

UNDERSTANDING OF EXECUTIVE FUNCTIONING CHALLENGES AND SUPPORT FOR LEARNERS WITH FASD WITHIN A CLASSROOM

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Thesis presented in partial fulfilment of the requirements

for the degree

Master of Educational Psychology

in the

Faculty of Education

1918 - 2018

at

Stellenbosch University

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December 2018

DECLARATION

By submitting this thesis electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

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SUMMARY

This study was undertaken to explore educators' knowledge of and attitude towards understanding of executive functioning challenges and support for learners with fetal alcohol spectrum disorders (FASDs) within a classroom.

This study posed three research questions, namely about the nature of the executive functioning difficulties that learners living with FASDs may experience in the classroom, teachers' knowledge and attitudes towards FASD learners who experience executive functioning difficulties in the classroom, and then thirdly about the supportive strategies that teachers use to support these challenges.

Working from an interpretive paradigm, a single instrumental case study design, utilising a qualitative methodology, was employed. It was attempted to gain in-depth understanding and meaning of the purposefully selected case and participants.

Four main themes emanated from the data gathered. Information about the way a FASD learner presents in the classroom, about teachers' and classroom assistants' teaching experiences, strategies of working with FASD learners, and teaching and support strategies for EF difficulties, was identified after a thematic analysis of the data.

The findings of the study suggest that although every learner living with FASD is different, most FASD learners do experience some executive functioning difficulties. If teachers understand these difficulties and use appropriate supportive strategies to address these challenges, it may be possible for learners with FASDs to also reach their full potential.

OPSOMMING

Hierdie studie is onderneem om opvoeders se kennis van en houding teenoor die uitdagings ten opsigte van uitvoerende funksionering sowel as die ondersteuning van sodanige uitdagings wat leerders met fetale alkohol spektrum versteurings (FASDs) binne 'n klaskamer ervaar, te ondersoek.

Hierdie studie het drie navorsingsvrae gestel, naamlik omtrent die aard van die uitvoerende funksionele probleme wat leerders met FASDs in die klaskamer mag ervaar, tweedens hoe onderwysers uitvoerende funksionering verstaan, hul kennis en houdings teenoor FASD-leerders en die uitdagings ten opsigte van uitvoerende funksionele probleme wat in die klaskamer mag voorkom, en dan derdens watter ondersteunende strategieë die onderwysers en hul assistente gebruik om hierdie uitdagings te ondersteun.

'n Enkel instrumentele gevallestudie is as navorsingsontwerp gebruik. Vanuit 'n interpretatiewe navorsingsparadigma het dit sin gemaak om 'n kwalitatiewe metodologie in te span ten einde 'n in-diepte verstaan en betekenis van die doelgerigte geselekteerde geval en deelnemers te verkry.

Vier verskillende temas is vanuit die data geïdentifiseer. Inligting oor hoe die FASD leerder in die klaskamer funksioneer, oor onderwysers en klaskamer assistente se onderrigervarings, strategieë om met leerders wat uitvoerende funksionering uitdagings te werk en hul onderrig- en ondersteuningsstrategieë om sodanige leerders te ondersteun, het as hooftemas uitgestaan na 'n tematiese analise proses..

Die bevindinge van die studie dui daarop dat elke leerder wat met 'n FASD leef verskil, maar dat die meeste FASD leerders van die uitvoerende funksioneringsprobleme ervaar. As onderwysers hierdie probleme verstaan en ondersteunende strategieë gebruik om hierdie uitdagings mee aan te spreek, kan leerders wat met FASD leef ook hul volle potensiaal bereik.

ACKNOWLEDGEMENTS

This has been an extraordinary challenging journey. A journey I have been fortunate enough not to have had to travel alone. There have been many who have walked alongside me, held my hand, offering guidance and support.

I would like to thank Delano Pieterse, for having to listen to my endless talks about my thesis. For me to have walked this part alongside you has made it much easier.

Gerda Grobler, thank you for your guidance and input with the language editing.

To Sarah Baratt, my friend who has contributed to the richness of my life in so many ways, thank you for always listening and for the many conversations and valuable insights you have contributed to my thinking. Your unconditional support and ability to give without expecting anything in return is much appreciated, I am forever grateful.

To my mother, thank you for your unconditional love and understanding. Comfort from you soothed me when motivation was low.

To each participant, thank you for being willing to give of your precious time to contribute to the richness of this study. I am indebted to each of you.

To Mariechen Perold, thank you for your continued guidance, supportive encouragement, especially when the going got tough It was greatly appreciated.

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Chapter 1

CONTEXT AND RATIONALE FOR THE STUDY

1.1 INTRODUCTION

Fetal Alcohol Spectrum Disorder (FASD) is a non-diagnostic umbrella term that describes a range of effects that can occur as a result of a mother consuming alcohol during pregnancy (Badry & Choate, 2015). The disorders that form part of this spectrum include Fetal Alcohol Syndrome (FAS), Partial Fetal Alcohol Syndrome (Partial FAS), Alcohol-related birth defects (ARBD) and Alcohol-Related neurodevelopmental disorder (ARND) (Gross, Deling, Wozniak & Boys, 2015; May, 2017).

The prevalence rate of FASD in the Western Cape is the highest in the world (Visagie, 2006; May, 2017). Several researchers have reported difficulties with executive functioning to be common among children who have prenatally been exposed to alcohol (Connor, Sampson, Streissguth, Bookstein, & Barr, 2006; Mattson, Goodman, Caine, Delis & Riley, 1999; Mattson & Riley, 2000; Willford, Richardson, Leech & Day, 2004; May, 2017). May (2017) have reported that the total FASD rate found in a recent epidemiological study ranged between 20% and 28%. A rate this high has not ever been reported for a general population before.

To assess and diagnose all learners living with FASD is often difficult to impossible (May, Gossage, Marais, Adnams, Hoyme, Jones & Hendricks, 2007), with the result that most learners stay undiagnosed (Viljoen et al., 2005), making it very difficult to tailor support in schools. Despite the challenges teachers face to understand and support learners living with a FAS disorder, they are compelled to support learners living with special needs in an inclusive educational system that provides for all learners' needs (UNESCO, 1994, viii).

An understanding of the difficulties that FASDs pose to learners, will help educators to recognise steps they may need to take in order to enhance learning opportunities

for learners with FASDs (Blackburn, Carpenter & Egerton, 2012). According to Catterick and Curran (2014), there is no magic support system or intervention available that will dramatically enhance the abilities of learners with FASD in the classroom. There are however, strategies and insights that can be drawn from research and practice that can be utilised to enhance the effectiveness of actions in relation to the individual and their environment. This study will specifically focus on the needs of learners who have prenatally been exposed to alcohol, as well as on ways of supporting those needs.

This study will not address how to successfully implement support strategies in the mainstream classroom. The focus is to gain understanding of the nature of executive functioning difficulties as experienced by learners who fall within the spectrum of FASD, by exploring the components of executive functioning difficulties that are visible in classrooms, and compiling supportive strategies employed by teachers who work with children within the spectrum on a regular basis.

I aim to create awareness and understanding of the challenges learners living with FASD experience with regard to learning, especially in the area of executive functioning. I shall endeavour to learn from two specialist teachers and their assistants, which supportive strategies they use in their classrooms to support executive functioning difficulties. Observing the challenges the learners face in classrooms will be complemented by a descriptive picture of such challenges, followed by support strategies found to be useful by the teachers and assistants. Best practices used in a classroom in a school that specialises in teaching learners living with FASD, will be explored. The information gathered will hopefully serve as a tool that teachers in all schools can use with learners who struggle with executive functioning. It might be possible to ensure that learners with FASDs and who may be undiagnosed in mainstream schools can be supported alongside their peers.

Within an inclusive education philosophy and inclusive education system that compels teachers through policy to make adjustments to accommodate all learners in their classrooms without any form of discrimination (Department of Education, 2010), this research can serve the purpose of doing justice to learners and educators alike if the above-mentioned awareness and understanding can be developed and shared.

1.2 BACKGROUND AND MOTIVATION

Motivation for the proposed study comes from my own personal experience of working in 31 rural schools in a Special Learning Education Support (SLES) team of the Western Cape Education Department (WCED). The schools where I worked were mostly in poor rural communities where alcohol use is rife and most parents of learners do not stop drinking when they are pregnant. Significantly more signs of FASD have been observed among children of women in rural areas, usually among workers on local farms (Viljoen et al., 2005; May, 2017).

Many learners present with symptoms of a FASD but most are never formally diagnosed. This causes many challenges for teachers who struggle to understand and support learners; consequently there are many learners living with FASDs in schools who might not receive the support they require.

This study is important because in the context of the current education system there is a dire need for improving support services delivered to children with special needs (Department of Education, 2001). This paradigm is outlined in progressive inclusive education policies which have been written since 1994 (UNESCO, 1994; Department of Education, 1995; Department of Education, 2007; Department of Basic Education, 2010; Department of Education, 2011).

Findings have revealed children with known prenatal alcohol exposure with and without diagnosis often exhibit executive functioning difficulties (Kalberg & Buckley, 2007; Kodituwakku, 2009; Fuglestad, Whitley, Carlson, Boys, Eckerle, Fink & Wozniak, 2015; Gross et al., 2015; Kingdon, Cardoso & McGrath, 2016). Kodituwakku (2009, p. 218) stated that "... children with FASDs have a generalized deficit in the processing and integration of information". Executive functions can be described as including goal-directed behaviour, such as planning, organising, searching, error correction, impulse control (Welsh, Pennington & Groisser, 1991; Kodituwakku, 2009; Fuglestad et al., 2015; Gross et al., 2015). The functions also include using other cognitive abilities such as reasoning, attention and especially working memory processes (Gross et al., 2015). These are involved in changing up strategies, adapting, inhibition of inappropriate behaviour, abstract reasoning, metacognitive

capacities, and the ability to adjust the sequence of activities as needed (NOFAS-SD, 2009).

Information will be gathered by among other methods, a review of literature in this regard, as well as data gathered in a school where rich supportive strategies for executive functioning challenges are used with learners living with FASD. This could aid other teachers to gain a better understanding of the challenges learners living with FASD experience in terms of executive functioning and equip them with supportive strategies that can hopefully support more learners living with FASD, alongside all learners in the classroom.

1.3 RESEARCH OBJECTIVES AND QUESTIONS

I aimed to create awareness and in-depth understanding of the challenges learners living with FASD experience in terms of their executive functions. I wanted to learn from experienced teachers in a specialised environment, which supportive strategies they use in their classrooms to support such difficulties and promote learning. I also wanted to explore the different components of executive functioning and give a descriptive picture thereof followed by support strategies employed by the mentioned experienced teachers. The sharing of best practices from a classroom in a school that specialises in teaching learners living with FASD might be useful to other teachers too.

The information gathered will hopefully serve as a tool teachers can use with learners who struggle with executive functioning and ensure that learners living with FASD that are undiagnosed in schools, can be supported alongside their peers in the learning classroom.

In order to achieve these aims, the following research questions guided the research process:

1. How do educators that teach in a specialised environment experience and view executive functioning difficulties presented by learners living with FASD?
 - What behaviour that can be described as executive functioning difficulties, exhibited by learners with FASD, do the teachers see/witness in the classroom?

- What knowledge do teachers possess about executive functioning in learners with FASD?
2. How do teachers support executive functioning difficulties experienced by learners with FASD, in the classroom?

1.4 PARADIGM, RESEARCH METHODOLOGY, DESIGN AND METHODS

I gathered data to answer the above research questions, employing a qualitative methodology, in a basic interpretive study (Merriam & Tisdell, 2016).

A central characteristic of qualitative research is that individuals construct reality in interaction with their social worlds. That is why the qualitative researcher is interested in, how people interpret their experiences, how they construct their worlds, and what meaning they attribute to their experiences (Merriam & Tisdell, 2016, p. 24).

Therefore, in light of the above chosen research methodology, I view my research through the lens of an interpretive paradigm. An interpretative paradigm takes into account participants' subjective experiences as the crux of what is important (Terre Blanche, Durrheim & Painter, 2006).

I utilised a case study design for the research process, as it allowed me to focus on a small group of people, in-depth and over time (Henning, 2004). I applied a qualitative methodology to find specific details and descriptions from teachers about how they see and understand executive functioning difficulties that FASD learners may present. I also explored and noted what strategies the teachers employ to help the children overcome the barriers that executive functioning difficulties present (Terre Blanche et al., 2006).

The participants constituting the case, have been approached based on a purposeful selection of possibilities (a school that specialises in teaching children who live with FASD), voluntary willingness of the teachers, classroom assistants and the learners who are part of the specific classrooms, as well as on the grounds of convenience, referring to accessibility by me as the researcher. The participants presented a specific bounded system, within the relevant population and could provide information that may shed light on the research question (Tongco, 2007) and on the phenomenon that is being explored. The bounded system, a school for children with FASD, was

presented by two classrooms in the school, where learners living with FASD are being taught. The learners, the two teachers and the two classroom assistants in those two classrooms formed the unit of analysis.

To gain the best possible understanding of the participants' experiences and the strategies used to support executive functioning in the classroom, data has been collected through observations in the classrooms, and that data was supplemented by conducting three focus group interviews with the two teachers and their assistants. Interviewing as a more natural way of interacting with people fits well with an interpretative paradigm (Terre Blanche et al., 2006). In this study semi-structured interviews with the teachers and assistants were conducted.

Classroom observations were used to obtain in-depth understanding of the difficulties that learners experience with executive functioning. Observations of the learners' behavioural patterns and the corresponding teaching strategies employed, were done over two weeks, where the researcher went to the school for two full days each week. The first teacher's class was observed before first break, the second teacher's class after break and the following day these times were switched. During observations the researcher looked at how the teachers and their assistants identify specific behaviours due to executive functioning difficulties and how they respond to it. The strategies they use to support these barriers have been noted. Observations allowed for accurate identification and description of meaningful human interactions and processes (Patton, 1987). Executive functioning in learners with FASD, as well as the supportive strategies used by the teacher in the classroom to support the learning process, have thus been observed and noted.

After transcribing the audio-recorded interviews and observation notes, I analysed the data using a thematic content analysis process. Thematic content analysis is essentially a descriptive presentation of qualitative data and the outcome of any qualitative research; therefore, it needs to represent a convincing account of the phenomenon being studied (Anderson, 2007).

In order to ensure verification of data and data analysis, the trustworthiness of the research study was kept in mind during the planning stage as well as during the actual gathering of data. This included such aspects of the research process as credibility,

transferability, confirmability and dependability, which have replaced reliability and validity as in quantitative research (Babbie & Mouton, 2001). Babbie and Mouton (2001) also state that an “inquiry audit” should take place during data collection and the analysis phase should be meticulously recorded, maintained and carefully managed. By seeing to the trustworthiness of the study, the quality and usefulness of the findings will be enhanced. More detailed information is to be found in chapter 3.

1.5 ETHICAL CONSIDERATIONS

Prior to the study, I obtained approval from the principal of the School, an individual learning centre, where specialised teaching is offered to learners living with FASD, in order to gain access to two classrooms for four full school days over a period of two weeks. This involved writing a letter that specified the extent of time, the potential impact of my presence, and the outcomes of the research. This also included the criteria according to which I intended to observe the learners’ behaviour in class as well as the teaching strategies employed by the teachers and assistants. It also included the proposed research schedule. After the principal gave permission to proceed with the research (Appendix A), she was asked to introduce me to all the teachers where I shared and explained the purpose of the study and the proposed process. It was an open discussion where all potential participants were able to ask questions (Creswell, 2013). This opportunity was used to ask for voluntary participation by teachers.

Confidentiality was emphasised and its limits were discussed. Anonymity was also negotiated (Daniels, 2016). Hereafter the Research Ethics Committee (REC) of the Stellenbosch University, as well as myself as the researcher, had to weigh up the relative risk of the proposed study against any benefits that the study might directly bring to participants or to society through knowledge gained. I was obligated to attempt to maximise all benefits to participants in the research study. I was therefore guided by the principles of beneficence and non-maleficence, fidelity and responsibility, integrity, justice and respect for the rights and dignity of all persons, as espoused by the American Psychological Association (APA) in 2010. This among other considerations, imply that justice has been sought through me providing appropriate

care and support should applicants have become distressed or harmed by the study (Terre Blanche et al., 2006).

I committed to respect the dignity, moral and legal rights of participants and endeavour to treat all participants in the proposed study fairly and without any form of discrimination (Terre Blanche et al., 2006). This was done through active and clear communication between the parties on what was expected from participants and why their participation was required. Confidentiality and anonymity of participants was ensured, all names of people and places have been anonymised by using pseudonyms (Daniels, 2016). Participants were explicitly informed about their rights to ask questions and to receive satisfactory answers, to withdraw from the research at any time without adverse consequences. Applicants were allowed to review any data or other information held about them, to receive information about project results, outcomes and dissemination. Children were orally answered on questions about the proposed research by the researcher and the teacher. Data collected through interviews and observations in the classroom was been stored on my password protected personal computer and only the participants and my research supervisor had access to the data.

I endeavoured to ensure that consent from all prospective participants was freely and autonomously obtained, and that they have not been coerced in any way. Firstly, information about the study, was read and explained to all participants that agreed on taking part in research. This happened at the school, myself meeting with the teachers and assistants. I explained the research study, what it is about, what executive functioning means, and their proposed role in it. Similar explanations on their level were offered to the learners. When talking to the learners, I attempted to explain the above-mentioned in language understandable to them and on their developmental level. After participants gave oral consent, the teachers and assistants were asked to sign informed written consent forms agreeing to their participation in the research. This included taking part in interviews and allowing me in their classrooms to observe the classroom activities. Parents of the learners in the classrooms, was called and research study was explained telephonically. Informed consent that their child/children may have been observed in class was send home to be signed. The learners indicated their willingness to be observed by signing an informed assent (Daniels, 2016). One

learners and his parents did not signed assent and/or consent, observations of the particular child was not recorded and is not part of the data set collected and analysed. After consent and assent was obtained from all the other relevant role-players, a demographic questionnaire was disseminated among the teachers and assistants (Creswell, 2013) to be filled out and given back to me during the first interviews.

Everything possible was done to avoid any undue harm to participants. I endeavoured to continually weigh up and decide on the most beneficial option to participants. I aimed to be accurate and objective in my communication and not intentionally mislead participants. I also corrected any misleading interpretations that became apparent.

I considered at all times the interests of participants before my own. I kept a research journal which aided in this regard and also served as a measure to ensure ethical behaviour on my part and simultaneously heighten the trustworthiness of the study. An awareness of any potential conflicts of interest and the avoidance of any form of exploitation was addressed in the journal.

I took responsibility in the following ways: Consideration of the welfare of the research participants is of primary importance conducting ethical research in the hope that this study will contribute to the profession and the benefit of educational society.

I respected the research site so that it was left undisturbed after the research study. I endeavoured to stay cognisant of the impact of my presence and tried to minimize disruption of the physical setting. Guidelines from the school's side were sought in this regard (Creswell, 2013).

1.6 CONCLUSION

This chapter describes the context and rationale for the study and addresses the key issues to be critically explored throughout this thesis. The background and research problem was concisely articulated. The research design, methodology, research methods and data analysis technique were briefly introduced. The main ethical issues were also alluded to. The next chapter, chapter 2, provides a thorough review of pertinent literature and information on executive functioning difficulties experienced by learners with FASD, before a comprehensive presentation of the research methodology is discussed in Chapter 3.

Chapter 2

LITERATURE REVIEW

2.1 INTRODUCTION

The purpose of this chapter is to provide a review of the literature pertaining to the executive functioning difficulties learners living with FASDs may struggle with, as well as a review of the literature about supportive strategies that teachers may use to support learners' executive functioning in the classroom.

Rural populations in the Western Cape have had the highest FASD rates in the world, and it continues to be extremely high (Mc Kinstry, 2005; Birn & Molina, 2005; May et al., 2007; Marais, Jordaan, Viljoen, Olivier, de Waal & Poole, 2011; Olivier, Viljoen & Curfs, 2016; May, 2017). The adverse effects of prenatal exposure to alcohol can represent a spectrum of structural anomalies, behavioural and neurocognitive disabilities, broadly termed as Fetal Alcohol Spectrum Disorder (FASD) (Hoyme, May, Kalberg, Kodituwakku, Gossage, Trujillo & Viljoen, 2005). Research shows that children living with FASDs display diminished intellectual functioning falling within the borderline to low average range but can also sometimes display higher levels of functioning (Kodituwakku, 2009). Birn and Molina (2005), as well as Fuglestad et al. (2015) found that among all difficulties that learners with FASDs experience, executive functioning deficits feature prominently.

