learning
    *   Response to needs
    *   Prevalence of EF needs in special schools
    *   EF needs of foundation phase learners in (SLD) special schools (emotional/behavioural functioning, Academic functioning)

Addressing executive functioning needs

    *   ==Strategies to support working memory==
    *   ==Strategies to support cognitive flexibility (shift)==

- Strategies to support attention needs
- Strategies to support inhibition
- Strategies to support planning

Research question	Line no	Transcript	Coding
Researcher: Thank you very much for your willingness to be part of this research study and for sacrificing your time. Okay, so if we can start with the first question. So, that is how you would address the various executive functioning needs of the learners that you see. So, in some cases, you may plan to accommodate the needs, and in other cases, it's just responding automatically to what you see. So, if we can start with working memory, please.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	**OTSAI:** In therapy, I don't necessarily treat these components. But we do see the deficits and respond to them. I try to teach them skills because as children get older, especially towards grade three, we do need to teach them some strategies and skills so that they are able to organise their work. And so it is necessary to sometimes teach it explicitly or practice the skill, or to accommodate the deficit, to get other strategies to help them with that. So, working memory is mostly addressed through memory games. But also in the way I give instructions, so I grade from the smaller classes to the bigger classes, I give them more instructions, I focus a lot on repetition. It starts with the instructions and working on good listening skills, so just to	Knowledge and understanding of EF needs Support working memory needs Support working memory needs

	17	actually give them the information first, and then	
	18	try to retain it, if that makes sense. So, really try	
	19	to get them all to focus. I tell them that we listen	Support working memory needs
	20	with our ears, with our eyes, with our whole body.	
	21	And then I give them the instructions. So, by	
	22	Grade 3, I don't give them all the instructions at	
	23	once. With the smaller ones, we do one	
Researcher: And I also saw	24	component at a time.	
during one of the observation	25	**OTSAI:** Definitely, I definitely think so, and that's	Multidisciplinary team approach /
sessions that you would	26	why it's so nice to work in the classes and with	integrating the (CAPS) curriculum
quickly recap what you did	27	the curriculum content so that I can also link what	content
previously. And then, by	28	I am doing in therapy to what the teacher is	
repeating that, they have	29	doing. It has to fit into the context.	
something to hinge on the new	30		
information. So that also is a	31		
way to enhance it. Is that what	32		
I heard?	33		
Researcher: Do you see a	34		
transmission of knowledge	35	**OTSAI:** Yes, definitely because there is	Multidisciplinary team approach /
and skills from the context of	36	overlapping and association, and they can	integrating the (CAPS) curriculum
the therapy to the classroom	37	transfer the knowledge and skills from one	content

because you use the same curriculum content as the teacher in class?	38	context to another, something that our learners with special needs struggle with.	
	39		
	40		
Researcher: Thank you. And then, um, cognitive flexibility, the shift from one activity to another.	41		
	42	**OTSAI:** I think sometimes I may accommodate more for it than I am, especially in a group situation. So I know which children struggle with that. And we try to ease them into challenges or prepare them in advance. But sometimes, because I think cognitive flexibility is something you need, we're not prepared for it. So, it might be more linked to listening and following instructions. But sometimes, I give the same activity, but I give different instructions. So they would expect it and to do it in a certain way. But then, today, I want you to do it this way. So, in a playful way, they learn to be more flexible and do the same activity in a different way. They learn there are more ways to do the same thing and that it doesn't have to happen in a strict way. It's	
	43		
	44		Knowledge and understanding of EF
	45		needs
	46		
	47		
	48		
	49		Support cognitive flexibility (shift) needs
	50		
	51		
	52		
	53		
	54		
	55		
	56		Support cognitive flexibility (shift) needs
	57		
	58		