According to Blaschke, Mataverne and Struck (2009, p. 53) "executive functions are described as the directive capacities of the mind routed through the frontal lobe that act in a coordinated way to direct perception, emotion, cognition and motor functions." These functions are used to engage in self-regulating behaviour and they signal the use of higher order cognitive functions such as sustained attention, abstract reasoning, working memory, adapting, inhibition, self-regulations, reasoning, changing strategies, metacognitive strategies, prioritising and sequencing, reasoning, metacognitive strategies and sequencing. All of these are executive functioning skills which are important for academic success.

Learners with FASDs need support in the classroom to help them reach their full potential. Teachers teaching learners with FASDs need to be knowledgeable about the struggles that FASDs may imply and also be informed about different support strategies that could be helpful when teaching a learner with FASD. According to Badry and Choate (2015) care-takers and teachers need to understand as well as be trained in ways to support learners living with FASDs.

Numerous studies have indicated that the impact of using effective strategies during the learning process improve academic success for FASD learners (Brown & Campione, 1986; Harris & Graham, 1992; Meltzer, 1993; Palincsar, Winn, David, Snyder, Stevens & Meltzer, 1993; Pressley, Goodchild, Fleet, Zajchowski & Evans, 1989).

2.2 DEFINING AND CONTEXTUALISING FETAL ALCOHOL SPECTRUM DISORDER (FASD)

2.2.1 Fetal Alcohol Spectrum Disorder (FASD)

FASD is the umbrella term used by researchers to describe the effects of exposure to alcohol during pregnancy (Astley & Clarren, 2001; Duquette, Stodel, Fullarton & Hagglund, 2006; Petković & Barišić, 2010). FASD is not seen as a clinical diagnosis, but is used as a term to describe the conditions within the FASD spectrum, which include Fetal Alcohol Syndrome (FAS); Partial Fetal Alcohol Syndrome (PFAS); Alcohol-Related Neuro Developmental Defects (ARND) and Alcohol Related Birth Defects (ARBD) (Astley & Clarren, 2001; Duquette et al., 2006; Petković & Barišić, 2010).

2.2.2 Fetal Alcohol Syndrome (FAS)

Within the spectrum of fetal alcohol disorders, FAS is seen as the most serious category. According to Phelps (1995) it describes a system of multiple abnormalities which result from mothers using alcohol during pregnancy. It is characterized by a series of symptoms that include specific facial features, dysfunction of the nervous system, brain damage and delayed growth.

2.2.3 ARBD (Alcohol-Related Birth Defects)

ARBD is used to refer to the physical, behavioural and developmental abnormalities which may be immobilising and which can be attributed to prenatal alcohol exposure. Skeletal, heart, vision, hearing and fine and gross motor problems and abnormalities may present itself in this disorder (Carrier, Green, Jones, Soliman & Wark, 2005; Duquette et al., 2006).

2.2.4 ARND (Alcohol-Related Neuro Developmental Disorder)

The disorder ARND is used to indicate individuals with a confirmed history of prenatal alcohol exposure. It mainly focuses on brain dysfunction. People that are diagnosed with ARND will display a multi-layered pattern of cognitive and behavioural abnormalities that are not consistent with the person's development level and cannot be connected to the person's genetic conditions. Challenges for a person diagnosed with ARND include: social and perceptual difficulties, abstraction challenges, learning disabilities, poor impulse control, school-performance deficits, poor impulse control, language dysfunctions, deficits with regard to maths, abstraction challenges, judgement and attention problems (Streissguth & Kanter, 2002; Carrier et al., 2005).

2.2.5 PFAS (Partial FAS)

In PFAS, only certain components of FAS are evident. There is evidence of complex patterns of behavioural and cognitive abnormalities that are inconsistent with the developmental level of the child and cannot be explained by familial background or environment alone (Stratton, Howe & Battaglia, 1996).

2.2.6 Diagnoses co-morbid with FASD

Disorders that are often co-morbid with FASD are Moderate and Complex Learning Difficulties, Sensory Impairment, Specific Learning Disorder, Autistic Spectrum Disorder, Attention Deficit and Hyperactivity Disorder, Profound Learning Difficulties and Severe Learning Difficulties (Blackburn, Carpenter & Egerton, 2010).

2.3 PREVALENCE IN SOUTH AFRICA

South Africa has the highest rate of measured Fetal Alcohol Spectrum Disorder (FASD) rates in the world (Marais et al., 2011; Olivier et al., 2016).

According to Olivier et al. (2016) as well as Kalberg, Marais, De Vries, Seedat, Parry and May (2017), the prevalence rate of FASD in the Western Cape Province has been reported as the highest rate anywhere in the world with a number of 29 per 1000 live births. These estimated numbers indicate how vital it is to address this phenomenon in the education system.

2.4 THEORETICAL CONCEPTS FRAMING THIS STUDY

2.4.1 Physiological and neuropsychological factors that may influence learning

Alcohol consumed by a pregnant woman, moves within 10 to 15 minutes into her blood stream. It moves through the placental tissues that separate the mother and baby's blood system, sending the alcohol directly to the developing tissues of the fetus. This can be devastating for the baby's development, especially the baby's central neurological system, as it crosses the blood brain barriers with ease (Abel, 2012).

The harmful effects of the alcohol can damage the development of the fetus throughout the pregnancy and is not isolated to a particular time during the pregnancy. The severity of FASD's also depends on the timing and quantity of the mothers drinking, together with several other factors such as the mother's age, food consumption in general, body mass index, food consumption at the time the alcohol was ingested, genetics and the consumption of other drugs (Blackburn et al., 2012).

When a mother drinks, her unborn baby is exposed to the same blood alcohol levels as she is (Luu, 2010). The baby's developmental maturity is largely dependent on the mother's liver's ability to break down the alcohol. For the mother, approximately one unit of alcohol is metabolised per hour (Blackburn et al., 2012), but the process of alcohol breakdown is much slower in the fetus. Alcohol is also absorbed into the amniotic fluid surrounding the baby. The rate at which alcohol is eliminated from the amniotic fluid is about double that for blood, and so it acts as a reservoir for alcohol, increasing the length of time the baby is exposed to it (Luu, 2010).

There have been individual cases where heavy drinking caused no harm to babies and in other cases, a lesser intake by mothers negatively affected their offspring which causes controversy around “safe” drinking levels. In these cases, the individual’s differences like nutritional and physical status and their sensitivity levels, have been proposed as mitigating factors (May et al., 2013). This is the reason why there has been no defined “safe” amount of alcohol consumption or pregnant mothers to insure against the risk of damaging the unborn child. In most cases, alcohol intake during pregnancy, whether it is heavy drinking in some women or lesser alcohol intake on the other, has proven to negatively affect offspring.

Children living with FASD may have many deficits in behavioural, emotional, physical or social functioning. Many children also have deficits in speech, hearing, vision and loco-motor function, as well as functional and structural brain damage and other secondary disabilities as a result of prenatal alcohol exposure that may occur (Turner, 2005).

Harmful effects to the brain may cause life changing damage and can occur at any stage as the brain and the central nervous system develops throughout the entire pregnancy. Different areas of the brain may be affected by alcohol exposure depending on which areas are developing at the time of alcohol consumption. It has been proposed that the most significant damage probably occurs in the prefrontal cortex, which controls the executive functions of the individual (Phillips, 1997).

Prenatal alcohol abuse is one of the largest causes of preventable brain injury in children. The principal frontal subcortical circuits are involved in cognitive, emotional and motivational processes, in the dorsolateral, ventromedial and orbitofrontal areas. The dorsolateral frontal cortex projects primarily to the dorsolateral head of the caudate nucleus and has been linked to executive function difficulties in the brain (Cummings, 1995; Duke & Kaszniak, 2000; Malloy & Richardson, 2001). The frontal lobe has multiple connections to cortical, subcortical and brain stem sites. It is seen as the basis of higher level cognitive functions such as inhibition, flexibility of thinking, problem solving, impulse control, concept formation and abstract thinking.

It has been reported that learners with FASD who have deficits in executive functioning, struggle with cognitive flexibility, inhibition, attention, planning, organising,

set shifting and working memory (Mattson et al., 1999). All of the above mentioned difficulties can make it extremely difficult for a learner to achieve academic success. In essence, it can be said that according to neuropsychological considerations, a person living with a FASD is born with a specific biological template. The alcohol consumption levels of the mother, but also of the father during conception of the baby can have an impact on the formation of the child's biological template (Gearing, McNeill & Lozier, 2005).

2.4.2 A bio-ecological view

In the later iterations of the bio-ecological systems theory, Bronfenbrenner (Landsberg, Krüger & Swart, 2016) referred to heritability that focuses on the understanding of genetic influences on the development of a person. According to Bronfenbrenner, a child's biological template is shaped by the mother's and the father's genetics. In the case of prenatal alcohol exposure, this exposure seems to contribute to the genetic biological template with which an infant is born. The influence of the biological template can be understood through understanding the central concept of Bronfenbrenner's theory (Bronfenbrenner & Morris, 1998), which refers to the fact that the characteristics of a person are evoked by differential responses from the environment to the biological template of a young person, as well as by differential reactions by the developing person to the environment. These interactive responses present what Bronfenbrenner referred to as proximal processes (Bronfenbrenner & Morris, 1998).

After looking at the mother and the fathers' alcohol consumption and its effects on the biological template of the child, and taking Bronfenbrenner's theory of proximal processes into account, it can be argued that these processes play an important part in an infant's development. Bronfenbrenner viewed proximal processes as the primary mechanism for development and postulated that human development takes place through processes of "... more complex reciprocal interaction between an active, evolving bio-psychological human organism and the persons, objects, and symbols in its immediate external environment" (Tudge, Mokrova, Hatfield & Karnik, 2009, p. 200). To be effective, the interaction must occur on a fairly regular basis over extended periods of time.

Proximal processes therefore present the developmental processes of systematic, reciprocal interaction between person and environment. Bronfenbrenner identifies group and solitary activities such “as playing with other children or reading as mechanisms through which children come to understand their world and formulate ideas about their place within it.” A child’s functioning will therefore be dependent on his or her context (Bronfenbrenner & Morris, 2006, p. 797).

The interactions within the environment in a classroom at school can thus be assumed to also play an influential part in learners’ with FASDs learning. Proximal processes among learners, teachers, assistants, the teaching and pedagogies utilised and the educational systems therefore need to be considered when exploring how learners with FASD can be supported effectively in their learning.

The proximal processes increases the level of effective developmental functioning, and also increases the degree of the individual’s differences attributable to actualised genetic potential for such outcomes.

The learner may have been born with a predisposition for learning difficulties because of heritability and the alcohol consumption of parents, especially the mother, but the proximal processes may also contribute, either positively or negatively, to such mentioned learning difficulties. Through this framework, Bronfenbrenner identified the need to understand individuals’ development through his/her interactions within his/her environments.

The learner’s context, when taking into account both the home environment and the learning environment or school, can either support or undermine, his or her eventual learning achievements.

2.5 FASD AND EDUCATION

Literature in the field of FASD reflects on the immense financial burden of FASD in the Western Cape Province of South Africa and the implicit need for rigorous prevention efforts. Literature in the field of FASD, according to Rendall-Mkosi, London, Adnams, Morojele, McLoughlin and Goldstone (2008), highlights gaps that exist country-wide for addressing the effects of FASD as well as the need for improved identification of

FASD. A wide range of behavioural problems and thinking and reasoning (cognitive) difficulties can affect a child's school performance.

It is also noted that the needs of the children affected by FASD becomes more prevalent in the school environment. In most schools, teachers have not been equipped with the knowledge and skills to effectively support children with these mentioned barriers to their learning. Training must be a priority for teachers to enable them to adapt their teaching strategies in the classroom to support the different learning needs of affected children (Kazdin, Siegel & Bass, 1992).

According to Kalberg et al. (2017), school personnel in South Africa where FASD research has been conducted, are frustrated with the large numbers of affected children who are attending their schools. Many teachers complain that they did not receive the necessary training to understand the challenges that exists in learners who are affected by FASD. Being able to identify a learner's individual learning style (strengths and concerns) seems to be the key to the development and implementation of potential classroom support strategies that the child might need. The lack of teacher knowledge about FASD has negative implications for affected learners to reach productive and meaningful outcomes in their educational processes (Kalberg & Buckley, 2007).

Teachers may be confronted with cognitive or learning deficits, some visual problems or a higher than normal pain tolerance at the one end of the spectrum. On the severe end, a child may present with mild to severe speech and language delays, facial deformities, extreme impulsiveness, hyperactivity, intellectual impairment, heart defects, attention and memory deficits tremors and coordinating difficulties, organising, planning impaired judgement and reasoning (Blaschke et al., 2009).

Despite the fact that FASD affects the cognitive functioning and developmental outcomes for children exposed to alcohol prenatally, their functioning is dependent on a wide range of factors which includes, among others already mentioned, parents' intelligence and levels of education. This leads to highly variable levels of cognitive functioning and not all children who have been exposed to alcohol prenatally display all of the learning difficulties associated with FASD (Kalberg & Buckley, 2007).

Researchers have, however, documented that children with FASDs show reduced intellectual functioning, with average IQ scores falling within the borderline to low average range which according to Mattson and Riley (2000), Crocker, Vaurio, Riley and Mattson (2009), Streissguth et al. (1990), and Mattson et al. (1999), can lead to higher risks for problem behaviour. Slow processing and integration of information and disturbances in attention, and especially marked deficits in executive functioning seem to be present. Particular tasks that involve the holding of information in order to manipulate cognitive functioning (working memory) may be problematic. In domains that include memory and processing of numbers, individuals with FASD have revealed low performances as the complexity of tasks increased (Kodituwakku, 2009).

Effective executive functioning can be viewed as an important component for all learning. Executive functioning difficulties were found in children with FASD diagnoses (Krivitzky, Walsh, Fisher & Berl, 2016). These executive functioning deficits persist regardless of the presence of other more visible signs of the disorders (Rasmussen, 2005).

2.6 EXECUTIVE FUNCTIONING

2.6.1 General definition

Executive functioning at its most basic level refers to the abilities that enable a person to develop specific behaviour patterns, thinking skills like considering one's own behaviour while thinking about it (Burgess, 2003). Executive functioning refers to a set of abilities which is controlled by the frontal lobes. These functions includes: reasoning, attention, problem solving, judgement, impulse control, awareness and emotion regulation all which can be referred to as higher order functions (Scott & Schoenberg, 2011).

2.6.2 A neuropsychological understanding of EF

The application of a neuropsychological perspective to the study of executive functioning in children on the FASD spectrum has established a number of important facts about FASD.

The principal frontal subcortical circuits are involved in cognitive, emotional and motivational processes. The front subcortical circuit called the dorsolateral circuit is linked to executive functions which control the ability to retain, remember and use information, plan responses, control problem solving and abstract thinking (Cummings, 1995; Duke & Kaszniak, 2000; Sbordone, 2000; Malloy & Richardson, 2001). A learner needs to use all these functions in the classroom on a daily basis.

2.6.3 Difficulties in EF as experienced by children on the Fetal Alcohol Spectrum in the classroom

The increasing use of technology in schools today emphasises the importance of teaching learners executive functioning skills such as organising, planning, self-editing and prioritising. Learners are expected to complete long term projects, take open book tests and write lengthy assignments for which executive functioning is very important. However, our curriculum's focus remains on the content of learning and not much attention is given to the process of how learning takes place, which leaves many learners living with FASD frustrated and overwhelmed (Meltzer, Pollica, Barzillai & Meltzer, 2007).

Teaching children with FASDs necessitates ascertaining how to best serve each child's individual needs. As mentioned before, the effects of being exposed to alcohol in utero vary and lead to each learner experiencing unique and very different barriers to learning. Learners can have strengths or weaknesses in one or more of the executive functions at any given time. Some children may have well developed executive functioning where others may not. The different executive functions can be described in the following ways (Blaschke et al., 2009):

2.6.4.1 *Metacognition*

Metacognition is the process of becoming aware of your cognitive processes and the ability to control these cognitive processes.

2.6.4.2 *Inhibition*

The act of inhibiting or restraining yourself from something you would like to do. (Connor, Sampson, Bookstein, Barr & Streissguth, 2000).

2.6.4.3 Sustained attention

The focus needed for long periods of time (Blaschke et al., 2009).

2.6.4.4 Working memory

Working memory is the skill that is used to control and manipulate information received (Blaschke et al., 2009).

2.6.4.5 Organisation

Organisation is the management function that follows after planning. Organising comprises of grouping task into compartments, assigning tasks, and adequately allocating resources to achieve a common goal.

2.6.4.6 Planning and sequencing

Planning and sequencing (also called forethought) is the process of thinking about and organising the activities required to achieve a desired goal.

2.6.4.7 Flexibility and ability to shift between tasks

Cognitive flexibility has been described as the mental ability to switch between thinking about two different concepts, and to think about multiple concepts simultaneously. Two sub-categories of cognitive flexibility refers to the ability to seamlessly switch between different tasks as well as the ability to shift between thoughts on different topics, depending on whether change happens unconsciously or consciously, respectively.

2.6.4.8 Self-regulation

Self-regulation refers to how we control our behaviour by self-monitoring needs and desires as well as the desirable behaviour.

2.6.4.9 Focussing attention

Focussing attention is the process of selectively concentrating on an isolated aspect of the information while ignoring other visible information.

2.6.4.10 Storing and retrieving information

Storing refers to the process of placing newly acquired information into memory, which is modified in the brain for easier storage.

The above-mentioned executive skills are all required to achieve academic success, and it is of utmost importance that these skills be supported and developed in class.

2.7 LEARNING SUPPORT

2.7.1 Policy on Inclusive Education in South Africa

Since 1994, the education system in South Africa has undergone policy changes reflective of the government's need to transform and restructure a divided education system into a more democratic and inclusive system (Mda & Mothata, 2000; Sayed, 2001).

An inclusive education system is consistent with the democratic principles underlying the current democratic dispensation in South Africa. The South African Constitution and Bill of Rights abide by the concept of embracing the democratic values of quality, and human rights and implying an education system that is capable of meeting the diverse needs of every learner and preventing learner failure and exclusion (Republic of South Africa, 1996).

The South African Schools ACT 84 of 1996 (Republic of South Africa, 1996) also affirms the right of equal access to education for all learners without discrimination in any form. No learner may therefore be denied access to any school on any grounds, including disability or learning difficulty. To support this transformation into a more inclusive education system in South Africa, The Education White Paper 6 for Special Needs Education (White Paper 6, 2001) and the Screening Identification Assessment And Support Policy Document (SIAS, 2008) policy documents were released to support and guide the change so that every learner receives the support he/she needs to reach his/her full potential.

2.7.2 White Paper 6/SIAS (policy on support)

The purpose of the SIAS policy document is to provide a policy framework and official documents to assist in identifying, assessing and providing programmes for all learners who require additional support to enhance their participation in the classroom and promote inclusion in schools. This document is aimed at improving the access to quality education for vulnerable learners including learners living with a FASD who experience barriers to learning. When teachers follow the SIAS guidelines they can manage their teaching and support the learners who experience barriers to learning within the NCS (National Curriculum Statement Grades R-12). The SIAS document allows for early identification and effective interventions by aligning with the School Health Policy to minimise learning breakdown and potential dropout (SIAS, 2008).

The aim of White Paper 6 on Special Needs Education: (Building an Inclusive Education and Training System Dept. of Education 2001) is that all schools in South Africa can meet all learners' needs under one delivery system. Under the best of circumstances, this goal of White Paper 6 is still difficult to implement. There is a need for creative implementation processes so that learners with FASD's can thrive in a system driven by an inclusive education philosophy.

Diagnosing FASD learners is not always possible but in order to support a learner with FASD, formal and informal assessments, guided by the SIAS policy document, are important. Assessment is needed to be able to understand the strengths and challenges of each learner. Information gained from teachers' assessments in addition to information gathered from the family, the actual school or academic achievement, behavioural information, information from previous teachers, and any IQ or neuropsychological information from other professionals, need to be considered. Such an assessment must be a collaborative process between the learner and all parties involved in the learner's life.

Firstly, in order to assess the impact of an environment on the learner's abilities, the child must be observed in a variety of natural settings on different occasions over a period of time. This will help the teacher to see how the learner reacts in different settings, for example, in the classroom, on the playground and in the dining hall etc. It is important to observe the learner in a variety of settings in order to identify specific

difficulties which may appear only in certain settings, such as the school. Multiple observations can help the teacher to determine the learner's current ability and with that information the teacher can set reasonable expectations in the classroom. This process can also assist the teacher with information about the conditions needed for the child to reach his/ her full potential and what could potentially disrupt optimal functioning in the classroom. Once this assessment is done, all parties involved can utilise the information and create an Individual Educational Support Plan (IESP) for the learner.

The White paper 6 policy document promotes collaboration amongst learners, parents, teachers, School-Based Support Teams and District-Based Support Teams as well as other support systems available to ensure maximisation of support provisioning to schools. This requires that everyone involved in a learner's life must be involved in the assessment process, the planning of support best suited for the learner and in the reassessment or referral to the District support team, if needed. This policy document is aimed at transforming the education system into an inclusive education system in line with the prescripts of the Education White Paper 6 (2001). White paper 6 is concerned with the educational experience available to learners with moderate to severe disabilities in the education system. This document ensures that learners with any disability, including learners living with FASD, will be accommodated and supported to enable them to reach their full potential (White Paper 6, 2001).

White paper 6 also acknowledges the anxieties that many educators may have about inclusion and teaching learners with special needs. To this end, teachers are provided with expert training and resources are invested in special schools as resources centres so that teachers can support the learners that experience barriers to learning. White paper 6 also gives teachers access to neighbouring schools, especially full service schools, so that they may obtain the necessary information to support the learners with their diverse needs in their classrooms (White Paper 6, 2001).

2.7.3 Learning support for learners living with FASD in the classroom

Children with cognitive-related issues from prenatal alcohol exposure often come to the attention of the education system because of the learning and behavioural issues they display, and not because they have been diagnosed with FASD (Connor et al.,

2000). A formal diagnosis of FASD can only be made by a qualified medical practitioner, which is often very difficult because of financial implications. While diagnosing a learner as FASD may alert a teacher to the possible learning barriers that a child may face, no two FASD learners are the same. Even if children with FASD have the same diagnoses, their barriers to learning may be very different, which is why every learner's support need to be individually tailored to that specific learner.

White paper 6 states that all learners need to be supported and that teachers should empower themselves to be able to support all learners in their classrooms despite any disability or learning barriers that the learner might experience. Understanding the difficulties learners living with FASD experience, may help educators to identify and support all learners and enhance learning opportunities in the classroom. Supportive strategies for FASD learners can also support many other learners that experience executive functioning difficulties in the classroom.

According to the SIAS process, the teacher tries to support the learner in the classroom and when they do not succeed, the teacher seeks assistance from the SBST (School Based Support Team). The school based support team includes the principal, deputy principal, head of department, learning support teacher, the specific teacher involved, the parent and the learner if necessary. Outside specialists can sit in and collaborate with the team in drawing up an IESP (Individual Educational Support Plan) to support the learner. This plan is set up with a review date. When the teachers and the parents have tried everything and nothing works, the District-based support team (DBST) is asked for help. The school generally asks for an individual assessment of the learner's abilities and challenges. This assessment most often includes intelligence testing, and specific screening for learning abilities. These tests do not help with an FASD diagnosis as an IQ score is not an indicator of an FASD diagnosis (Connor et al., 2000). As a variety of IQ scores can be found in learners with FASD, an individual learning profile of each learner needs to be developed (Connor et al., 2000; Kodituwakku, Kalberg & May, 2001; Mattson et al., 1999; Mattson & Riley, 2000).

Findings indicate that individuals with known FASD and individuals with known exposure to parental alcohol exposure, even without a diagnosis of FASD, exhibit

executive functioning difficulties, including those learners that fall in the average IQ range (Mattson et al., 1999).

Executive functioning refers to the individual's cognitive ability to plan and sequence behaviour to efficiently achieve a goal and to manipulate information to be able to successfully complete a task. Children with executive functioning difficulties also struggle with complex working memory-related tasks and sifting tasks, planning ability, cognitive flexibility, selective inhibition, and concept formation and reasoning (Kodituwakku et al., 2001)

A deficit in executive functioning difficulties interferes with some of the daily tasks, academic achievement and problem solving. When the SIAS process of assessment has taken place, the difficulties a learner experiences may become evident. When the learner's challenges are known, it may be possible to develop support strategies within the classroom.

2.8 GENERAL SUPPORT STRATEGIES FOR COGNITION-BASED DIFFICULTIES

Learners, who struggle with cognition-based difficulties, will typically struggle with daily routine and interaction or social exchange and sequence of learning. Whereas most children learn from observing others and being guided by adults, for children with FASD these skills are not always easily understood and need to be directly taught. Sometimes they need an environmental tool to help them stay on track with daily routine or start a task. In this case socially appropriate interaction needs to be taught as rote teaching and learning (Connor et al., 2000).

2.8.1 Inhibition and impulsiveness

Learners that presents with inhibition and impulsiveness may choose task with smaller immediate rewards, over larger delayed rewards; they may take other learners items; physically lash out without warning and tell lies. The personal safety of FASD learners and the learners in their classroom may also be comprised due to learners with FASD's inability to consider consequences before acting (Blaschke et al., 2009). The teacher should motivate mindfulness by using deep breathing techniques or counting to five before responding. The teacher may find learners blurting out answers

without being asked, therefore using a stick or hands signals for taking turns can help. Teachers should avoid over stimulation from multiple sources (data, wall decorations and technology) and keep a clean, uncluttered class.

Learners living with FASD often perform poorly on executive functioning because of poor inhibitory control (Carlson & Moses, 2001; Dempster, 1993; Diamond & Gilbert, 1989; Harnishfeger & Bjorklun, 1993). Support strategies for inhibition and stopping interrupting behaviour will include classroom rules, positive reinforcement and consequences. Teachers can use concrete and consistent language when setting up rules and avoid setting more than five rules. For younger learners, the teacher can provide pictures alongside the rules and they should be easily available. Ensuring that a poster with all the rules are visible without too much decoration will also assist learners (Blaschke et al., 2009).

FASD learners benefit from positive reinforcement to enforce habits of behaviour and increase self-esteem. Immediate reward in a form of incentives should be available if a learner has succeeded in any task or shown positive behaviour. There should be meaning behind the incentive otherwise the incentive would not help to promote positive behaviour. Incentives can be individualised to a specific learner. Incentives can even be link to home rewards. The incentive should be worth-while to the learners, if not, then the incentive should be changed. The teacher can make two or three different lists of incentives and rotate as needed. It is very important to know what motivates positive behaviour for a specific child. To this end, the parents and the learner should be consulted when drawing up an incentive list. This will require substantial planning but once it is put in place, a learner's behaviour in the classroom will improve. For older learners, the teacher can create a chart where a learner tracks their own rewards by positive feedback. This allows the learners to build up their reward to earn certain privileges and it helps if the teacher always provides options from which a learner may choose. Rewards should also be publicly acknowledged and learners' good behaviour rewarded by, for example giving out certificates during assembly or emailing the recognition of reward if the learner has an email account at school.

Remonstrating and asking the learner why he/she did what they did, will not help the teacher or the learner because learners often do not understand what they have done

wrong, nor why they have done it, and as such will not understand why they should be punished for their behaviour. When the learner breaks the rules, teachers should reprimand him/her for breaking the rules immediately and remind the learner what the consequences are (Catterick & Liam, 2014).

Peer acceptance is very difficult for learners with FASD. Teachers should avoid singling out a learner in front of all the learners in the class. By reminding learners of the rules daily and also what the consequences are for breaking the rules, teachers will be able to maintain discipline. Consistency is very important and a teacher should ensure that if learners break a rule, that the same consequence is applied every time. It can become very difficult when monitoring consequences, so having an assistant available would be helpful.

Learners living with FASD who struggle with executive functioning may begin a task impulsively with no plan of action. This leads to them getting stuck when they have to take the next step in the task, which leads to an end product that is disorganised and incoherent. Planning a task and setting a goal before the learner starts a task is important as it allows them to think before they start working and prepare them to minimise unnecessary mistakes. Learners who set goals and plan, also show greater commitment, and are more motivated to complete a goal orientated task (Schunk, 2001; Winne, 1996, 2001; Zimmerman, 2000; Zimmerman & Schunk, 2001).

Starting a task for an FASD learner can be a real struggle; learners may seem unaware of what is required to complete a task. The learner may also find it difficult to do a task when there is no motivation or understanding as to why a task is being done (Connor et al., 2000). They tend to get caught up in the immediate moment of doing the task and do not think about the end goal while completing the task. This may lead them to complete the task in an insufficient way. The learner may not show problem solving skills or sometimes may not even realise problem solving skills are needed (Blaschke et al., 2009). This behaviour may appear as oppositional behaviour to the teacher or the learner may appear as lazy.

Catterick and Curran (2014) advise that at the start of a task, teachers should use multi-sensory learning tools to reinforce the learning or to stimulate enthusiasm to learn a new task. Learners may need prompts and feedback when they end an old

task or start a new task. The feedback will help the learner de-regulate to avert possible disruptive behaviour (Catterick & Curran, 2014).

Learners living with FASD may put themselves in difficult situations without thinking of the consequences. Learners will also find it difficult to stop interruption behaviour. It has been suggested by Blaschke et al. (2009) that the use of environmental prompts like switching off the lights or stopping the music to alert learners to stop or end an activity may be useful. Cues ahead of time or indicating the time left for an activity may also help the learners to be more aware of own behaviour as opposed to expectations from the environment (Blaschke et al., 2009).

2.8.2 Planning organising and setting goals

Planning or the organisation of information is a prerequisite for reading, writing, and completing projects in content areas. At school, however, learners are not necessarily taught how to do long and short term planning when doing homework or studying for a test. This is why learners often underestimate the time they need to complete a task and by the time they start with their task they feel overwhelmed by the amount of work. They find it very difficult to break a task down into manageable parts. These skills are part of the subject Life Skills, but should also be modelled by teachers and parents (Donald, Lazarus & Moolla, 2014). The teacher or the parent or both needs to assist the learner to set up a time table to track deadlines but also to help with planning. These strategies are crucial for promoting independent learning (Hughes, Ruhl, Schumaker & Deshler, 2002; Sah & Borland, 1989). This learning should ideally be taught from an early age, during pre-school already. Planning just becomes more complex as they move to higher grades. Learners are expected to complete multiple tasks with different deadlines.

When needing to complete long-term projects and research papers across grades, learners living with FASD struggle with goal setting, planning and prioritising. Learners become overwhelmed because they just see the bulk of the work and do not know where to start or how to plan, set goals and prioritise the work that needs to be done. According to Pintrich and Schunk (1996) and Schunk (1995) there seems to be a strong relationship between the ability to set personal goals and sustain higher levels of motivation and strong positive self-efficacy.

Research also reveals that learners with FASD perform better when they get to choose their tasks and that they will work harder on goals they chose themselves than when they have to follow the expectations and plans of others (Linskie, 1997). Teachers should share their goal-setting processes with the learners and give them appropriate guidance; learners can then learn how to set responsible goals, which increases their motivation and willingness to complete tasks (Meltzer, 2010).

Goal setting should not only happen in one classroom implemented by one teacher, but it should be implemented across the whole school. Also, according to Meltzer (2007) goal-setting needs to be taught explicitly, systematically, and across grade levels and curriculum areas.

The Curriculum Assessment Policy Statement (CAPS) is a content-centred curriculum that needs to be differentiated to accommodate the learner. Still, many teachers find it very difficult to include time to teach learners goal-setting. Metacognitive strategies can be used to improve goal setting.

Metacognitive strategies are essential for setting goals. Research has shown a strong relationship among self-understanding, effective strategy use, academic success, the development of beliefs that one can succeed, positive self-concept, and increased engagement with learning (Licht, 1993; Merlzer & Krishnan, 2007). When learners approach a task knowing that they have the strategies to tackle the task, it will increase their self-efficacy (a belief that they will succeed at a task.) This will increase their involvement in the task. Learners who have not developed their metacognitive strategies are greatly disadvantaged when trying to cope with the CAPS fast-paced complex curriculum.

Learners living with FASD often tend to be more visual which is why rubrics and samples of finished projects presented to students provides opportunities for a learner to see what is expected of him or her. The provision of rubrics and samples will also address the need of students with multiple learning styles.

Learners living with FASD do not easily respond to long term rewards, therefore the teacher should often provide immediate rewards (Schunk, 1980). The teacher cannot, for example, promise the learner that if they do all their reading today they can watch a movie at the end of the month. Immediate rewards, in the form of points, beans or

stones that may count up to a movie at the end of the term (Locke, Shaw, Saari & Latham, 1981) will be preferable. When the goals are set to far apart some learners may not want to engage because they perceive it as too difficult to reach.

Learners with FASDs tend to focus on smaller detail and forget the bigger picture. For this reason, learners often do not see the sense in completing a task (Meltzer, 2004; Meltzer, 2007). It is very important for the teacher to explain the bigger picture before going into the smaller details of tasks that are needed to be completed. When learners can envision the end point, they will have a clear, well-defined target, their focus will improve and they will better allocate their cognitive resources.

Timelines and calendars can be included effectively in the classroom. This way learners can monitor their own progress and it will also help with effective goal setting. Calendars provide visual reminders of due dates as well as help learners scaffold the work needed to be done.

When learners succeed in a task or fail in a task, it is important to allow the learner to evaluate their own strengths and learning points (self-assessment) in both tasks. This self-assessment will promote self-knowledge that will help the learner in setting goals. For this to be successful, it is important for the teacher to create an environment where there is little judgment and where it is accepted that everyone has strengths and weaknesses, everyone learns differently and that all learning styles are accommodated.

It is important that learners care about what the teacher is teaching. It is important to understand that learners are motivated to do work that is in line with their own strong desires and values (Feather, 1988; Vroom, 1964; Wigfield & Eccles, 2000). That is why teachers will benefit from knowing the learners' interests and hobbies and who their role-models are. Teachers can use this information as examples and set up work within an individual learner's frame of reference.

FASD learners will most likely struggle with time and sequencing that is inherent in their typical daily routine. Learners may find themselves lost when they write a test and that the work differs from the work they have been taught. When learners read words, sentences or phrases that have multiple meanings, they often have to shift their

mind-set. Learners can start out by taking magazines, newspapers and comics and practise identifying multiple meanings.

When learners are editing their writing pieces, they can use different coloured pens. When they do this, they can pretend to play the role of the learner and the teacher. By playing different roles and switching pens, learners are more likely to find their own mistakes and identify their areas that need improvement. This will also help the learner to make amendments to other part of their work.

2.8.3 Attention

According to Mirsky (1996) and Nanson and Hiscock (1990) learners with FASD struggle to focus, sustain, and shift attention. It becomes very challenging for FASD learners to maintain this type of attention for a significant amount of time without being distracted. The ability of learners with FASD to sustain their attention will vary as they may listen intensively the one minute and the next their attention will lapse. The key concept for sustained attention is the ability to refocus on the task after a distraction.

FASD learners find it difficult to shift attention from one task to another and to encode new information. They tend to perseverate and adhere rigidly to a routine regardless of the circumstances. In their school books they will repeat the same action over and over even if the results are incorrect. Learners might be organising data and materials so that it is out of sequence, incoherent or fragmented. There might also be difficulty in stopping a task or mental process (Blaschke et al., 2009). Learners may get stuck on one approach or not know how to access appropriate resources to move to the next task. A FASD learner may become confused when daily routines change. Learners may show resistance to a change in routine and to transition from one place to another, for example, changing classes or grades (Conner, 2000).

According to Blaschke et al. (2009), learners may become easily frustrated and have temper tantrums if they do not succeed. FASD learners will stick to only doing one task at a time and they will be unable to shift between different tasks when necessary (Blaschke et al., 2009).

According to Catterick and Curran (2014), learners with FASD may need additional time to process change and overcome their initial fight/flight/freeze reaction. For

learners with this rigid behaviour pattern, change without the needed support is particularly difficult.

Catterick and Curran (2014) believe that the teacher needs to ensure that the learner has a timetable for school and for home so that the learner can check when they feel unsure of what they need to do. This will also help them to know what is expected of them and to prepare themselves for school. The teacher can build social cues into a classroom dialogue so that the learner knows what is expected of him/her on an on-going basis.

To give learners the idea of when a task is supposed to be completed and when a new task is starting, a teacher can give them an early warning sign of the change, which will give them the time to get used to the idea. Teachers can make use of verbal prompts, time trackers or clocks in the classroom (Catterick & Curran, 2014). The teacher should try to make eye contact when giving instructions and tell them what they should do rather than telling them to stop what they are busy with. It is important that the teacher does not rush the learners but gives them time to respond to change. A daily planner will help to make learners aware of what is coming next and it will also help them plan their day and cope with transitions.

Learners need time to work through experiences before it happens. Role playing a new experience before it takes place can help the learner to prepare for change. For example, when the psychologist comes to see a learner the teacher can prepare the learner by informing them of what a psychologist does and role-play the psychologist's visit. It can also be helpful if you allow learners to enter the class first so that they have some time to acclimatise before the rest of the class enters. The teacher can try to keep the same time table each day and it can also be helpful to give brain breaks between transitions of subjects (Catterick & Curran, 2014).

Focussing attention is the ability to focus on a specific task for a continuous amount of time without being distracted. Examples of sustained attention tasks that learners might struggle with in class include listening to lectures or stories, reading or playing games (Conner et al., 2000).

The learner may briefly attain their attention or focus but they might not be able to maintain their focus for the period of time needed to complete a task. The learner may

have a good initial performance followed by a decrease in consistency as times goes on (Blaschke et al., 2009). This often leads to learners losing important information needed to complete an assignment accurately (Blaschke et al., 2009).

By providing the learner with a stress ball, focus may be encouraged. It is important to keep tasks short and mix it with physical activities to expend their energy. To sustain attention the teacher can make a visual chart showing progress with the task so that they can see their own progress in term of sustained attention. The teacher can create rhythms to practise instructions and copy patterns with. When doing this learners would have to listen with sustained attention to hear and/or identify the pattern (Blackburn et al., 2012). Attention can also be improved by environmental and visual structures.

2.8.4 Environmental and visual structures

It is important to put environmental structures in place before environmental support. Structuring the environment helps the learner to know what is expected of him/her. The environment should be used to support the learner and not to control the learner. It is very easy for a teacher to turn to controlling the learners when plans fall apart and the learners' behaviour becomes out of hand. When plans of support fail, it is important to re-assess what is not working and to restructure the classroom environment accordingly (Conner et al., 2000).

Structure will give the learner clear guidelines of what to do when and how to do it as well as the sequence of how the task should be completed. Planning of environmental organisation takes substantial planning from the teachers. The teacher's plan will include a daily routine, starting with how the activity will be taught, what materials the learners will need and the steps and cues that will indicate the beginning of routine. It will also indicate the positive reinforcement that needs to be in place if a learner successfully completes a task as well as what will happen should an answer be incorrect (Giangreco, Cloninger & Iverson, 2000).

Ensuring consistency in the learning environment provides safety for learners. Learners could benefit from a table booth that blocks out all the external activity from the learner next to them. Providing learners with a fidget item at their desks and ensuring that seating allows for constant movement, ought to remove possible

frustrations and conflicts. An occupational therapist can be consulted with regards to seating arrangements for the learners. Most learners with FASD are kinaesthetic learners – for this reason the teacher should include movement gestures that underline her instructions and messages to the learners.

Most FASD learners may find bells in the school very disturbing. If bells are compulsory, learners need to be warned when bell will go off or use earmuffs to mask the sound when it occurs.

It would be useful to monitor the environment by looking at noise and light. Fluorescent lights, air conditioners, scraping of chairs, school bells, ticking clocks, perfumes and aromas may distract learners and should be adapted to accommodate their sensory sensitivities (Blackburn et al., 2012).

Personal space can be something learners with FASD struggle with. Colour-coded blocks on a carpet can allow each learner to have their own space on the carpet and during group activities. Sometimes learners can disturb the whole class when they need time to self-regulate and when there are too many activities happening in the classroom. A thinking space in the corner of the classroom or a room in the school where a learner can go to cool off when he or she needs a break, can work. This should not be seen as a punishment but rather as a space for nurturing to help the child decompress.

Learners may be visually inclined. Visual structure makes the environment and learning area visible and clear. Visual structures should support executive functioning difficulties. This will include making use of daily schedules, decreasing visual and auditory distractions and tasks structures that provide visual organisation, clarity, and instructions (Schopler & Mesibov, 1995).