Researcher: So subtle changes. What I also noticed in the observation, and I think that also helps our learners who are so rigid in their thinking and struggle to complete a task and move on to the next activity, is you warn them that they have to finish, and then you let them physical move on to the next activity. So, that movement walking away and towards the next activity helps them to understand that it's a definite close of the one activity and the beginning of a new one. And while moving from one	59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78	not I'm not disrupting the pattern of doing something or the schedule, but I'm changing little things. And hopefully, in that way, they find change less threatening. **OTSAI:** Definitely, I didn't really think of it that way. But, because I know the learners and their specific needs, I respond intuitively to their needs and deficits. I also like to do is to create excitement about the next activity. So, to introduce it in a way that gets their attention.	Knowledge and understanding of EF needs

activity to the next, he can start focusing on what he's going to do at the next activity.	79 80		
Researcher: How do you accommodate their attention needs?	81 82 83 84 85 86 87 88 89 90 91 92 93	**OTSAI:** There, we try to limit distractions and help them to organise their space so it's not cluttered. And you limit external distractions. And so we don't expose them to a lot of information, if it's on a page, limit the information, limit the number of things I need to concentrate on one thing at a time, and then break it up into steps. So you don't have to think of the whole activity at once. So even if I give all the instructions, we break it into parts and give the instructions again step by step. So that helps him to be able to attend to smaller pieces of information at once.	Support attention needs
Researcher: Do you think that making the activity multi-sensory can help with attention?	94 95 96 97 98	**OTSAI:** Definitely, it sometimes can be distracting because we have learners with such different sensory needs. So we also don't want to overwhelm them with a scene. Yeah, but then they can use the strongest sensory modality they	Support attention needs

	99	rely on, but getting the extra information through	
	100	the other senses. Also, that actually, I think also	Support attention needs
	101	works with working memory. Because I think	
	102	working memory starts in your body. So if you	
	103	experience it with more of your body with more	
	104	of your senses, then you retain that information	
Researcher: Yeah, there's definitely overlap between all these executive functioning	105	better.	Knowledge and understanding of EF needs
	106	**OTSAI:** Definitely, and you don't address them	
	107	in isolation.	
Researcher: How do you address problems with inhibition?	108		Knowledge and understanding of EF needs
	109	**OTSAI:** You know, I've sort of tested the waters	
	110	with that one because, especially the children	
	111	with internal distractions, they always have a	
	112	different story they want to tell you, and it is very	
	113	important for them to do it immediately. So I find	
	114	that if you don't pay attention to that, they get	Supporting inhibition needs
	115	stuck in that thought. So, I try to let them	
	116	verbalise it. And then I try to redirect focus	
	117	instead of sort of just shutting down that thought	
	118	and forcing it in my direction, but that never really	
	119	works. But it is difficult, especially in a group, if	

	120	you let one voice their story, then everyone else	
	121	wants to join in the conversation. So it's	Supporting inhibition needs
	122	important to just make contact with them. I find	
	123	that if you just give them a few moments,	Supporting inhibition needs
	124	especially in a group at the beginning of a	
	125	session, to get that out of their system, and also	
	126	feel seen and heard because I think often it's just	
	127	part of the excitement that bubbles up. Yeah, so	
	128	just acknowledging those feelings or whatever is	
	129	on their mind at the moment. But then gently	
	130	redirecting them if that occurs during this	
	131	session, I try to say can we focus on what is here	
	132	now and then, in the end, I will listen again to	
	133	their stories. It is important to teach them to delay	
	134	immediate gratification. And so to delay that	
	135	helps with the inhibition. Because they will get	
	136	the chance and they know you, so they trust you.	
	137	And they know you will give them the chance to	
	138	say what they want. So it is important to keep in	
	139	mind to give them that time at the end of the	
	140		

Researcher: How do you address their needs with regard to planning?	141	session. And that is through building the relationship like you say, they can trust in you.	
	142	**OTSAI:** Planning that I tried to, especially with	
	143	the Grade 3s, but I've done that a little bit	Support planning needs
	144	towards the end of Grade 2 to help them	
	145	understand how to approach a task. Because of	
	146	a lot of them, we found that with learning	
	147	disabilities, there is usually a deficit in motor	Knowledge and understanding of EF
	148	coordination as well. Often, they coincide. So	needs
	149	they even struggle to plan movement. So, in	Support planning needs
	150	individual therapy, we do a lot of more body-	
	151	centred work. We do the physical planning of	
	152	movement and generating of ideas, because it	
	153	actually starts with generating an idea, and then	
	154	making the plan how I'm going to carry that out	Therapy and support to make the
	155	and then actually carry it out. So we do a lot of	curriculum accessible and bridge
	156	that kind of play. But in the groups or the small	barriers
	157	groups, it's more work-related and school-	
	158	related planning; this is my task; where do I	
	159	start? What is the middle? Where do I finish?	Support planning needs
	160	How can I group it into little chunks to finish one	

	161	part first and then move on? We use colour to	
	162	coordinate and sort and put things that make	
	163	sense together. That kind of thing and then	
	164	organising physical space is a big one. Because	Support planning needs
	165	that gives them the direction of where you were	
	166	going. I also make use of visual cues and	
	167	schedules. And sometimes, when these children	
	168	are very anxious about the session, it's nice to	
	169	just give them a visual cue. And I've seen so	
	170	many times even the visual schedules enclose,	Knowledge and understanding of EF needs
	171	help, just to bring that anxiety down because	
	172	then they can see the plan. Because I think that's	
	173	also part of executive function, it is like they can't	
	174	see space and time in the mind. So, to think of a	
	175	school day, or even a period or a therapy	Support planning needs
	176	session, can seem endless; they don't know	
	177	when it's going to end. Yeah. So having that	
	178	visual plan helps them tremendously to feel in	
Researcher: Yeah. Thank you. So, what do you think is the impact of the above-	179	control of what's going to happen, and they know	
	180	where it's going to end and what will be expected	Knowledge and understanding of EF needs
	181	of them.	

mentioned executive functions on the general functioning of the learners here? With the different diagnoses and problems that they experience?	182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202	**OTSAI:** I've actually grown to see and understand that it (*EF)* really is a key feature that I think sets them apart from the age-related peers in mainstream schools. Because they are still intelligent children, so there is not a difference. Apart from the actual diagnosis or learning disability, I think the ability, as you get older, to use executive functions to organise and guide your actions really sets you apart in how you're able to approach your work and approach life. And I think that those skills really affect how they feel about themselves. Because it's not a matter of intelligence, they know what is expected of them. They know what it has to look like, but somehow they're unable to do it. And they feel forgetful or are called lazy or disorganised, and those are very negative things, and they feel and experience that they don't know how to start. They are anxious about these things. So I think that really affects self-esteem in a big way. They are scared and	Knowledge and understanding of EF needs

	203	anxious to try something new and to take up a	
	204	challenge because they're not sure that they'll be	
	205	able to do it. They have the, the intelligence to	
	206	do it, but they can't rely on themselves. They	Knowledge and understanding of EF
	207	experience a lot of problems with aim directed	needs
	208	behaviour, because they know, more or less	
	209	what is expected, but to get the plan to reach that	
	210	aim. And they don't know how to do that. And I	
	211	often see that in assessment, because if I see	
	212	the child in the classroom, and we are unpacking	
	213	the concept and doing it step-by step, and	
	214	together and with concrete methods might be	
	215	concrete, etcetera, not abstract, then they are	
	216	very capable, and you know, they know this	
	217	information, but in the task situation, they are	
	218	unable to access that. And that is very sad	
	219	because, you know, if you could just direct them,	
	220	or get them the plan, give them the bird's eye	
	221	view or this step, they would be able to do it. But	
	222	so the assessment shows that they haven't	
	223	mastered those skills, but they just don't know	