Some organisation in the classroom will include separating materials, taping of sections of a room for specific activities as well as the learners' learning space, using the carpet squares for learning time. Visual structure can also be implemented by colour coding, labelling and highlighting important information or activities. Rules, instructions and clear visual cues regarding the sequence in which a task should be completed, must be in place. Teachers need to determine what daily schedule works for their classrooms; some use lists, others fill out calendars and some use daily

planners. With the daily planner teachers may want to include task structuring. Task structuring provides a clear system for the learner to follow. For example, there may be different places in the classroom where different subjects get taught with a clear indication of the different work stations. This helps the learner come to grips with their environment, to know what is expected from them and also to minimise potential behaviour difficulties. Task structuring should be discussed with the learners in the morning and should be available (and on display) during the whole day; it will also help to relieve anxiety and help learners predict and anticipate what will happen next. This can relieve the anxiety learners sometimes experience when they have to switch tasks.

Schedules also help to provide motivation by giving the learner concrete proof of how long the day will be. This, instead of the teacher, can also help to keep the learner on track. Learners are sometimes able to work with focused attention on completing long complicated tasks, when their learning is structured without visual and auditory distractions.

2.8.5 Memory

Learners often fail tests due to a loss of information. The learner may struggle to remember day to day events and may be unable to recall information after a delay (Connor et al., 2000). When teachers use constant repetition, it helps learners deal with memory deficits. The more relevant the data is, and the more information can be related to their own life experiences, the easier it is for the learner to recall the content and to make connections. To improve learners' memory, teachers can make use of memory games on a daily basis. This can be done with pictures and real life objects they use every day (Catterick & Curran, 2014).

Providing clear, consistent rules across the school in order to reduce the number of things that need to be remembered, may lead to more adherence to it. It also needs to be accepted that rules will need to be repeated frequently. Instructions in short sentences will serve to reduce complexity. When instructions are given, extra time might be needed to process the information; which will lessen anxiety which can lead to emotional outbursts. A teacher can also monitor understanding and to ensure that

learners have processed the information by asking the learner to repeat the instructions in their own words (Blackburn et al., 2012).

Learning is dependent on memory. To learn learners should be able to retrieve, store and retain information, and at times the learner is required to manipulate information. The accumulated information shapes the response and choices that learners make. Learners can get very frustrated with the volume of work they need to juggle and access mentally.

The long term memory of learners living with FASD seems to be better developed than their short term memory which is why rote learning is very effective. When a FASD learner does not regard information as important, it is discarded right away. To improve their short-term memory, the teacher should teach by making use of all the learners' senses (Goldman, 1995). The responses to sensory input, or information that is received, are often determined by the level of attention that is given to the current task. The conscious effort to attend to information represents executive functioning processes in attention and learning. Information that is recognised as important stands out for the learner and enters the working memory system, where it may be used right away or eventually be encoded into long term memory and retained (Shiels et al., 2008).

With working memory the learner should temporarily be able to hold information while the end goal is the manipulation of the information. For working memory it is very important that the learner pays attention to work done, because if attention is not given the information will be marked as unimportant and therefore discarded.

Repetition, rehearsal and review of work done are important to cement small amounts of information into the memory (Baddely, 2006). Attaching meaning to new information is another powerful memory tool. It allows the learner to attach personal meaning that will make it easier for the learner to understand and remember information. Another technique that can help is 'chunking down' information. This is when the teacher breaks the work up into smaller units which will help the learner store and retrieve it (Swanson, 1999).

Chase and Ericsson (1982) identified three components to working memory. Short-term memory, intermediate-term memory and long-term memory. Short-term memory

holds recent information, while intermediate-term memory is the retrieval of specific information from the long term memory which gives direct and relatively fast access to knowledge states and context. It contains structures for controlling the flow of processing within the current task and gives fast access to knowledge previously gained that is relevant to the current task or context.

Difficulty with working memory may present itself in the classroom in the following ways: learners may find it difficult to follow directions, retain information previously presented, generalise items or events in logical order, keep track of personal belongings like school materials or organise information into a meaningful sequence, generalise information from one situation to another and general organising skills.

Basic skills for academic reading develop much slower. As a result, learners with FASD will struggle with foundational concept acquisition such as shapes, letters, numbers and words.

Using mnemonics is a popular strategy for remembering information. Learners can use crazy phrases to be able to remember big volumes of work, for example, when learners have to learn long questions. They can either recite it to themselves as a story or they can make up key phrases that will allow them to remember the story, in other words, using beginning letters of words or phrases to form an acronym. As a learner learns memory strategies taught by the teacher, many learners find their own way of remembering work which matches their learning styles. That is why the teacher should first give the learner work to remember and see what type of technique they tend to use and support them to improve their choice of leaning.

As mentioned before, learners with FASD sometimes have difficulty with remembering assignments or directions. The teacher can try to shorten instructions and provide them one at a time. The teacher could also write instructions on the board so that when the learner cannot remember what should be done, they can go back and check. The teacher can start a lesson by activating prior knowledge by asking questions like, "What do you know about that?" At the end of the task the teacher may ask, "What did you learn?" (Chase & Ericsson, 1982).

2.8.6 Social and Emotion-related functioning deficits

Understanding what appropriate behaviour is, is often very difficult for learners who have prenatally been exposed to alcohol. They often find themselves socially intrusive to those around them. They may also find it difficult to control their emotions and can impulsively act out towards others without thinking of the consequences.

Emotion-related executive deficits can manifest itself in an inability to inhibit immediate responses to other people and circumstances. The learner may be unaware of his/her emotional states, thoughts or actions and may also appear inappropriately active by speaking out without waiting his/her turn or without thinking about their responses. A teacher might observe a learner acting wild or out of control or responding excessively in a typical normal situation (Blaschke et al., 2009). Such behaviour often interferes with the learner's ability to make friends and form sustainable relationships (Kalberg & Buckley, 2007).

Learners may find it difficult to manage their emotional reactions to school-related events which could negatively affect their school performance. When learners experience stressful situations and living conditions at home they may find it difficult to regulate their emotions at school (Vail, 1994). Primary school learners may present with temper tantrums when the volume of work becomes unbearable. High school learners may "shut down" when feeling overwhelmed.

There are various definitions for emotional regulation. Most of the definitions refer to the internal processes an individual experiences, and how he/she maintains and/or modifies it. In the classroom the ability to modulate and shift emotions is a crucial component of effective and efficient learning. When learners know how to regulate their emotions in the classroom they are better able to attend to instructions, sustain their effort and work through their frustrations when faced with challenging tasks.

It is important to teach learners what to do when they feel overwhelmed and are unable to control their emotions. There are different programs which can assist teachers with learners' emotional regulation. There are also supportive strategies the teacher can try to use in the classroom that can have a significant impact.

Learners should be allowed to share their emotions in a safe place without judgement. This should not only strengthen the acceptance of emotions but also make learners aware of their emotions and how they can control their behaviour by controlling their emotions. The teacher can allow a breathing space in the corner of the classroom for learners to cool off or allow the learner to count backwards from 5 or allow them to go to the toilet to wash their face or their hand to their elbows to cool off. Posters and cues cards that remind learners to think through their actions before they impulsively respond, can help to guide and reinforce learners' behaviour. The teacher should also try to first model rules, practised by the class as a whole, and have students role-play adherence to rules in different situations. When learners break rules, the teacher can explain the negative behaviour and the impact it has on other learners. It is important that teachers demonstrate the desired behaviour and encourage self-talk. Reminding learners of rules every day and allowing learners to role-play different situations seems to be important (Blaschke et al., 2009).

There are steps that teachers can use to teach a learner to control their emotions. Having visual reminders in the class and even pasting it on the learners' desks for easy reference are ideas on how to remind the learners of what constitutes appropriate behaviour.

Self-monitoring or regulation refers to the way in which the learners manage their cognitive and metacognitive processes to track own performances.

2.9 CONCLUSION

The literature review in this study gives a broad overview of the multifaceted executive functioning difficulties learners living with FASD struggle with. Even though learners living with FASD are all different individuals, there is still a common set of executive functioning difficulties most of these learners seem to struggle with. Through reviewing literature in this regard, I became aware of the significant research that has been conducted as well as the wealth of information on FASD (Streissguth & Kanter, 2002) that is available. I however, also became aware of how little information there is on supporting learners struggling with this mentioned set of executive functioning difficulties in the classroom. I realised how much work still has to be done in South Africa to inform and support educators with strategies which can be used in

classrooms. Such classroom support for learners living with FASDs will contribute to an inclusive and fair education system. Support structures need to be put in place at educational level, in order to reach the goals, set out by policy documents like White Paper 6.

In Chapter 3 I shall focus on the research design and methodology of the current study.

Chapter 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In this chapter I describe the research design that I have used as a strategic framework for the study. It served as a bridge between the research question and the execution or implementation of the research (Terre Blanche et al., 2006). According to Bless and Higson-Smith (1995) a research design serves as the plan for any scientific research from the first to the last step and provides the programme to guide the researcher in collecting, analysing and interpreting data. It is the designed and planned nature of observations that allows for empirical evidence which distinguishes research from other everyday forms of observation (Babbie & Mouton, 2001; Terre Blanche et al., 2006).

3.2 RESEARCH PARADIGM

According to (Mertens, 2005, p. 7) “a paradigm is a way of looking at the world”. I worked from an interpretive paradigm, which asserts that participants “make meaning” of situations or phenomena. An interpretive paradigm suited my research project because I attempted to understand the perceptions, perspectives and understandings of teachers who support learners living with FASDs and the executive functioning difficulties they might experience (Mertens, 2005).

According to (Terre Blanche et al., 2006, p. 6) “paradigms are all encompassing systems of interrelated practice and thinking that define for researchers the nature of their enquiry along three dimensions: ontology, epistemology and methodology” Ontology is the description of concepts and relationships within the study, how the nature of the reality is understood in the study. Epistemology describes the relationship between the researcher and the knowledge yet to be acquired, in this case the knowledge being the subjective meanings. Finally, methodology is the approach used by the researcher to bring the unknown to the known (Terre Blanche et al., 2006).

This study was conducted in the form of a single instrumental case study design, in order to gain in-depth understanding and meaning. This narrows the study down to a single unit of analysis within a bounded system and allows for intensive descriptions, gathered over time (Merriam, 2009).

The interpretive research paradigm allows one to study participants' subjective realities and perspectives. The interpretive paradigm as framework, enables a researcher to be able to recognise, understand and appreciate the behaviour, attitudes and feelings of the participants in the study (Terre Blanche et al., 2006). The methodology within this interpretive paradigm, demands a qualitative methodology, which I shall attend to in the following section.

3.3 QUALITATIVE METHODOLOGY

A qualitative research methodology suits the orientation of my research. Qualitative methods are mostly used in research that is designed to provide an in-depth description or understanding of a specific setting or phenomenon (Mertens, 2005). Therefore, the researcher is interested in "understanding the meaning people have constructed; how people make sense of their world and the experiences they have in the world" (Merriam, 2009, p. 13).

The information gathered by a qualitative researcher provides a "thick description", that is, as much detailed information as possible about participants' experiences. (Merriam, 2002; Ritchie & Lewis, 2003; Mertens, 2005). However, it is important to take into consideration that the researcher is human and humans are potentially fallible and own meanings and frames of reference may influence analyses and findings. This is why I have described my experience in the field of education with children who have been exposed to alcohol during pregnancy in Chapter 1. I have developed significant empathy for their struggles in mainstream schools.

Qualitative research also allows for flexibility within the research process. When the researcher suspects an error arising that might negatively influence research or feels the need to make changes as the process progresses, the researcher may do so to accommodate participants involved (Merriam & Tisdell, 2016).

3.4 PURPOSE OF THIS STUDY

Closely related to the choice of paradigm is the purpose of the intended study. The purpose of this study was to gain insight into how learners with FASDs and who experience accompanying executive functioning difficulties can be supported efficiently in the classroom. Such insight was sought by engaging with teachers/educators who are experienced in this field and by seeking answers to the following research questions:

1. How do educators that teach in a specialised environment experience and view executive functioning difficulties presented by learners living with FASD?
 - What behaviour, that can be described as executive functioning difficulties, exhibited by learners with FASD, do the teachers see/witness in the classroom?
 - What knowledge do teachers possess about executive functioning in learners with FASD?
2. How do teachers support learners with FASD with regard to their experiences of executive functioning difficulties?

3.5 RESEARCH METHODOLOGY

3.5.1 Participant selection

According to Bless and Higson-Smith (1995, p. 85) "... sampling is a technical accounting device to rationalise the collection of information, to choose in an appropriate way the restricted set of objects, persons, events and so forth from which the actual information will be drawn from".

For this study I made use of purposeful and convenience sampling when I decided on a participating school and individual participants. The individuals participated voluntarily after the proposed research process was explained to the staff of the school. Bless, Higson-Smith and Kagee (1996) explain that a purposeful sampling method is based on the judgement of the researcher, regarding the characteristics of representative participants. In the case of this study, I selected teachers and assistants who have experience in teaching learners living with FASDs. The two teachers who volunteered, their assistants and the learners of two classes in a privately run school

where children with FASDs are taught, formed a bounded system, being part of that specific school. In this particular school learners living with FASDs are taught, and therefore purposefully selecting participants from this school ensured that it could shed light on the research topic and questions (Merriam, 2002; Terre Blanche et al., 2006).

According to Evans and Rooney (2014) convenience sampling allows me, as the researcher, to select participants who are readily available to take part in the study. In this study, the school was convenient as I am familiar with it and the nature of the education that is offered at the school. The private school opened in 2010 to address the educational needs of children with Fetal Alcohol Spectrum Disorders (FASD) who, as a result of cognitive, behavioural and emotional difficulties, could not cope within the mainstream educational system. It is one of only a few schools in South Africa that offers education with support to children's needs because of alcohol-related and neurological challenges.

As mentioned, this school is run by a private organisation and specialises in teaching learners from different cultures, living with FASDs. Not all the learners are formally diagnosed by medical practitioners, but their histories and other sources of information support the assumptions of FASDs. The school claims to make use of specific techniques and strategies in the classrooms to accommodate and encourage learners living with FASDs to learn optimally. Individual teaching happens in very small classes with only between 8-12 learners per classroom. Extra activities are offered, like sports days, school concerts and talent shows, soccer, dancing and Taekwondo. Taekwondo is an art of self-defence which originated in Korea and which is seen as a means of building both physical and mental strength. The criterion for a learner to apply to this school is a report from an educational psychologist stating that the learner will benefit from the school, or that a formal medical diagnosis of FASD has been made.

The requirements to teach at this school are a degree in education or a post-graduate certificate in education (PGCE), and the teachers need to be registered with the South African Council for Educators (SACE). Two teachers and their two assistants from the school took part in this research voluntarily. These two classrooms therefore constituted the case that was being studied in-depth and over an extended period of time.

Table 3.1: Background and contextual information of the participating teachers and the classroom assistants

Teacher 1	Assistant 1	Teacher 2	Assistant 2
How long have you been teaching?			
An assistant at the school for 6 months and thereafter teaching for 4 years.	5 years as an assistant at the school	3 years as a teacher at the school	8 months as an assistant at the school.
How many learners do you have in your classroom?			
12	-	8	-
How long have you been teaching at the school?			
4 years and 6 months	2 years	3 years	8 months
What grade do you teach?			
Grade 1 and 2 learners.	-	Grades 2, 3, 5 and 6 learners	-
What subjects do you teach?			
English Home Language, Mathematics and Life Skills.	-	English, Mathematics, Natural Science, Technology, Social Science and Life Skills.	-
How did your interest in working with learners with FASD start?			
Worked as an assistant for 6 months and become interested.	Wanted a new experience and a challenge.	Background within special needs and inclusive education brought teacher to teaching at the school.	Inspired by teacher's own child with special needs.
What are your qualifications and where did you study?			
Bachelors in Education and Honours in Inclusive Education at UNISA.	In the process of getting a teaching qualification at Lyceum College	BA-Psychological counselling (UNISA), PGCE- Senior and FET phase's (UNISA) and a BEd Honours in Educational Psychology (Stellenbosch University).	Completed the first year of Psychology through UNISA, completed first year of biblical counselling and currently studying further towards a Bachelor's degree in Theology.
What previous experience did you have with teaching learners living with FASD?			
None	None	None	Previous experience with own child, a learner with special needs.

3.5.2 Data collection methods

The methods I used to collect data were the following: Three consecutive semi-structured interviews were conducted with a focus group consisting of the participating two teachers and two assistants. The interviews were audio recorded and subsequently transcribed. Field notes were taken during the observation periods that I spent in the two classrooms without participating in any of the classroom activities. I also kept a journal as a means of quality control.

I started off on day 1 at the research school with an interview with the identified focus group. The group consisted of the two teachers and two assistants who volunteered to be part of the research. The semi-structured interview was conducted at the school after the learners had gone home. During this first interview I informed the group about the research process and what they could expect during the observation periods. I also tried to ascertain what they know about FASD and executive functioning (see Appendix D for interview schedule). Thereafter observations in the classrooms commenced the following day.

Observations of the learners' behavioural patterns and the corresponding teaching strategies employed, were conducted over two weeks, during which time I went to the school for two full days each week. The first teacher's class was observed before first break, the second teacher's class after break and the following day these times were switched. During observations I looked at how the teachers and their assistants identified specific behaviours due to executive functioning difficulties and how they responded to it. The strategies they used to support these barriers had been noted. Observations allowed for an accurate identification and description of meaningful human interactions and processes (Green & Thorogood, 2018). Executive functioning in learners with FASD, as well as the supportive strategies used by the teachers in the classrooms to support the learning process, was thus observed and noted.

The second day began with observations in the classrooms, followed by a second focus group interview. The focus of the second interview was on in-depth questions about the ways teachers experience working with learners living with FASD and how they support learners' with executive functioning difficulties in the classroom. The last

day began with observations and an interview that was used to clear up any misunderstandings or gaps in information after 4 days of observations.

3.5.2.1 *Semi structured-interviews and focus groups*

The purpose of the interviews was to engage in dialogue with the participants to elicit their knowledge of FASD with a specific focus on executive functioning and information gathering about the strategies teachers and assistants use in their classroom to support learners living with FASD.

A semi-structured interview is a non-standardised interview format, often used in qualitative research. While an interview guide is used, the semi-structured interview format allows for additional questions to be asked, and the order of the questions can be changed if necessary. This partial pre-planning of questions is an important feature of the semi-structured interview. It allows the researcher opportunities “to respond to the situation at hand, to the emerging worldview of the respondent, and to new ideas on the topic” (Merriam, 2009, p. 90). Semi-structured interviews allowed me to use open-ended questions which allowed the participants to elaborate on their own personal experiences of working with learners with FASDs. Through the interviews I gained access to and was able to understand the “... private interpretations and reality that the individual holds ...” (Merriam, 2002, p. 272).

A focus group will typically be constituted of a group of people who share similar experiences, but it is not necessarily a 'naturally' existing social group. Focus groups are often purposeful in the sense that a group of participants is selected because of their knowledge of a specific field, so that a wide range of perspectives can be obtained on the specific topic. Focus groups are often selected "to reflect a heterogeneous cross-section of interests and attitudes within the parameters of whatever main criterion qualifies them for membership" (Terre Blanche et al., 2006). Informed permission was given orally by participants for all the interviews to be audio recorded. I informed the participants that all audio recordings together with the transcribed data would be stored on a password protected external hard drive and kept securely under lock and key for a period of five years as required by law. Only I and my supervisor ever had and will have access to this data.

3.5.2.2 Observations in the classrooms and field notes

Observation was also used as a method of data collection for the purpose of this study. Observational data collection allows researchers to have first-hand experiences of the phenomena being studied (Merriam, 2002; Mertens, 2005). Educators were informed of observations and were also given a copy of the classroom observation schedule beforehand. Observations only took place in the classroom. During observation periods I looked at the learners' executive functioning skills, how they retained information provided by the teachers in their minds, and how they used that information to complete tasks.

According to Denzin and Lincoln (2005, p. 643), "... going into a social situation and looking is another important way of gathering materials about the world". I observed the learners within their classrooms for 4 full days over a period of two weeks. The learners were prepared for these observation periods when they were introduced to the research study.

According to Patton (2002, p. 260) "observation is a form of social inquiry which requires disciplined training, and which includes learning to pay attention, see what there is to see, and hear what there is to be heard. It is important to practise writing descriptively, to acquire discipline in recording field notes and knowing how to separate detail from trivia". While observing the learners I did not interact with the teacher, assistants or learners in any way. I only observed and recorded field notes throughout the observation period. Note-taking took place while observing how the teachers and their assistants understand executive functioning difficulties and how it manifested in the classroom. See Appendix D for the observation criteria.