	224 how to express or show it. Yes. And I think that	
	225 frustrates them as well because they work	
	226 extremely hard during the term and do not get	
	227 those results at the end is very difficult. But it	
	228 also, I think, helps by working collaboratively.	Knowledge and understanding of EF
	229 You know what they are doing in class, so you	needs
	230 can help them in therapy to make the curriculum	
	231 accessible. And now, we must just also give	
Researcher: In your	232 them the tools so that they have equal	
experience, what would you	233 opportunity as to their neuro-typical peers. And	
say is the prevalence of	234 that is lovely to see - that breakthrough in a child;	
executive functioning needs of	235 when they get that confidence to try, that is very	
learners in special schools? So	236 rewarding.	
that is also, again, irrespective	237 **OTSAI:** You know, I think it's very high *(the*	
of the diagnosis? If you	238 *prevalence of executive functioning needs of*	
compare that also to the	239 *learners in special schools)*, especially in a	
neuro-typical peers in a	240 school for learners with learning disabilities like	Knowledge and understanding of EF
mainstream school, what	241 ours. I can't speak necessarily of other special	needs
would you say is the	242 schools, but I think, definitely, even in social	
prevalence in a special	243 skills, and it seems like it's maturity, a level of	
school?	244 maturity. So there are children within a class that	

Researcher: Could you please describe the collaborative approach of the multidisciplinary team addressing the foundation first learners' needs? Your team approach.	245 will be stronger in that. <mark>But I do think it's really,</mark> 246 <mark>very closely associated with the diagnosis we</mark> 247 <mark>see in our school. Yeah, because it's they who</mark> 248 <mark>have developmental delays who struggle with</mark> 249 <mark>abstract concepts, and there is a definite</mark> 250 <mark>correlation with executive functioning deficits.</mark> 251 **OTSAI:** I think we are a wonderful team with a 252 lot of knowledge. And I think, especially because 253 we are all working in the school. So it's not 254 because, even in private practice, it's difficult to 255 get everyone around the same table in the first 256 place. But also, you're not <mark>working so closely</mark> 257 <mark>centred around the curriculum</mark> in private 258 practice, <mark>so that approach in our school works</mark> 259 <mark>very well because that is our one centre point.</mark> 260 <mark>We all have our own disciplines and our</mark> 261 <mark>knowledge base and our roles,</mark> but <mark>we work</mark> 262 <mark>around the curriculum, and then you start to see</mark> 264 <mark>how your knowledge and skills fit in, and, in the</mark> 264 <mark>end, I think that that helps to unite and in the</mark> 265 <mark>process everyone's not pulling in different</mark>	 Multidisciplinary team approach / integrating the (CAPS) curriculum Collaboration/functioning of the team/roles Multidisciplinary team approach / integrating the (CAPS) curriculum Collaboration/functioning of the team/roles

	266	directions. So, we are all centred around the	
	267	curriculum. So I think that that is a very good way	Collaboration/functioning of the
	277	or that really helps you focus on therapy. What	team/roles
	278	is nice then is when we have a learner	
	279	discussion, and we can hear the other	
	280	disciplines' point of view, what they're working	
	281	on, what they're finding, then you also have an	
	282	idea of how you can incorporate that. So when I	
	283	hear from the speech therapist that the child	
	284	struggles with vocabulary, I can focus a little bit	
	285	on vocabulary while I'm doing what I need to do,	
	286	and so, you learn from each other. I've had the	
	287	privilege of also presenting groups or facilitating	Multidisciplinary team approach /
	288	groups with the physiotherapist or speech	integrating the (CAPS) curriculum
	289	therapist, and you learn so much of how you can,	content
	290	just in little ways, in how you speak, in what your	
	291	address to incorporate in your goals, not as your	
	292	therapy goal but to support the language	
	293	problem. So that is very good. And I think then	Collaboration/functioning of the
	294	we involve all the different areas of the	team/roles
	295	curriculum as well because the speech and	

Researcher: So you have an IEP that is a working document, and at your learner discussions, the strategies and plans are put on it?	296 297 298 299 300	language therapy focuses a lot on the language subjects, but from an auditory point of view, and then our work is to focus more from a visual perception point of view and to see how we can also meet each other.	Collaboration/functioning of the team/roles Multidisciplinary team approach / integrating the (CAPS) curriculum content
	301 302 303 304 305 306 307	**OTSAI:** Yes. So everybody sees what the other team members are doing. So we're working towards a common goal, but each one, each team member also has their own therapy goals, but they are all directed towards one common goal to make the curriculum accessible, and that is why we incorporate the curriculum content.	Collaboration/functioning of the team/roles
Researcher: So, you mentioned that you have combined sessions. So, you and the physiotherapist and the speech therapist have combined group sessions? Is that a class group?	308 309 310 311 312 313 314 315 316	**OTSAI:** Yes, the combined session is a class group. So, in the Grade 1 class, every time there was a lesson to teach new phonics, the speech therapist would work on the sound for the phonemic awareness necessary for building words, and our focus was on letter formation. How do we write this letter? What does it look like? So there is a nice combination. Yeah. And then that also includes more sensory modalities.	Collaboration/class group Collaboration/functioning of the team/roles
Researcher: Is the teacher also present?			

	317	So I think there's a lot of learning happening in	
	318	that space. Not only the children but we learn	Multidisciplinary team approach /
	319	from each other also.	integrating the (CAPS) curriculum
	320	**OTSAI:** Yes, and we learn from each other.	content
	321	When I've observed the lesson, I also get some	
	322	great ideas. I really feel there is collaborative	Collaboration/functioning of the
	323	learning among the team members. In the class	team/roles
	324	group sessions, we worked more on the theme	Collaboration/informal discussions
	325	of life skills; there is a lot of vocabulary again. So,	
	326	that is a bit of a different way to combine the two	
	327	disciplines in a more experiential lesson to	
	328	broaden concepts and experience. We haven't	
	329	really collaborated on an individual level in our	
	330	individual sessions. But we do talk to each other,	Collaboration/functioning of the
	331	and sometimes, with physiotherapy, then again,	team/roles
	332	we try to see the child close together. So they	
	333	work on the posture and the gross motor, so then	
	334	I can go straight into fine motor. So that saves	
	335	time that I don't have to also address those	
	336	things in one session. So there are lovely ways	
	337	to work together in the team. What we also	

	338	sometimes do is before the learner goes to the	
	339	speech therapist, the child first goes to the	
	340	occupational therapist, who can help them to be	Collaboration/informal
	341	regulated before they go to the speech therapist.	discussions/functioning of the
	342	Then they are more calm and they are able to	team/roles
	343	focus absolutely. Especially if it's a learner who	
	344	is very anxious or has behavioural problems,	
	345	then that helps a lot. And I think when you speak	
	346	to each other, and you understand with what the	
	347	child struggles, and you hear it from another	
	348	discipline's point, it broadens your perspective	
	349	and influences your approach. And that also	
	350	integrates all the different skills and abilities. The	
	351	visual, the auditory, the motor, everything that	Multidisciplinary team
	352	contributes to holistic development. Our kids	approach/integration of the (CAPS)
	353	struggle with the generalising of information. So	curriculum content
	354	now they have done it with the teacher, and they	
	355	do similar work with the occupational therapist	Multidisciplinary team
Researcher: Maybe you can	356	and with the speech therapist. We all have a	approach/integration of the (CAPS)
also elaborate on the positive	357	different way of talking about the same thing.	curriculum content
aspects of integrating the	358	Two plus two. But, this leads to generalisation	

curriculum content with your therapy goals.	359 360	from one context to another. And then, it makes sense, and they can apply the knowledge.	
	361 362 363 364 365 366 367 368 369 370 371 372	**OTSAI:** They learn how to apply the same knowledge and skills in different contexts. So, that is how the integration of knowledge and skills takes place. This integrated approach is much better than a parallel approach in a clinical environment, especially for our learners with developmental delays and learning disorders and especially the ASD learners who get the repetition of information in different contexts combined with different activities. I've seen it in private practice. You have your therapy goals and work independently, but the child who is not	
Researcher: What are the challenges that you as a team experience?	373 374 375 376	neurotypical doesn't understand how everything is helping him at school. They struggle to apply what they have done in therapy, and there is thus no integration and there is no transmission of	Collaboration/challenges
	377	knowledge or skills in different contexts.	Collaboration/characteristic
	378 379	**OTSAI:** It is a big organisation, and sometimes, because of a lack of time, communication	

Researcher: Thank you so much for your time.	380	sometimes is a problem because we cannot find the time to get together. We are, however, good with e-mails, and that helps if you cannot talk in person. We are actually working very well together, and there are not many challenges.	