3.5.2.3 Reflexive Journal

I kept a journal which served to ensure ethical behaviour and which heightened the trustworthiness of the research process. In qualitative research literature the importance of researchers reflecting on own values, assumptions, beliefs and biases, and on monitoring these as the process progresses, is emphasised (Mertens, 2005). One way of doing this is by keeping a research journal where the researcher monitors and interprets as the research process unfolds (Mertens, 2005; Terre Blance et al., 2006). I kept a journal throughout the research process (see Appendix G). The journal

contains detailed reflections, questions, plans, decisions made, problems encountered and new ideas generated during the data collection and analysis. This journal reminded me of changes, of information that needed to be added and of questions that needed clarification. This process contributed to the validity and reliability of this study as well as to the ethical approach I followed.

3.5.3 Validity and reliability (Trustworthiness of the study)

The main goal of any research is to gather valid and reliable knowledge and to ensure that this is undertaken in an ethical manner. The validity of any research refers to the degree to which it measures what it is supposed to measure while reliability refers to the consistency of what the research study measures (Ary, Jacobs, Irvine & Walker, 2018). According to Hanson, Ju and Tong (2018) the trustworthiness of any qualitative research can be established by showing that it is credible, transferable, dependable and confirmable.

3.5.3.1 Trustworthiness

Credibility is about establishing whether the research is believable. One of the ways in which credibility can be insured is by gathering data from more than one source, namely by triangulation. I made use of three semi-structured focus group interviews as well as observations in two classrooms over a period of two weeks. Member checks, assured that the findings are accurate and credible to me as the researcher, to the research participants and to anyone else who reads it (Merriam & Tisdell, 2016).

Member checks refer to the process whereby the accuracy of the researcher's (myself) understanding of information, analyses, and findings was checked with the participants during the third and last interview. When the participants agreed with my understandings, it indicated that the findings could be viewed as credible (Harper & Cole, 2012).

Transferability is the degree to which the research findings can be generalised to other contexts (Merriam & Tisdell, 2016). For this purpose, I compared information gathered from other researchers with similar topics of research. I attempted to describe the research process itself, clearly and succinctly, in order that a similar study may be carried out at another setting by another researcher. Such clarity of

description, may make it possible to repeat the study in other environments and it can then be considered transferable as well as dependable.

Conformability asks questions about the quality of the findings produced. Conformability is strengthened by how well research findings are supported by participants and whether other literature can confirm findings (Merriam & Tisdell, 2016). Teachers and assistants related to most of the research introduced to them and the literature confirmed their experiences. Rich descriptions were provided.

Dependability guaranteed that research findings are consistent and that they can be accurately repeated over time (Merriam & Tisdell, 2016). The audit trail involves the process of documenting the course of the development of the completed analysis. An audit trail (as part of the research journal) helps to establish the credibility of a qualitative study and serves to convince the scientific community of its rigour (Wolf, 2003).

In the light of the different measures mentioned in this section, I shall proceed by describing the research process in the following section.

3.5.4 Research Process

Upon deciding the topic that I would like to research, I identified the school where it seemed as though the teachers possessed the expertise to teach learners who may experience executive functioning challenges. After making contact with the organisation managing the school, I sought the consent of the principal of the school to conduct the research (see Appendix A). Having obtained the consent to proceed, I prepared a submission to the Research Ethics Committee (REC) of the Stellenbosch University (SU) for ethical clearance, which I received (see Appendix B).

I then forwarded the following information to the principal: The information sheet about the process of the proposed research; a demographic questionnaire to be disseminated among the potential participants, namely teachers and assistants (which was to be filled out and returned during the first interview); information leaflets and consent forms for the volunteer participants. Observation criteria forms that I was going to use during classroom observations were also provided. The interview

schedules for the semi-structured group interviews were also made known to the principal (see Appendices C, D and E).

Thereafter, the principal invited the teachers, learners and the parents to a session so I could introduce the study and obtain the consent of those involved. The parents did not show up so I presented the study to the staff and the learners at the school and asked for voluntary participants. The intermediate phase and senior phase teacher agreed and signed the consent forms to take part in the study. The learners went back to their classrooms and the intermediate phase and senior phase learners completed the assent forms. I then contacted the parents to inform them of the research study. After the telephonic conversation with the parents I sent the information sheet and consent letters home for their signatures. I received consent from the parents and only one learner's parents did not give consent. This specific learner was otherwise occupied, having been given separate tasks, during my observation periods of the class.

The interviews with the group of participating teachers and assistants commenced thereafter as I have described previously. Each interview began with my thanking the teachers and assistants for their participation in the interviews and allowing me to observe their daily routines in the classrooms. The researcher showed respect to the participants and reciprocally received respect from the participants.

3.6 ETHICAL CONSIDERATIONS

Ethical norms serve as the aims of any research study and apply to all people who conduct scientific research. Ethics should impact every decision made through-out the research process. As an educational psychology intern, I am bound by the code of professional ethics as prescribed by the Health Professions Council of South Africa, as well as by the general principles of ethical research within the profession of Psychology.

Therefore, to ensure the research conduct remained ethical thorough-out this research process a number of ethical principles needed to be carefully considered.

3.6.1 Ethical principles

Participants should feel free to take part in the research and be comfortable that anonymity will be ensured. It should not be necessary to worry about others reading the thesis and what they will think of them, so names of all people, organisations and places was anonymised and fictionalised. The school's name as well as the NGO responsible for the school has not been mentioned. The anonymity also ensured confidentiality, as care was taken that information gathered was not made available to anyone other than myself and my supervisor.

Everything possible was done to avoid any undue harm to participants. I continually weighed up the most beneficial options for the process to the participants wellbeing, and tried to be as accurate and objective in communication as possible. I also tried to correct any misleading interpretations of the process. Initially, I planned individual interviews, but based on the teachers' preferences and requests, focus group interviews were chosen.

The principle of autonomy refers to the right of every individual to freely and voluntarily make informed decisions regarding their own lives. In this study, participants partook in the research out of free will and were not coerced in any way. They voluntarily signed an informed consent form (see Appendix C). The autonomy of participants was also respected in that they could withdraw from the process at any stage, and they could also decide not to answer certain questions should they have wished not to, without any negative consequences for them. This did however not happen. The autonomy of the participants was respected in that they could withdraw from the process at any stage and they could decline to answer specific questions, if they so desired, without any negative consequences. This however, did not happen.

There is risk involved when doing research. Risk against benefits are guided by the principles of beneficence and non-maleficence, fidelity and responsibility, integrity, justice and respect for the rights and the dignity of all persons as proposed by the American Psychological Association (APA) in 2010.

Beneficence is action that is done for the benefit of others. Beneficent actions can be taken to help prevent or remove harm or to simply improve the situation of others. A researcher is obligated to attempt to maximise the benefit that the research will afford

to participate in the research study. I am hopeful that outcomes of this research can be used as a guide for teachers to support learners living with FASD who experience executive functioning difficulties (Beauchamp, 2008).

The principle of non-maleficence states that the researcher should act in ways that do not inflict evil or cause avoidable or intentional harm to others (Beauchamp, 2008). This includes avoiding even the risk of harm. In the informed consent forms that participants signed, it was stated that if any of them were negatively affected by the research, they could withdraw without any negative consequences to them. I would have done anything in my power to rectify any wrong doing.

Fidelity refers to the quality of faithfulness, trustworthiness or loyalty. The participants should know that a researcher has their best interest at heart and that they can trust the researcher with the information they provide. Teachers and assistants did not seem hesitant to answer any question and did not keep me away from their classrooms or seemed uncomfortable with my observing in the classrooms. The teachers welcomed me with open arms whenever I entered a classroom. Preparing the teachers for the observation periods with an explanation of the observation criteria, seemed to put their minds at ease, and seemed to instil some trust in me as the researcher.

It is a researcher's responsibility to inform participants of their rights to ask questions and receive satisfactory answers as well as to be able to withdraw from the research at any time. I informed the participants that they are allowed to review any information about them and to receive feedback about the findings, outcomes and dissemination of it. Questions from children were also answered in the language they understood.

Justice should be sought by providing appropriate care and support to participants should they become distressed or are harmed in any way because of the study.

Participants have the right to be informed about the research process that they involved in. Consent was freely and autonomously obtained (oral and written) from the parents of the underage learners in the two classes (see Appendix C). The learners provided assent after the process was explained to them (see Appendix C). When the teachers signed consent (see Appendix C) they understood that it meant that they had to take part in interviews and also allow me to observe their classroom activities. The

parents understood that signing consent meant that their child/children would be observed in their classrooms. The learners were also informed that by assenting they were saying that they willing to be observed in classroom.

Integrity is the quality of being honest. I tried to be honest and upfront about all aspects included in the research and did not lie to or mislead the participants in any way.

A researcher should treat all people with dignity and respect. This includes vulnerable people, small children and children with mental disabilities. In this study no child was exposed to labelling nor any other discriminating practices.

3.7 DATA ANALYSIS

Thematic analysis is a method for identifying and reporting themes within qualitative data. It organises and describes data in detail (Boyatzis, 1998). I have provided a summary broadly outlining the six phases which constitute thematic analysis. The table below provides a summary of the guidelines on how I conducted the thematic analysis process (Patton, 1990).

Table 3.2: Guidelines for the thematic data analyses process

Table guidelines on how to conduct thematic analysis process	Description of the process transcribing data
1. Familiarisation with the data:	When I started the analysing process I first familiarised myself with the data. According to Lapadat and Lindsay (1999) this is the beginnings of an interpretive act through which meanings are created. While reading and re-reading data I immersed myself in the data to such an extent that the ‘the strange becomes familiar and the familiar strange’ (Terre Blanche et al., 2006, p. 321)
2. Generating initial codes:	I used coding to organise the data in a systematic fashion across the entire data set. I then identified passages of the text or meaningful phenomena to the research question. I continued by applying labels to them to indicate that they are examples of some thematic idea. In the end I reduced the data to key themes (Babbie & Mouton, 2001; Merriam, 2002; Terre Blanche et al., 2006).
3. Searching for themes:	While I was searching for themes I collected codes and organised them into potential themes. When the data relevant to each theme was collected, I had a collection of themes and subthemes.
4. Reviewing themes:	I first reviewed all the coded data which now fit into each theme to make sure that all the data forms a coherent pattern. I reviewed the entire data set and each theme in relation to all the gathered data. I then created a thematic map to help me visualise the relation between the themes (Patton, 1990).
5. Defining and naming:	In this stage, I refined the essence of each theme by giving clear definitions and names to each theme.
6. Producing the report:	In the final stage of analysis, I decided on the best examples suitable for the research question and literature to produce my research findings (Braun & Clarke, 2006).

Thematic analysis is a flexible method, but it is important to be clear and explicit about what you have been doing and how you arrive at the final themes and findings (for a sample of the analytic process, see Appendices E and F).

My analysis process had to correspond with the way I presented the themes (Braun & Clarke, 2006). In this sense, the theory and method needed to be applied rigorously, as “rigour lies in devising a systematic method whose assumptions are congruent with the way one conceptualizes the subject matter” (Reicher & Taylor, 2005, p. 549).

3.8 CONCLUSION

This chapter has guided the reader through the framework of the research design. I presented the research paradigm, research methodology and design, including how trustworthiness was ensured, the way that the data was analysed thematically, and the ethical considerations. The main focus of the qualitative case study research design was identifying an understanding the participants' knowledge and strategies used to support executive functioning difficulties experienced by learners living with FASDs.

In the following chapter I shall present the themes that emerged from the data and discuss it by comparing it with the literature that I reviewed in chapter 2. I shall use clear examples of the participants' words and actions to motivate these themes.

Chapter 4

FINDINGS AND DISCUSSION

4.1 INTRODUCTION

The central aim of this study was to get a better understanding of the executive functioning challenges learners living with FASDs struggle with in the classroom, as reported by teachers and teaching assistants. The research also intended to explore teachers' understanding of executive functioning and the supportive strategies that they use to support these learners' scholastic functioning.

The research questions were designed to probe the participants' understandings of the above:

1. How do educators that teach in a specialised environment experience and view executive functioning difficulties presented by learners living with FASD?
 - What behaviour, that can be described as executive functioning difficulties, exhibited by learners with FASD, do the teachers see/witness in the classroom?
 - What knowledge do teachers possess about executive functioning in learners with FASD?
2. How do teachers support learners with FASD who experience executive functioning difficulties in the classroom?

In order to answer the research questions I had to glean pertinent information about the teachers' understanding and insight of executive functioning, and the difficulties that may be experienced by learners if these functioning skills are not optimally developed. I also needed to understand what learners with FASD struggled with as well as how teachers and teaching assistants supported them. Therefore, I conducted three interviews over a period of two weeks with participants in the form of semi-structured, in-depth focus group interviews. As discussed in chapter 3, these focus group interviews were conducted with two teachers and their assistants in a school where they teach learners living with FASDs.

The use of semi-structured interviews allowed opportunities 'to respond to the situation at hand, to the emerging worldview of the respondents, and the supportive strategies on the topic' (Merriam, 2009, p. 90). In this way I was able to generate the necessary in-depth insight in order to comprehensively address the research questions.

Two separate interview guides were used for each of the two interviews. The first and the second interview were used to get a better understanding of the executive functioning difficulties the FASD learners' experience in the classroom and the supportive strategies the teachers use to support these challenges. In the third interview, I checked my understanding of their responses in the previous interviews and paid attention to information I might have misunderstood in the previous interviews or observations.

Classroom observations were used to witness and obtain an in-depth understanding of the difficulties that learners experience with executive functioning. Observations of the learners' behavioural patterns and the corresponding teaching strategies teachers employed were done over two weeks. During the observations I obtained information on how the teachers and their assistants identify specific behaviours due to executive functioning difficulties and how they respond to them as well as the strategies they used to support these barriers.

4.2 RESEARCH FINDINGS

The table below serves as an advance organiser, highlighting the themes that have emerged from the data gathered through the focus group interviews and the observations. It is important to bear in mind that the research questions are used as a framework to organise the data from which a number of themes and subsequent sub-themes arose. The findings presented in the sections below are supported by the participating teachers and their assistants, from the actual interview transcripts and my observations in the classroom.

Table 4.1: Themes and sub-themes

Themes	Sub-themes
Theme 1 2.1 How the FASD learner presents in the classroom	2.1.1 Impulsivity and inhibition
	2.1.2 Metacognition
	2.1.3 Working memory
	2.1.4 Attention
	2.1.5 Self-regulation
Theme 2 2.2 Teachers' and assistants' teaching experience and strategies of working with FASD learners	2.2.1 Teachers' and assistants' experience of working with FASD learners: insight, knowledge and description of FASD diagnoses
	2.2.2 Attitudes and emotional experiences of teaching staff
Theme 3 2.3 Teaching and support strategies for EF difficulties	2.3.1 How to get started and bring learners back on task
	2.3.2 Constructivism, scaffolding, rote learning, chunking down and concrete foundation
	2.3.3 Differentiating the curriculum
Theme 4 2.4 Classroom management	2.4.1 Classroom rewards
	2.4.2 Discipline/rules/instructions in the classroom
	2.4.3 Multi-functional classroom teaching, organisation and structure in the classroom

- **General points of departure**

Many learners living with FASD present with executive functioning difficulties in the classroom, but as the participants have indicated, not all the learners struggle with the same components of executive functioning difficulties because every learner is unique. It is also important to be aware that learners living with FASD present differently every day. Below I introduce the themes and sub-themes, substantiated by the teachers' and assistants' comments as well as by my observations. Participant one and three indicate the two teachers, participant two and four the assistants and the O's represent my observations.

General comments that serve as an introduction to the participants' experience of teaching at this specific school are represented by the following quotes:

Participant 2: *Every learner is different.*

Participant 4: *Each learner is different. Learners differ from day to day.*

Participant 1: *Some days learners are disciplined and some days they are not, you can't really tell.*

Participant 3: *Sometimes they didn't have a great night or it's just one of their off days and then the learner doesn't want to work.*

4.3 THEME 1: HOW THE FASD LEARNER PRESENTS IN THE CLASSROOM

4.3.1 Impulsivity and Inhibition

According to the participants, impulsivity and a lack of inhibition result in learners acting without forethought in the classroom. He or she may struggle to suppress his/her feelings and thoughts even if these are inappropriate at the time.

Participant 3: *It is like they don't always think before they act.*

Participant 4: *We give them time to eat before they go out to play during break time because they can't say I'll eat now and play later. If you allow them to eat during break time they would want to eat for the whole day.*

Participant 1 points to a "lack of impulse control" while participant 2 mentioned the lack of inhibition.

Participant 1: *Learner tends to put up their hands and then they don't have an answer to the teacher's question.*

Participant 2: *Learner puts up their hand but shouts out the answer before waiting their turn to speak.*

4.3.2 Metacognition

Participants' responses below pointed to a lack of metacognition in FASD learners. Participants found that learners are not always aware of their 'reality' and learners tend to overestimate their progress in tasks and projects. Teaching learners strategies to solve problems in the classroom prove to be very effective in improving their confidence in their work.

Participant 1: *Learners don't realise they made a mistake.*

Participant 2: *They don't seem to understand why they got low marks.*

Participant 2: *Learners tend to give themselves higher marks than they deserved.*

Participant 1: *They might be biased, for them they always did well.*

Participant 3: *When a learner use a strategy learned, to solve a problem, they feel very proud of themselves and it improves their confidence.*

4.3.3 Working memory

Participants' responses pointed to challenges with short term memory, especially with regards to executing instructions in completing homework or a project and keeping track of what they do with their belongings.

O: *The learners get frustrated and don't seem to know where to start when given too many instructions at a time.*

Participant 2: *There's very rarely a project that goes home because learners tend to forget what they should do and if there is a project that goes home, parents would be phoned and explained exactly what has to happen.*

Participant 3: *You would sometimes have to just go over the instructions of the task again to refresh their memory.*

Participant 3: *Learners often forget work done previously which hinders the ability to proceed the task that follows.*

Participants 1: *Learners often lose things and forget instructions.*

4.3.4 Attention

Most FASD learners seem to struggle with three kinds of attention: shifting attention, sustained and focused attention. According to the participants, learners struggle to focus their attention in order to increase the efficiency of their processing. Learners also find it difficult to decrease attentional resources to unwanted or irrelevant inputs.

Learners seem to find it difficult to shift their attention from one activity to another. Sustained attention is the ability to direct and focus cognitive activity on specific stimuli and is required in order to complete any planned cognitive activity, and sequenced action or any thought. This also seems to present barriers to learning for learners with FASDs.

- ***Sustained attention***

Participant 3: *We introduce a new subject in interesting ways to keep learners' attention. When learners' attention wanders it may be because they have lost you and they don't know what is expected of them.*

Participant 1: *We start with maths early in the morning as you need a lot of brainpower and attention for this subject and the day ends with activities like drama, practising concerts, where you need less attention.*

Participant 1: *You get the learners' attention if you do things they are interested in.*

- ***Shifted attention***

Participant 4: *Learners find it difficult to move from one subject to the next. As a teacher we need to give learners a brain break in between subjects.*

Participant 2: *Sometime we sing songs. It just sort of gets the learners more interactive and ready to pay attention. If we go straight into new work, we'll never have their attention.*

- **Focused attention**

Participant 1: *Teacher uses finger-clinking in maths, to keep learners' attention when counting in two's.*

O: *Sometimes the teacher puts the light on and off just for the learners to refocus on work being done.*

Participant 1: *The desks are set up and free from clutter, so that it limits their attention from wondering. Each learner has his own cubicle so that that they don't get distracted by the learner next to them or their surroundings.*

4.3.5 Self-regulation

The participants described how learners struggle with self-regulation. According to participants, learners struggle to control their behaviour and emotions in accordance with the demands of the situation. Both participants 1 and 4 mentioned tantrums and that there were different ways to deal with tantrums in the classroom. They also indicated that learners may become frustrated and present with tantrums when they are not given any work to do or given too much for them to handle.

Participant 1: *Learners throw tantrums when they see too many wrong answers in their books. Learners may also throw tantrums when the work looks too much for him/her to handle.*

Participant 2: *Learners don't always realise they have a problem.*

Participant 4: *You cannot force a learner to work because this may lead to a tantrum.*

Participant 3: *You have to shut a tantrum down right away.*

Participant 2: *You can also try to avoid tantrums by keeping as far as possible to the routine.*

Participant 1: *You can take the learner to the bathroom to wash his/her face. The learner can go to a quiet room to cool off and come back when*

he/she is ready to enter the classroom. You can also give the learner a chance to take a break.

Participant 4: Learners can cause a lot of problems, if left alone. If you were to walk out of the class and not give them any toys or work to do, you don't know what you are going to come back to, because unless there's something that's their main focus, nobody knows exactly how to function. You may come back to a massive fight or you may come back to a child who's stormed out.

4.4 THEME 2: TEACHERS' AND ASSISTANTS' TEACHING EXPERIENCE AND STRATEGIES OF WORKING WITH FASD LEARNERS

During interviews and observations I gathered information on the experiences of teachers and their assistants in the classroom.

4.4.1 Teachers' and assistants' experiences of working with FASD learners, insight, knowledge and description of FASD diagnoses

The teachers and assistants seem to have gained much knowledge and insight on how to work with FASD learners. They gained experience from working with FASD learners and attending short training sessions. They mentioned the importance of being able to identify traits of the diagnoses to be able to effectively support learners.

Participant 3: If you keep on doing something that doesn't correspond to the brain functioning of the FASD child you will not get the learner to work. It's not their fault.

Participant 3: It is important that you know the kids, so you can see when someone is really struggling with something.

Participant 2: As much as we plan, we don't always follow that plan because it depends on the child, because that child changes every day, or five times in one day.

Participant 3: We don't always get to all the work in a day but we eventually do the work, whether it takes a week or a month.

Participant 1: *Training for teachers is important, we attend short training sessions. You can't just have planning; it needs to be structured around the learners' strengths.*

Participant 2: *The learners should constantly be reminded of what's happening in the classroom. You need to inform them of your plan.*

Participant 3: *As soon as they feel uncomfortable, they will not always be able to tell you that they have a problem, but if you explain to them what they might be feeling, they seem to understand.*

Participant 2: *As long as justice is served, they are happy.*

Participant 3: *Each group knows what they need to do and that's how they are able to function in the bigger classrooms.*

Participant 4: *Like if you had to change that routine, you would watch the wheels fall off. You should not say "Don't do something!". You should rather tell them what you want them to do.*

Participant 1: *So I'll mark as they write. So they can correct their answers straight away, because if they forget, they will have forgotten by tomorrow what they've done. As they get older, they do develop some form of memory, but the young ones especially struggle with that.*

Participant 1: *When learners forget, we tend to ask for an example. If I see you holding your jersey in your hands, where are you going to put it? So we all kind of know where to look for it when the learner forgets where he/she has put it.*

O: *Learners don't always like change but they need to be prepared for change.*

Participant 1: *We don't have a school bell because it would be too much of a distraction. If you would ring a bell at the beginning of break they will start packing up to go home. So we would only have it when break ends so they know that they should stop playing and get back to the classroom.*

Participant 4: *It's very difficult and expensive to get a FASD diagnosis. Not all of our learners are formally diagnosed in the school. I think we had two that are officially diagnosed. Learners referred to our school are mostly because the mother admitted to drinking during pregnancy and the psychologist's report that reports on the learners' behaviour and scholastic performance.*

4.4.2 Attitudes and emotional experiences of teaching staff

What I gathered from the data collected, is that working with FASD learners can be emotionally challenging as it is extremely demanding of the teacher. A very specific attitude is required when teaching FASD learners.

Participant 3: *The most important thing to know about teaching a learner living with FASD is just to have patience and know their brain functioning.*

Participant 3: *You get used to learners not being able to do things for themselves.*

Participant 4: *You need to be flexible and understand FASD learners. You also need to be able to create a little bit of extra resources and to think outside the box a bit.*

Participant 3: *So just because they got something wrong doesn't mean that they'll never get it right.*

Participant 3: *It doesn't matter if you are patient or not because if you keep doing something the same way and they don't get it, you are going to get frustrated with the learner and yourself.*

Participant 4: *It can cause frustration if you know what the learner wants or they can't do things for themselves.*

Participant 4: *We prepare work for the learners every day. It is frustrating and it is very annoying, to prepare extra work, but if you don't, you are wasting time in the classroom.*

Participant 3: *You know how to eat an elephant; you need to take one bit at a time, that's what we do. It is all worth it at the end of the day because it makes life easier for the teacher and the learner and it makes your life just a little bit easier, but it's not always easy.*

Participant 4: *It takes so much time to prepare for one or two children in the classroom, but if you don't, you will struggle every single day. Where if you could spend an hour to prep for those four children, your day would run much more successfully because you are going to fight through every day if you don't. This was the hardest lesson for us to learn.*

Participant 3: *You can't force them. Doesn't matter what you do, you can't force them.*

4.5 THEME 3: TEACHING AND SUPPORT STRATEGIES FOR EF DIFFICULTIES

4.5.1 How to get started and bring learners back on task

Participants agreed that learners living with FASD need to start their day in a certain way in order to be able to start working. FASD learners also seem to struggle to start a new activity and that is why teachers need to give them breaks in between.

Participant 1: *We start with bible where it's relaxed in the day and then we do stretches and exercises to wake up.*

Participant 3: *We start with singing and dancing videos in the morning where they just copy what the videos do. In the beginning when we didn't do it, they didn't want to start working.*

Participant 4: *I know when one of the children doesn't want to start something, then they'll ask: Can I go to toilet, to avoid starting an activity.*

Participant 1: *You'll see even with the dates, I'll put a mark on every single book where they must write a date and I will put a little line where they must write it, because they can't do those themselves. This sometimes keeps them from starting an activity.*

Participant 3: *You give one instruction at a time. You repeat back what the learner needs to do and you get started and then we will always go and check that they are still doing what they should be doing.*

According to participants, learners living with FASD often find it difficult to start working and to transition from one activity to another. It is therefore important to know how to bring learners back on task.

Participant 2: *So you normally have a relevant break before, whether it's a 5 minute or 10 minute break or a break outside, so that there is a gap between the subjects.*

O: *When the learner didn't want to start with his work. The teacher took the following actions to help and motivate the learner to get working. The teacher tells the learner that he will be rewarded if he starts working. When that doesn't work, the teacher asks the learner if there is something that's keeping him from doing his work. The teacher then guides the learner to start with his sums. When all else failed, the teacher tells the learner if he completes his sums, that will be all for today.*

Participant 2: *We need to remind learners what we are doing every step of the way. We also find that learners don't like to change and we need to inform learners long before the time that there will be a change in the schedule.*

Participant 4: *When a learner struggles with work, he doesn't want to continue or if they don't understand what they should do, they will not to start working.*

O: *Before they start new work they have to recap old work (if old work is the basis of the new work). Sometimes the teacher just tells them about the work they did last week if they need the information to start this week's work. Learners get easily distracted.*

O: *Learners get a 5 min break before the next subject in which they can choose what to do, for example, build a puzzle, play cards or walk around.*

4.5.2 Learning theories informing practice

Participants have found that certain teaching methods work well when teaching learners living with FASD. The strategies that participants identified were scaffolding, chunking down, rote learning, constructivist teaching and learning and building concrete foundations for learners.

The participants mentioned the need to move the learners' learning and understanding from where it is to where it needs to be while the teacher supports and then gradually withdraws her support, which refers to the constructivist concept of **scaffolding**.

Participant 1: *building on what they know and then slowly lessening the support given.*

The participants see **chunking down** as a very useful technique, as it allows the teacher to break work up into smaller pieces as this improves the amount of information the learners can remember in the end.

Participant 1: *We are always walking around and breaking the work down in smaller parts for the learners to understand what they should be doing.*

Participant 4: *The same as breaking it down. We break the work down, we inform the learner that we going to finish this whole page of learning, then we start here and then we get through each step.*

According to the participants in the study, learners with FASDs need to be taught in a very **concrete** manner since they find it very difficult to understand work if it is abstract.

Participant 4: *Never in maths would we start with the broader picture. In maths your main focus is to be logical and concrete. As soon as it's abstract, you can forget about it, they are not going to get it.*

Participant 3: *If you trying to teach a child how fractions fit into decimal rods, forget it! It's not going to happen; it's too abstract.*

O: *The teacher gave the learners pictures and they have to write the name of the picture next to it. When the one learner doesn't understand what to*

do next to the first picture of the pot of glue, the teacher physically takes out a pot of glue to show the learner what she must write down.

Participants also mentioned that learners need to be constantly involved in meaning making as opposed to passively receiving information. They referred to **constructivist principles of teaching**, where activating prior knowledge along with the repetition of constructs and connecting with meaning provides important strategies that work for learners living with FASD.

Participant 4: We first hear what they have to say and what they know. If they don't get it, we explain again. We would ask them, have you heard of this, what do you know about this? Depending on what level the answer is, you take that as an entry meaning where you as the teacher start explaining and build it up from there.

Participant 3: You need to check learners' understanding and keep them involved in the topic discussed.

Participant 1: It's very important to keep learners active in the activities you do.

Participant 2: When learners can relate to what you explain, the learners understand the work better.

Participant 4: We would ask them, "Have you heard of this, what do you know about this?"

Regardless of the constructivist approach, **rote learning** seems to also be a popular teaching strategy in the classroom.

O: The teacher does a lot of repetition and review of work done previously before starting with new work. First, the teacher teaches the learner the work and then the learner writes the work down on a white board. The learner then goes back to their desk and writes the work done on the white board down in their books. In this way learners rehearses work a few times.

Participant 4: *We give learners one instruction at a time and we repeat it until the learner understands what to do, but most of the times we have to repeat instructions.*

Participant 3: *Yes. So they start from the beginning in their foundation phase, rote learning is done a lot, so they get used to seeing things and doing things in a certain way. In Intermediate phase, you get a little bit of hub and then you try to let them do it by themselves, so by the time you get to the higher grades usually, you able to do things independently.*

O: *Teachers repeat instructions constantly, with concrete examples or they show what learners must do in different ways.*

4.5.3 Differentiating the curriculum

The participants adapt the curriculum by making it more concrete as learners with FASD seem to struggle to understand the work if it is too abstract. They accept that not all learners have the ability to pass matric and for that reason they create light skills programs and work shadowing as part of their exit plan for their learners.

Participant 3: *We alter the way that we do the curriculum.*

Participant 3: *We have to remove the abstract from the curriculum. When the learners aren't responding to the work of the curriculum, then we stop and we do something else. We need to be fair, fair isn't everybody getting the same thing, it's everybody getting what they need in order to be successful.*

O: *The one learner is falling behind because she writes very slowly and struggles with the spelling of words. The assistant asks the learner to tell her how she would like to put what's she's thinking on paper and the assistant writes the story on a white board while the learner is talking. Afterwards, the learner just writes the story over in her classwork book.*

Participant 1: *Some kids will not get to matric before they turn eighteen, which is perfectly fine, because some of the kids are not able to. That is why we have developed like a light skills program.*

Participant 2: *We also created an exit plan for each learner whether they are meeting a grade or not, we then get them job experience. The cooking that we had today is all additional, it's obviously not curriculum-based things. We will create an opportunity, for example, Mary goes on a Friday, she goes to the crèche where she does job shadowing. She's doing her level one first aid based, so she could look after toddlers. So some kids who can't get matric or even a grade nine exit level, we find them other opportunities.*

4.6 THEME 4: CLASSROOM MANAGEMENT

4.6.1 Classroom rewards

All participants agreed that immediate rewards and positive reinforcement work for learners living with FASDs.

O: *The teacher often uses the words "Good job", "beautiful", "thank you", "high five", "very nice", "you impress me today", "well done", "you are such a clever girl, yes!", "I am very proud of you", and "excellent" to motivate learners to improve their performance in what they are busy with.*

Participant 2: *When they get their marks and we wrote "good job", or gave them stickers, no matter how old they are, there's like a smile on their face.*

Participant 1: *With our learners they have a little container on their desk and they put their surprises (fuzzy, small soft toys) in the container and then at the end of the day, the teacher will call them to see what they have. For every five surprises, they get one sticker. Once their sticker chart is full, they get to choose one big reward.*

Participant 2: *The reward will be like playing with the white board and the koki's or choosing something out of the shop with toys. The reward can also be something like reading a book to the class or playing with play dough, that sort of stuff. So it actually works in classroom rewards.*

O: *Teachers give instant gratification for motivation. Learners keep quiet because they want a reward. When it looks like learners are going to get*

out of hand the learners are reminded that their surprises can be taken away if they don't behave.

Participant 1: You can't tell the learner you are going to give them the reward later, you need to give it immediately.

O: Teachers have many different incentives that they change at times. The incentives just work as long as it's worthwhile for the learner.

Participant 3: For the older ones, we had a reward system in the class to get them into the habit of doing things. For example, you get a reward for each little thing on top of your desk. They get a bean for each thing and then, when the bean jar is half way, we go like on an outing on the weekend or we will have a popcorn, a movie or chip roll day etc. So that got them into a routine and into a habit of what they are responsible for. Once they know what to do the rewards should be stopped.

O: They use a school rewards system: Where learners get weekly wages (photo copied money) for good behaviour and work done. When they have enough money they can buy something in the shop which the school created from all the donations the school receives. The older learners work in the donations shops. They also get paid to work in the shops. To get a job, they need to apply, go for an interview and sign a contract. After three warnings you could lose your job. With their money they can also buy a civvies day or music for the day or a no homework day.

Participant 2: They get R20 a week, depending on whether they've had R5 for good behaviour, R5 for if your homework is being done, R5 if the learner presents with appropriate social behaviour on the playground. If you make a mistake somewhere on one of the days, you will lose R5 for that whole category. So we try to teach them the concept of working for money and how the work process works and then also dealing with money and also the learner's behaviour is controlled. We also have movies, but if someone wants to buy it, it is quite expensive. They can also decide to all save together or when someone is rich enough, they can buy it for the class as a treat.

4.6.2 Discipline/rules/instructions in the classroom

It seemed as though it is important that learners are reprimanded for bad behaviour immediately after it happened. It is important to have rules, but not too many. There ought to be no more than five rules and rules which are relevant and that can be repeated and explained to learners every day.

Participant 2: When you take too long to punish a learner for bad behaviour, they would not know why you are punishing them and feel that you are being unfair.

Participant 1: Every single child will tell you that. Learners don't always remember the rules. That is why you can't give them more than five which you have to repeat every day.

O: The 5 rules are stuck to the wall with explanatory pictures.

4.6.3 Multi-functional classroom, organisation and structure in the classroom

Participants emphasised the importance of the classroom being clutter free and the learners' cubicles being organised with minimal distractions. Learners are grouped according to their strengths to ensure an optimal learning experience.

Participant 1: So the idea is that they come to the carpet in their different groups. They are all working on the same level in the group they are grouped in, so I'll explain the concept to them on the level of their functioning. I'll explain what the idea is about and then they'll often go back and do the worksheets at their desks individually. Most times when learners don't know what to do, they just follow the group.

Participant 3: Our main focus in the classroom is to keep everything simple.

Participant 2: Learners get easily distracted, that's why each child has their own cubicle where we try to make sure that they are organized with all the stationary they need, books in the cabinets on top of them with their books, already organised in the way they need to use it for the day.

Participant 1: *As a teacher you need to prepare everything and put out any stationary the learner will need to complete the task the next day.*

Participant 1: *We see that there is no external stimulus distracting them, so no noise, or bells going off to change periods.*

4.7 DISCUSSION

Information collected from participants confirmed that many learners living with FASDs experience executive functioning difficulties. This information affirms the many reported sources of literature in which researchers have reported that difficulties with executive functioning are common among children who have prenatally been exposed to alcohol (Connor & Kodituwakku, 2001; Mattson et al., 1999; Mattson & Riley, 2000; Wilford, 2004; May et al., 2017).

The participants in the study agreed with the researchers Blaschke et al. (2009) that learners living with FASD display a lack of inhibition and for this reason they often choose smaller immediate rewards over later delayed rewards. The participants also agreed with the above mentioned researchers that FASD learners tend to be impulsive as they often find themselves blurting out answers before considering their response to an answer and reacting without thinking a plan through.

According to the participants, most learners with FASD lack metacognitive skills, the ability to become conscious of their own cognitive processes and therefore they do not seem to be able to explain or realise why they made a mistake. Consequently, they tend to over-estimate their performance in tasks and projects. This also has a negative influence on the development of self-regulated learning.

Participants agree with Licht (1993) that when learners approach a task knowing that they have the strategies to tackle the task, this will increase their sense of self-efficacy (a belief that they will succeed at a task). This can also increase a learner's involvement in the task and adds to motivation to engage with a task. Participants also reported that learners living with FASD seem to have limited working memory (Baddely, 2006), which has a negative impact on learners' academic performance and contradicts the sense of self-efficacy mentioned above.

Participants have mentioned that learners living with FASD experience barriers towards short term memory which is needed for activities that require learners to process large amounts of information while simultaneously manipulating the information to get a task done. This refers to what is known as the phenomenon of working memory (Kalberg & Buckley, 2007). When these cognitive demands of retaining the information are too great, mental resources that are available to perform higher-level reasoning may diminish for the learner living with FASD (Goldman, 1995). Learners then become overwhelmed and frustrated when they receive more than one instruction at a time. Weak working memory causes learners many practical problems in school, such as, learners lose stationary and forget instructions as well as work done previously. This hinders their ability to proceed with a given task. This information confirms Chase and Ericsson's (1982) notion about working memory difficulties in FASD learners.

Participants agreed with Blaschke et al. (2009) that most learners living with FASD find focusing, sustaining and shifting attention challenging. Learners seem to find it difficult to focus on a task that does not hold their interest. They may intensively listen one minute and the next their attention will lapse (Conner et al., 2000). Small distractions seem to make learners lose attention. If they cannot focus, they find it difficult to maintain attention for long periods of time which makes it difficult for teachers to carry over large chunks of work or move from one subject to another. Many breaks need to be allowed for learners to regain the ability to focus and attend and productively proceed with work. The teacher needs to plan for this and prepare to optimally keep learners' attention at all times.

Participants mentioned that learners struggle to self-regulate, manage emotions to achieve a goal and to control behaviour; that is why they exhibit inappropriate behaviour at times or overreact to situations. Learners seemed to easily become frustrated, anxious and overwhelmed and sometimes presented with temper tantrums when the volume of work became unbearable. They often do not realise that their reactions are inappropriate for the situation and therefore do not even try to regulate their emotions appropriately within a trying experience (Vail, 1994).

According to the participants most FASD learners come to the attention of the education system because of their learning and behaviour problems and not their

FASD diagnoses. That is why teachers agree with Viljoen et al. (2005) that having learners with FASDs formally diagnosed is very difficult. The school is therefore mostly dependent on the mother's self-report of a history of drinking during pregnancy, and a psychologist reporting on the above-mentioned learning and behavioural difficulties.

Teachers and researchers emphasised the importance of understanding the brain functioning of FASD learners. According to the participants, if teachers understand the difficulties that FASDs pose to learners, they can then recognise steps they need to take in order to enhance learning opportunities for learners with FASDs (Blackburn et al., 2012). That is why teacher participants claimed the importance of specialised training for all educators who might teach learners with FASDs. The proximal processes as theorised by Bronfenbrenner (Bronfenbrenner & Morris, 2006, p. 797) among the learner with FASD and his or her environment have therefore been emphasised by the participants. If teachers and assistants can create understanding and accepting relationships with the learners they teach, optimal learning may be possible.

Researchers and participants acknowledge that every FASD learner is different and also that an individual's behaviour and functioning in school may differ from day to day too. There is no magic or uniform support system or intervention available that will dramatically enhance the abilities of learners with FASD in the classroom but there are common barriers FASD learners' experience that can be addressed with support strategies that FASD learners respond to (Catterick & Curran, 2014).

Participants mentioned that as a teacher you work effectively with FASD learners when you understand and accept the difficulties FASD learners' experience. For such learners, the Curriculum Assessment Policy Statement (CAPS) curriculum may bring about many barriers to learning, as learners mostly find it difficult to keep up with the pace of the curriculum. Most learners with FASD also struggle with the work that requires higher-order cognitive functioning and abstract thinking. Participants agreed that the CAPS content needs to be differentiated to accommodate FASD learners and to be able to give each learner what he/she needs in order to reach his/her full potential. The curriculum also needs to be presented much more concretely to learners living with FASDs. Not all learners have the ability to complete the curriculum up to grade 12 and exit plans need to be devised for each learner. Training, in what the

participants referred to as soft skills training, needs to be included in the curriculum presented to the learners with FASD. For some learners, reaching their full potential will be passing grade 9 and for others this may be completing grade 12. There should be an exit plan for each learner that they should be able to achieve. An exit plan should allow a learner to enter society and use the skills they have learned to hopefully provide an income for themselves.

Participants agreed that when working with FASD learners it is very important to have patience. You need to understand the learners you are working with and you have to be willing to put in the extra hours of planning and preparation to effectively support them. The teacher should expect, that no matter how many hours are spent on planning, the learners' reactions to the work may change in an instance and he/she might have divert from the plan and adapt a new approach in order to accommodate the learner in his/her current state of learning. Participants also reported that without planning, a teacher will struggle through every day when teaching learners living with FASD. This may cause real frustration when teachers do not understand or accept the FASD diagnoses. A teacher needs to be flexible and think differently. Further frustration is sometimes caused by learners who find it difficult to verbally express how they feel, or do things for themselves. Teachers reported that most learners do not even remember where the date should be written on a worksheet, even when they had been doing it for an entire year. However, according to the participants, some of the older learners do tend to remember better than younger learners what needs to be done. That implies that progression is possible. The teachers referred to learner memory, which can improve, even if it is only because of rote learning, over time (Baddely, 2006).

Teachers motivated not having a school bell in a school where there are FASD learners. Ringing a bell to change periods seems to be too much of a distraction and learners sometimes misinterpret the bell ringing. The only time teachers recommend using a bell is at the end of the day, to indicate that the day has ended and learners need to pack up and go home.

Learners living with FASD show resistance to changes in routine. They will stick to only one task at a time and they find it difficult to transition between different tasks. Scheduled changes need to be announced in advance so students have more time to

adjust. Changes can result in confusion and misunderstanding if learners are not prepared for change. Teachers have to prepare learners to start their day and even start a new activity. Small distractions and misunderstandings by the learners can keep them from starting to work. Learners struggle to do multiple tasks and often struggle to continue with work which was taught the day before.

Teachers and researchers (Swanson, 1999) agree that chunking down information or the idea of grouping information in smaller units, helps learners to store and retrieve larger chunks of information eventually. FASD learners seem to be very visual and that is why presenting concrete visual teaching material seems to be more effective.

Participants believe learners benefit from positive reinforcement to enforce positive behaviour and increase self-esteem. Rewards are used as motivation to either get learners to start work, complete work, as well as to motivate good discipline. All Participants agreed that learners living with FASD respond to smaller, immediate incentives rather than larger, delayed rewards. Incentives should be linked to rewards and it should be worthwhile for the learner otherwise it will not be effective. More than one incentive should be available as learners do not always respond to one type of incentive all the time (Catterick & Liam, 2014). As learners become older, a teacher can use a rewards system to remind them of their responsibilities, but as soon as they know what those are, the system should be discontinued. Smaller rewards like positive words, phrases and stickers still work even with older learners living with FASD.

When learners break the rules, they should always be reprimanded immediately and reminded what the consequences are, otherwise they will not understand why they are being punished. Teachers need to have no more than five basic rules that learners can learn and remember and repeat every day (Catterick & Liam, 2014).

Multifunctional classrooms, where there are more than one grade level in a classroom, seem to be effective when working with learners living with FASD because at times, when learners forget what they need to do, they can just follow the group. It also allows learners with the same academic strengths and grade levels to move at a similar pace.

Classroom structure should be functional and help learners to know what is expected of them. The classroom structure should give learners clear guidelines on what to do, when and how to do it, as well as what the sequence is in which it should be done.

Each day needs to start with the daily schedule and physical activities that will help learners get ready to work. By this time, the teacher should already have planned how he/she will manage the day's activity, including sorting all the stationary and equipment that might be needed to complete the activity. Participants agree that classes need to be kept very neat, simple and uncluttered because the smallest distraction can keep learners from working. Allowing learners to work in their own cubicles also help to minimise distractions. The classroom and learners' desks need to be organised and all stationary needs to have a place.

The teachers' scientific knowledge of FASD did not always correlate with the literature (Fullarton & Hagglund, 2007; Petković & Barišić, 2010), which is understandable taking into consideration that the teachers' knowledge of FASD at the schools, is being informed by their experience of working with FASD and short courses presented at times. The supportive strategies implemented in the school by the school staff, however allows for success at this particular school.

4.8 CONCLUDING REMARKS

Participants seemed to agree that learners with FASD are not easy to understand; teachers and assistants need to possess patience, perseverance and understanding of the implications of the learners' diagnoses. Teachers need to be willing to spend hours on structuring planning around the learners' specific needs, keeping in mind that all the planning may go to waste the next day if a learner is not able to do the work that day. The use of positive reinforcement by teachers motivates learners. The teacher also needs to be flexible and creative and be willing to discard all the planning done for the day and start with a new creative activity that will help a learner to proceed to learning. A teacher might find it frustrating when learners, who took so long to understand a concept the previous day, forget everything the next day; still it is important to not give up on learners. The teacher should stay positive and start work from the beginning. It is necessarily that teachers don't feel bound to complete work in a certain period of time as is indicated by the curriculum. FASD learners should be allowed to work at their own pace. The goal for FASD is not necessarily Grade 12, as is the case in mainstream schools. FASD learners need to be equipped to be self-sufficient and provide for themselves. That is the reason why a soft skills program at

school or in-service training should be included in an exit plan set up according to the skillset and abilities of each individual learner. There is much focus on what learners can do, on their strengths, with not as much focus on what they cannot do. A focus on what learners are capable of doing, on their strengths rather than on what they cannot do, is much more effective in promoting optimal learning.

In the following chapter 5, the research questions will be addressed and the limitations and strengths of the study will be considered. Recommendations for further research, as well as for the application of the findings in this study will also be suggested.

Chapter 5

CONCLUSIONS, LIMITATIONS, STRENGTHS, AND RECOMMENDATIONS

5.1 INTRODUCTION

The prevalence rate of Fetal Alcohol Spectrum Disorders (FASDs) in our classrooms is the highest in the world, with 10 to 30 per 1000 in the Western Cape (May et al., 2000). Several research studies have revealed that executive functioning challenges are common among children who have prenatally been exposed to alcohol (Kalberg & Buckley, 2007). In view of the high prevalence of FASD in South Africa, there is the possibility that many learners who struggle with executive functioning challenges in our schools could also be suffering from a FASD.

Executive functions are described as the directive capacities of the mind routed through the frontal lobe that act in a coordinated way to direct a collection of skills necessary for learning. They represent commands to engage in purposeful, organized, self-regulated and goal-directed behaviour. They cue the use of other cognitive abilities such as reasoning, attention, impulse control, and memory processes. They are involved in the direction of shifting strategies and adapting; inhibition, abstract reasoning, metacognitive capacities and sequencing. All of the above mentioned executive functions are a challenge for learners living with FASDs and are of utmost importance for success in the school functioning of a learner (Blaschke et al., 2009, p. 53).

A substantial amount of research has been conducted on the characteristics, manifestation and prevalence of FASD in the Western Cape, but little to no research has been done to ascertain educators' understanding of executive functioning challenges that learners with FASD may experience and the nature of support strategies for them in the classroom. This gap in the research motivated me to explore this aspect and it became the focus of my study.

Data was gathered in a school specialising in teaching learners who have been exposed to alcohol prenatally, and which is rich in supportive strategies for learners living with FASD. The expertise that the participating teachers shared could help all teachers to gain a better understanding of the challenges that FASD learners experience with executive functioning. It could also help to equip teachers with the appropriate supportive strategies to support all learners living with FASD within an integrated classroom.

Firstly, through this research I wished to determine the extent of the knowledge that educators have about the executive functioning challenges learners with FASD experience. Secondly, my aim was to ascertain how teachers are able to support learners who experience executive challenges. Qualitative research methods and an interpretive paradigm within a case study research design were used to conduct the study. Data was primarily collected through the use of interviews and observations. Data was analysed through a thematic content analysis process. The research participants included two teachers and their assistants and the learners living with FASDs in their classrooms.

With regard to the first research question – *How do educators that teach in a specialised environment experience and view the executive functioning difficulties presented by learners living with FASD?* – it appears that the participants were all aware of the different functions that can be impaired in a learner having been exposed to alcohol prenatally. According to the teachers, they both observe and experience the difficulties that their learners may experience, albeit, not all learners experience these challenges in the same way and not in similar ways, every day. In view of the challenges these executive functioning difficulties pose to them as educators, they appeared to be knowledgeable and demonstrated understanding, patience and empathy for their learners.

They reported witnessing difficulties with regard to impulsivity, lack of inhibition, metacognition, working memory, attention and self-regulation. The participating teachers demonstrated an extensive knowledge about executive functioning, albeit often lay knowledge. They also shared many support strategies that they have found to be effective in teaching learners with FASDs. The support strategies the teachers referred to include: constructivist learning and teaching strategies, scaffolding, rote

learning, chunking down, setting concrete foundations, bringing learners back to task and differentiating the curriculum.

5.2 LIMITATIONS AND STRENGTHS OF THIS STUDY

The limitations of this study encompass issues that emerged in conjunction with the interviews conducted with the teachers and the assistants.

Upon beginning the study, I was not an experienced interviewer and my lack of interviewing skills, especially at times when the research participants did not know the answers to the questions made me anxious. Thus, I tended to explain too much and used more closed-ended and maybe leading questions which limited the novel insights I could have gained from the participants. As I became more experienced with interviewing, I became aware of this limitation and was able to allow my participants more input. This meant that I developed strategies which allowed my participants to elaborate, explain in their own way, in order that I could understand their meaning.

The small sample size may have influenced certainty regarding data saturation, and could therefore have impacted the rigour of the data analysis process. The limited scope of the research project (50%) however influenced the decision for the sample size.

The teachers' experience in educating learners living with FASD, allowed me to successfully answer the research questions above.

One of the strengths of this study was my counselling skills as I was able to get my participants' to feel comfortable enough to express themselves without fear of judgement.

The selection of the specific school can also be seen as strength, as I was able to access rich data in order to answer the research questions and to gather knowledge that can be applied positively in wider contexts.

5.3 RECOMMENDATIONS FOR FUTURE RESEARCH

According to Bless and Higson-Smith (1995) "research is mainly relevant if it has implications for the improvement of the human condition" (p. 197). Therefore,

recommendations are an essential aspect of the outcome of this research study. The recommendations for future research should be linked to the problem statement of this research study.

As stated earlier, very little research has been done on the executive functioning difficulties learners experience in the classroom and on the supportive strategies for these learners. Further research could be done to see how the supportive strategies mentioned in this thesis can effectively be implemented in a mainstream classroom.

Based on the findings in this study, a training programme for teachers on executive functioning and appropriate support strategies can be developed, and presented at schools where the numbers of learners with FASDs are high.

Making the CAPS curriculum more flexible might assist teachers, especially if it can be adapted to accommodate the needs of learners living with FASD.

Further, the curriculum needs to incorporate exit plans for learners living with FASD who may not be able to complete the current curriculum. This could address the drop-out rate of learners in schools.

5.4 FINDINGS

This study revealed important issues pertaining to the participating educators' knowledge of FASD and how they support learners who are struggling with executive functioning difficulties. A number of strategies were initiated to best support learners living with FASD who struggle with executive functioning challenges

The research question was: What is educators' knowledge of and attitude toward understanding of executive functioning challenges and support for learners with FASD within a classroom.

In response to this question various themes emanated from the data. Four main themes, namely, how the FASD learner presents in the classroom teachers' and assistants' teaching experiences, strategies of working with FASD learners, teaching and support strategies for EF difficulties. Twelve subthemes arose. The subthemes related to the first main theme were impulsivity and inhibition, metacognition, working memory, attention, and self-regulation. The second main theme consists of the

subthemes speaking to the participants' knowledge and insight regarding FASD diagnoses, their attitudes towards their work and emotional experiences they have reported. The third main theme collaborates on the subthemes relating to strategies of how to get learners started with work and how to bring them back to task should they have been distracted, were highlighted, as well as pedagogical theories and techniques that they use in their daily teaching tasks. The fourth main theme addressed the subthemes classroom management strategies which included classroom reward systems, discipline/rules/instructions and lastly multifunctional teaching, organisation and structure within the classroom.

The findings suggest that in order to teach learners experiencing executive functioning difficulties, a teacher needs to employ certain strategies in conjunction with the acquisition of the relevant knowledge about the functioning of learners living with FASD. The teacher needs to not only understand the learner's diagnosis, but also be patient and do intensive planning to adapt the curriculum to accommodate the learner's specific needs. Staying positive at all times seems very important, as well as accepting that all the lesson and activity planning that was done for a specific day, might have to be discarded and new plans might be necessary and have to be creatively implemented. Exploring different theoretical influences and techniques associated with it seems to contribute positively to effective teaching approaches.

5.5 CONCLUSION

While working in many schools in the Winelands district I have found that teachers seem to be more stressed than ever. Understanding the root cause of a child's challenges reduces stress levels for both the learner and teacher. If the teacher understands the difficult behaviour she/he may be less frustrated when a child displays disruptive or negative behaviour. Teachers then seem to show more compassion and feel more in control because he/she knows that the behaviour is not because of his/her lack of discipline or planning, but that it is an inherent struggle the learner may have been born with.

The research results of this thesis confirms and strengthens that for a FASD learner experiencing executive functioning challenges to be able to reach his/her full potential in the classroom, the teacher needs to understand the root cause of the difficulties

learners experience in their classrooms. Teachers need to portray a positive attitude towards the learners in their classrooms and stay in control, even when frustrated at times. Teachers' support strategies can contribute to learners living with FASD's academic success as well as preparing them for life after school.

I received the following poem from a dear friend Christo Kirchner:

Ek hoor hoe fluister die dokter vir mamma die kind is FAS.

Die nurse skree kliphard in die hospitaal jy wou mos drink nou is die kind FAS

Sit hom in die stadige klas sê die iemand met die swart das vir die hoof want die kind is FAS.

Hy wil nie hoor nie die deurmekaar kind want die kind is FAS

Foeitog, hy het nie homself gemaak nie hy kan nie help nie sê antie die kind is FAS.

Hy kan nie meer vorder nie hy is agter hy kan nie help nie sê die juffrou want die kind is FAS.

Moenie sê ek is FAS nie ek is ek.

Learners living with FASD are frequently ridiculed and excluded and will continue to face difficulties both at school and in society. I hope that this thesis is able to alleviate some of this prejudice and contribute to the upliftment of learners living with FASD.

REFERENCE LIST

- Abel, E. L. (2012). *Fetal alcohol syndrome and fetal alcohol effects*. New York: Springer Science & Business Media.
- American Psychological Association [APA]. (2010). Publication manual of the American Psychological Association (6th ed.). Universal College of Learning.
- Anderson, R. (2007). Thematic content analysis (TCA): Descriptive presentation of qualitative data. Retrieved March 12, 2014, from <http://www.Wellknowingconsulting.org/publications/articles.html>
- Ary, D., Jacobs, L. C., Irvine, C. K. S., & Walker, D. (2018). *Introduction to research in education*. Boston, Mass.: Cengage Learning.
- Astley, S. J., & Clarren, S. K. (2001). Measuring the facial phenotype of individuals with prenatal alcohol exposure: Correlations with brain dysfunction. *Alcohol and Alcoholism*, 36(2), 147-159.
- Babbie, E., & Mouton, J. (2001). *The practice of social research*. Cape Town: Oxford University Press South Africa.
- Babchuk, W. A. (2016). Review of qualitative research: A guide to design and implementation (4th ed.). (2006) by S.B. Merriam & E.J. Tisdell. *Educational Psychology Papers and Publications*, 214.
- Baddely, A. D. (2006). Working memory: An overview. In S. Pickering (Ed.). *Working memory and education* (pp. 1-31). Chicago, IL: Academic Press.
- Badry, D., & Choate, P. (2015). Fetal Alcohol Spectrum Disorder: A disability in need of social work education, knowledge and practice. *Social Work and Social Sciences Review*, 17(3), 20-32.
- Beauchamp, T. (2008). The principle of beneficence in applied ethics. In N. Z. Edward (Ed.). *The Stanford encyclopedia of philosophy*. Stanford: Stanford University, Metaphysics Research Lab.
- Birn, A.E., & Molina, N. (2005). Using the past to step forward: Fetal alcohol syndrome in the Western Cape Province of South Africa. *American Journal of Public Health*, 95(7), 1097-1099.

- Blackburn, C., & Whitehurst, T. (2010). Foetal alcohol spectrum disorders (FASD): raising awareness in early years settings. *British Journal of Special Education*, 37(3), 122-129.
- Blackburn, C., Carpenter, B., & Egerton, J. (2010). Shaping the future and facing the children-foetal alcohol spectrum disorders (FASD). *Support for Learning*, 25(3), 139-145.
- Blackburn, C., Carpenter, B., & Egerton, J. (2012). *Educating children and young people with fetal alcohol spectrum disorders: Constructing personalised pathways to learning*. New York: Routledge.
- Blaschke, K., Mataverne, M., & Struck, J. (2009). *Fetal Alcohol Spectrum Disorders education strategies, working with students with a Fetal Alcohol Spectrum Disorder in the education system*. Sioux Falls, SD: Center for Disabilities. Sanford School of Medicine of The University of South Dakota.
- Bless, C., & Higson-Smith, C. (1995). *Fundamentals of social research methods: An integrated approach to research design, measurement and statistics*. London: SAGE Publications.
- Bless, C., Higson-Smith, C., & Kagee, A. (2006). *Fundamentals of social research methods: An African perspective* (4th ed.). Cape Town: Juta and Company Ltd.
- Boyatzis, R. E. (1998). *Transforming qualitative information: Thematic analysis and code development*. Thousand Oaks, CA: SAGE Publications.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Bronfenbrenner, U., & Ceci, S. J. (1993). Heredity, environment, and the question "How?": A first approximation. In R. Plomin & G. E. McClearn (Eds.). *Nature, nurture and psychology* (pp. 313-324). Washington, DC: American Psychological Association.
- Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-nuture reconceptualized in developmental perspective: A bioecological model. *Psychological Review*, 101(4), 568-686.

- Bronfenbrenner, U., & Morris, P. A. (1998). The ecology of development processes. In R. M. Lerner (Ed.). *Handbook of child psychology: Theoretical models of human development* (vol. 1). New York: Wiley.
- Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In R. M. Lerner (Ed.). *Handbook of child psychology* (6th ed.). *volume 1: Theoretical models of human development* (pp. 793-828). Hoboken, NJ: Wiley.
- Brown, A. L., & Campione, J. C. (1986). Psychological theory and the study of learning disabilities. *American Psychologist*, 41(10), 1059-1068.
- Burger, R. (2015). Exploring how educators deal with the challenges of teaching foundation phase learners with Fetal Alcohol Spectrum Disorder. Unpublished dissertation. Potchefstroom, South Africa: North-West University.
- Burgess, P. (2003). Assessment of executive function. In P. Halligan, U. Kischka, & J. Marshall (Eds.). *Handbook of clinical neuropsychology* (pp. 302-321). Oxford: Oxford University Press.
- Carlson, S. M., & Moses, L. J. (2001). Individual differences in inhibitory control and children's theory of mind. *Child Development*, 72(4), 1032-1053.
- Carrier, B., Green, L., Jones, S., Soliman, M., & Wark, D. (2005). *Fetal Alcohol Spectrum Disorder: A learning module for health and social service workers*. Primary Care Division. Community Health Services.
- Catterick, M., & Curran, M. (2014). *Understanding fetal alcohol spectrum disorder: A guide to FASD for parents, carers and professionals*. London: Jessica Kingsley Publishers.
- Centers for Disease Control and Prevention (CDC). (2003). Fetal alcohol syndrome - South Africa, 2001. *MMWR. Morbidity and Mortality Weekly Report*, 52(28), 660.
- Chase, W. G., & Ericsson, K. A. (1982). Skill and working memory. In G.H. Bower (Ed.). *The psychology of learning and motivation: Advances in research and theory* (Vol. 16, pp. 1-58). New York: Academic Press.

- Connor, P. D., Sampson, P. D., Streissguth, A. P., Bookstein, F. L., & Barr, H. M. (2006). Effects of prenatal alcohol exposure on fine motor coordination and balance: A study of two adult samples. *Neuropsychologia*, *44*(5), 744-751.
- Connor, P. D., Sampson, P. D., Bookstein, F. L., Barr, H. M., & Streissguth, A. P. (2000). Direct and indirect effects of prenatal alcohol damage on executive function. *Developmental Neuropsychology*, *18*(3), 331-354.
- Creswell, J. W. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: SAGE Publications.
- Crocker, N., Vaurio, L., Riley, E. P., & Mattson, S. N. (2009). Comparison of adaptive behavior in children with heavy prenatal alcohol exposure or attention-deficit/hyperactivity disorder. *Alcoholism: Clinical and Experimental Research*, *33*(11), 2015-2023.
- Cummings, J. L. (1995). Anatomic and behavioral aspects of frontal-subcortical circuits. *Annals of the New York Academy of Sciences*, *769*(1), 1-14.
- Daniels, D. (2016). Ethics in research, day 1. [PowerPoint slides]. Retrieved from email account: doria@sun.ac.za
- Dempster, F. N. (1993). Exposing our students to less should help them learn more. *Phi Delta Kappan*, *74*, 433-437.
- Denzin, N. K. (2008). *Collecting and interpreting qualitative materials* (3rd ed.). Thousand Oaks, CA: SAGE Publications.
- Department of Basic Education. (2010). Report on the implementation of the convention on the rights of persons with disabilities in education. Pretoria: Department of Education.
- Department of Basic Education. (2014). Policy on screening, identification and support. Pretoria: Department of Education.
- Department of Education. (1997). Education White Paper 3: A programme for the transformation of higher education. Pretoria: Department of Higher Education.
- Department of Education. (1997). Quality education for all: Overcoming barriers to learning and development. Report of the NCSNET/NCESS. Pretoria: Department of Education.

- Department of Education. (2001). White Paper 6 on special needs education: Building an inclusive education and training system. Pretoria: Department of Education.
- Department of Education. (2005). Conceptual and Operational Guidelines for the Implementation of Inclusive Education: District-Based Support Teams. Pretoria: Department of Education.
- Department of Education. (2005). Education Statistics in South Africa at a Glance in 2003. Pretoria: Government Printing works.
- Department of Education. (2005). Guidelines for inclusive programmes. Pretoria: Department of Education.
- Department of Education. (2010). Guidelines for full-service/inclusive schools. Pretoria: Department of Education.
- Department of Education. (2011). Curriculum and assessment policy statements. Pretoria: Department of Education.
- Department of Education. (2011). Guidelines for responding to learner diversity in the classroom through curriculum and assessment policy statements. Pretoria: Department of Education.
- Diamond, A., & Gilbert, J. (1989). Development as progressive inhibitory control of action-retrieval of a contiguous object. *Cognitive Development*, 4, 223-249.
- Donald, D., Lazarus, S. & Moolla, N. (2014). *Educational Psychology in Social Context. Ecosystemic applications in southern Africa*. Cape Town: Oxford University Press, Southern Africa.
- Duke, L. M., & Kaszniak, A. W. (2000). Executive control functions in degenerative dementias: A comparative review. *Neuropsychology review*, 10(2), 75-99.
- Duquette, C., Stodel, E., Fullarton, S., & Hagglund, K. (2006). Teaching students with developmental disabilities: Tips from teens and young adults with Fetal Alcohol Spectrum Disorder. *Teaching Exceptional Children (TEC)*, 39(2), 28-31.
- Duquette, C., Stodel, E., Fullarton, S., & Hagglund, K. (2007). Secondary school experiences of individuals with foetal alcohol spectrum disorder: Perspectives of parents and their children. *International Journal of Inclusive Education*, 11(5-6), 571-591.

- Evans, A. N., & Rooney, B. J. (2014). *Methods in psychological research* (3rd ed.). Los Angeles, CA: SAGE Publications.
- Feather, N. T. (1988). Values, valence, and course enrolment: Testing the role of personal values within an expectancy-value framework. *Journal of Educational Psychology, 80*(3), 380-391.
- Fuglestad, A. J., Whitley, M. L., Carlson, S. M., Boys, C. J., Eckerle, J. K., Fink, B. A., & Wozniak, J. R. (2015). Executive functioning deficits in preschool children with Fetal Alcohol Spectrum Disorders. *Child Neuropsychology, 21*(6), 716-731.
- Gearing, R. E., McNeill, T., & Lozier, F. (2005). Father involvement and fetal alcohol spectrum disorder: Developing best practices. *JFAS Int, 3*, e14.
- Giangreco, M. F., Cloninger, C. J., & Iverson, V. S. (2000). *Choosing out-comes and accommodations for children: A guide to education planning for students with disabilities* (2nd ed.). Baltimore, Md.: Brookes Publishing Co.
- Goleman, D. (1995). *Emotional Intelligence*. New York: Bantam Books.
- Green, C. R., Mihic, A. M., Nikkel, S. M., Stade, B. C., Rasmussen, C., Munoz, D. P., & Reynolds, J. N. (2009). Executive function deficits in children with fetal alcohol spectrum disorders (FASD) measured using the Cambridge Neuropsychological Tests Automated Battery (CANTAB). *Journal of Child Psychology and Psychiatry, 50*(6), 688-697.
- Green, J., & Thorogood, N. (2018). *Qualitative methods for health research*. Los Angeles, CA: SAGE.
- Gross, A. C., Deling, L. A., Wozniak, J. R., & Boys, J. C. (2015). Objective measures of executive functioning are highly discrepant with parent-report in fetal alcohol spectrum disorders. *Child Neuropsychology, 21*(4), 531-538.
- Hanson, C. S., Ju, A., & Tong, A. (2018). Appraisal of qualitative studies. In P. Liamputtong (Ed.). *Handbook of research methods in health social sciences* (pp. 1-15). Singapore: Springer.

- Harnishfeger K. K., & Bjorklund, D. F. (1993). The ontogeny of inhibition mechanisms: A renewed approach to cognitive development. In M. L. Howe & R. Pasnak (Eds.). *Emerging themes in cognitive development*. New York, NY: Springer.
- Harper, M., & Cole, P. (2012). Member checking: Can benefits be gained similar to group therapy? *The Qualitative Report*, 17(2), 510-517.
- Harris, K. R., & Graham, S. (1992). *Helping young writers master the craft: Strategy instruction and self-regulation in the writing process*. Cambridge, Mass.: Brookline Books.
- Hattie, J., Biggs, J., & Purdie, N. (1996). Effects of learning skills interventions on student learning: A meta-analysis. *Review of Educational Research*, 66(2), 99-136.
- Henning, E. (2004). *Finding your way in qualitative research*. Pretoria: Van Schaik Publishers.
- Hoyme, H. E., May, P. A., Kalberg, W. O., Kodituwakku, P., Gossage, J. P., Trujillo, P. M., & Viljoen, D. L. (2005). A practical clinical approach to diagnosis of fetal alcohol spectrum disorders: Clarification of the 1996 institute of medicine criteria. *Pediatrics*, 115(1), 39-47.
- Hughes, C. A., Ruhl, K. L., Schumaker, J. B., & Deshler, D. D. (2002). Effects of instruction in an assignment completion strategy on the homework performance of students with learning disabilities in general education classes. *Learning Disabilities Research & Practice*, 17(1), 1-18.
- Johnson, C. J., & Escobar, M. (2001). Child and adolescent psychiatry. *Stud*, 62, 381-388.
- Kalberg, W. O., & Buckley, D. (2007). FASD: What types of intervention and rehabilitation are useful? *Neuroscience & Biobehavioral Reviews*, 31(2), 278-285.
- Kalberg, W. O., Marais, A. S., De Vries, M. M., Seedat, S., Parry, C., & May, P. A. (2017). Neuropsychological aspects of prevention and intervention for FASD in South Africa. *Journal of Pediatric Neuropsychology*, 3(1), 68-78.

- Kazdin, A. E., Siegel, T. C., & Bass, D. (1992). Cognitive problem-solving skills training and parent management training in the treatment of antisocial behavior in children. *Journal of Consulting and Clinical Psychology, 60*(5), 733-747.
- Kingdon, D., Cardoso, C., & McGrath, J. J. (2016). Research review: Executive function deficits in fetal alcohol spectrum disorders and attention-deficit/hyperactivity disorder - a meta-analysis. *Journal of Child Psychology and Psychiatry, 57*(2), 116-131.
- Kodituwakku, P. W. (2009). Neurocognitive profile in children with fetal alcohol spectrum disorders. *Developmental Disabilities Research Reviews, 15*(3), 218-224.
- Kodituwakku, P. W., Kalberg, W., & May, P. A. (2001). The effects of prenatal alcohol exposure on executive functioning. *Alcohol Research and Health, 25*(3), 192-198.
- Kodituwakku, P. W., Kalberg, W., & May, P. A. (2001). The effects of prenatal alcohol exposure on executive functioning. *Alcohol Research and Health, 25*(3), 192-198.
- Krivitzky, L. S., Walsh, K. S., Fisher, E. L., & Berl, M. M. (2016). Executive functioning profiles from the BRIEF across pediatric medical disorders: Age and diagnosis factors. *Child Neuropsychology, 22*(7), 870-888.
- Landsberg, E., Krüger, D., & Swart, E. (Eds.). (2016). *Addressing barriers to learning, A South African perspective* (3rd ed.). Pretoria: Van Schaik Publishers.
- Lapadat, J. C., & Lindsay, A. C. (1999). Transcription in research and practice: From standardization of technique to interpretive positionings. *Qualitative Inquiry, 5*(1), 64-86.
- Licht, B. G. (1993). Achievement-related beliefs in children with learning disabilities: Impact on motivation and strategic learning. In L. Meltzer (Ed.). *Strategic assessment and instruction for students with learning disabilities: From theory to practice* (pp. 195-220). Austin, Tex.: Pro-Ed.
- Linskie, R. (1977). *The learning process: Theory and practice*. New York: Van Nostrand.

- Locke, E. A., Shaw, K. N., Saari, L. M., & Latham, G. P. (1981). Goal setting and task performance: 1969-1980. *Psychological Bulletin*, *90*(1), 125-152.
- Luu, T. N. (2010). A rat model of fetal alcohol syndrome: Molecular and behavioral analysis. Unpublished doctoral dissertation. New Brunswick: Rutgers University, Graduate School.
- Malloy, P. F., & Richardson, E. D. (2001). Assessment of frontal lobe functions. In S. P. Salloway, P. F. Malloy, & J. D. Duffy (Eds.). *The frontal lobes and neuropsychiatric illness* (pp. 125-138). Washington, DC: American Psychiatric Publishing.
- Marais, S., Jordaan, E., Viljoen, D., Olivier, L., De Waal, J., & Poole, C. (2011). The effect of brief interventions on the drinking behaviour of pregnant women in a high-risk rural South African community: A cluster randomised trial. *Early Child Development and Care*, *181*(4), 463-474.
- Mathison, S. (1988). Why triangulate? *Educational Researcher*, *17*(2), 13-17.
- Mattson, S. N., & Riley, E. P. (2000). Parent ratings of behavior in children with heavy prenatal alcohol exposure and IQ-matched controls. *Alcoholism: Clinical and Experimental Research*, *24*(2), 226-231.
- Mattson, S. N., Goodman, A. M., Caine, C., Delis, D. C., & Riley, E. P. (1999). Executive functioning in children with heavy prenatal alcohol exposure. *Alcoholism: Clinical and Experimental Research*, *23*(11), 1808-1815.
- May, P. A. (2017). The prevalence and epidemiologic characteristics of FASD in general populations of the United States: Final CoFASP results. 7th International Conference on Fetal Alcohol Spectrum Disorder: Results and relevance, integrating research, policy and promising practice around the world, Vancouver.
- May, P. A., Blankenship, J., Marais, A. S., Gossage, J. P., Kalberg, W.O., Joubert, B., ... Seedat, S. (2013). Maternal alcohol consumption producing fetal alcohol spectrum disorders (FASD): Quantity, frequency, and timing of drinking. *Drug and Alcohol Dependence*, *133*(2), 502-512.

- May, P. A., Brooke, L., Gossage, J. P., Croxford, J., Adnams, C., Jones, K. L., ... Viljoen, D. (2000). Epidemiology of fetal alcohol syndrome in a South African community in the Western Cape Province. *American Journal of Public Health, 90*(12), 1905-1912.
- May, P. A., DeVRies, M. M., Marais, A-S., Kalberg, W., Buckley, D., Adnams, C., ... Hoyme, H. E. (2017). Replication of High Fetal Alcohol Spectrum Disorders prevalence rates, child characteristics, and maternal risk factors in a second sample of rural communities in South Africa. *International Journal of Research in Public Health, 14*(5), 522.
- May, P. A., Gossage, J. P., Marais, A. S., Adnams, C. M., Hoyme, H. E., Jones, K. L., & Hendricks, L. (2007). The epidemiology of Fetal Alcohol Syndrome and partial FAS in a South African community. *Drug and Alcohol Dependence, 88*(2), 259-271.
- McKinstry, M.S. (2005). Fetal alcohol syndrome prevention in South Africa and other low resource countries. *American Journal of Public Health, 95*(7), 1099-1101.
- Mda, T. V., & Mothata, M. S. (Eds.). (2000). *Critical issues in South African education after 1994*. Johannesburg: Juta.
- Meltzer, L. J. (1993b). Strategy use in students with learning disabilities: The challenge of assessment. In L. J. Meltzer (Ed.). *Strategy assessment and instruction for students with learning disabilities* (pp. 93-136). Austin, Tex.: Pro-Ed.
- Meltzer, L. J. (2004). Resilience and learning disabilities: Research on internal and external protective dynamics introduction to the special series. *Learning Disabilities Research & Practice, 19*(1), 1-2.
- Meltzer, L. J. (2008). Executive function strategies, effort, and self-efficacy: The keys to academic success. Cruickshank Memorial Lecture presented at the 32nd Annual Conference of the International Academy for Research in Learning Disabilities, Toronto, June.
- Meltzer, L. J. (2010). *Promoting executive function in the classroom*. New York: Guilford Press.
- Meltzer, L. J. (Ed.). (1993a). *Strategy assessment and instruction for students with learning disabilities: From theory to practice*. Austin, Tex.: Pro Ed.

- Meltzer, L. J. (Ed.). (2007). *Executive function in education: From theory to practice*. New York: Guilford Press.
- Meltzer, L. J., Pollica, L., Barzillai, M., & Meltzer, L. (2007). Executive function in the classroom: Embedding strategy instruction into daily teaching practices. *Executive function in education: From Theory to Practice*, 165-193.
- Merriam, S. B. (2009a). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.
- Merriam, S. B. (2009b). *Qualitative research: A guide to design and implementation*. (2nd ed.). San Francisco: Wiley Publishers.
- Merriam, S. B. (Ed.). (2002). *Qualitative research in practice: Examples for discussion and analysis*. San Francisco: Jossey- Bass Publishers.
- Merriam, S. B., & Tisdell, E. J. (2016). *A guide to design and implementation*. San Francisco, CA: Jossey-Bass.
- Mertens, D.M. (2005) *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods*. Thousand Oaks, CA: SAGE Publishers.
- Mirsky, A. F. (1996). Disorders of attention: A neuropsychological perspective. In G. R. Lyon & N. A. Krasnegor (Eds.). *Attention, memory, and executive function* (pp. 71-95). Baltimore, Md.: Paul H Brookes Publishing.
- Morgan, D. L. (1988). *Focus groups as qualitative research*. Newbury Park: SAGE Publications.
- Morse, J. M. (1995). The significance of saturation. *Qualitative Health Research*, 5(2), 147-149.
- Nanson, J. L., & Hiscock, M. (1990). Attention deficits in children exposed to alcohol prenatally. *Alcoholism: Clinical and Experimental Research*, 14(5), 656-661.
- Olivier, L., Viljoen, D. L., & Curfs, L. M. G. (2016). Fetal alcohol spectrum disorders: prevalence rates in South Africa: The new millennium. *South African Medical Journal*, 106(Supplement 1), 103-106.

- Palincsar, A. S., Winn, J., David, Y., Snyder, B., Stevens, D., & Meltzer, L. J. (1993). Approaches to strategic reading instruction reflecting different assumptions regarding teaching and learning. In L. J. Meltzer (Ed.). *Strategy assessment and instructions for students with learning disabilities* (pp. 247-270). Austin, Tex.: Pro-Ed.
- Patton, M. Q. (1987). *How to use qualitative methods in evaluation*. London: SAGE Publications.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods*. Newbury Park, CA: SAGE Publications.
- Patton, M. Q. (2002). Qualitative interviewing. *Qualitative Research and Evaluation Methods*, 3, 344-347.
- Patton, M. Q. (2015). *Qualitative research and evaluation methods: Integrating theory and practice* (4th ed.). Los Angeles, CA: SAGE Publications.
- Petković, G., & Barišić, I. (2010). FAS prevalence in a sample of urban schoolchildren in Croatia. *Reproductive Toxicology*, 29(2), 237-241.
- Phelps, L. (1995). Psychoeducational outcomes of fetal alcohol syndrome. *School Psychology Review*, 24(2), 200-212.
- Phillips, L. H. (1997). Do “frontal tests” measure executive function? Issues of assessment and evidence from fluency tests. In P. Rabbitt (Ed.). *Methodology of frontal and executive function* (pp. 191-213). Hove, East Sussex: Psychology Press.
- Pintrich, P., & Schunk, D. (1996). *Motivation in education: Theory, research and applications*. Englewood Cliffs, NJ: Prentice Hall.
- Pressley, M., Goodchild, F., Fleet, J., Zajchowski, R., & Evans, E. D. (1989). The challenges of classroom strategy instruction. *Elementary School Journal*, 89(3), 301-342.
- Putnam, M. L., Deshler, D. D., & Schumaker, J. B. (1993). The investigation of setting demands: A missing link in learning strategy instruction. In L. J. Meltzer (Ed.). *Strategy assessment and instructions for students with learning disabilities: From theory to practice* (pp. 325-353). Austin, Tex.: Pro-Ed.

- Rasmussen, C. (2005). Executive functioning and working memory in fetal alcohol spectrum disorder. *Alcoholism: Clinical and Experimental Research*, 29(8), 1359-1367.
- Reicher, S., & Taylor, S. (2005). Similarities and differences between traditions. *Psychologist*, 18(9), 547-549.
- Rendall-Mkosi, K., London, L., Adnams, C., Morojele, N., McLoughlin, J. A., & Goldstone, C. (2008). *Fetal alcohol spectrum disorder in South Africa: Situational and gap analysis*. Pretoria: UNICEF.
- Ritchie, J., & Lewis, J. (Eds.). (2003). *Qualitative research practice. A guide for social science students and researchers*. Thousand Oaks, CA: SAGE Publications.
- Roulston, K. (2001). Data analysis and 'theorizing as ideology'. *Qualitative Research*, 1(3), 279-302.
- Sah, A., & Borland, J. H. (1989). The effects of a structured home plan on the home and school behaviors of gifted learning-disabled students with deficits in organizational skills. *Roeper Review*, 12(1), 54-57.
- Sayed, Y. (2001). Changing patterns of educational management development in South African education. In Y. Sayed & J. D. Jansen (Eds.). *Implementing education policies: The South African experience*. Cape Town: UCT Press.
- Sbordone, R. J. (2000). The executive functions of the brain. In G. Groth-Marnat (Ed.). *Neuropsychological assessment in clinical practice: A guide to test interpretation and integration* (pp. 437-456). New York: Wiley.
- Schopler, E., & Mesibov, G. B. (Eds.). (1995). *Learning and cognition in autism*. New York: Plenum Press.
- Schunk, D. H. (1980). Proximal-goal facilitation of children's achievement and interest. Paper presented at the 88th Annual Convention of the American Psychological Association, Montreal, Canada, 1-5 September.
- Schunk, D. H. (1995). Self-efficacy and education and instruction. In J. E. Maddux (Ed.). *Self-efficacy, adaptation, and adjustment: Theory, research, and application* (pp. 281-303). New York: Plenum Press.
- Schunk, D. H. (2001). *Self-regulation through goal setting*. ERIC/CASS Digest.

- Schunk, D. H., & Zimmerman, B. J. (2007). Influencing children's self-efficacy and self-regulation of reading and writing through modelling. *Reading and Writing Quarterly*, 23(1), 7-25.
- Scott, J. G., & Schoenberg, M. R. (2011). Frontal lobe/executive functioning. In M. R. Schoenberg & J. G. Scott (Eds.). *The little black book of neuropsychology* (pp. 219-248). Boston, Mass.: Springer.
- Shiels, K., Hawk Jr, L. W., Lysczek, C. L., Tannock, R., Pelham Jr, W. E., Spencer, S. V., ... Waschbusch, D. A. (2008). The effects of incentives on visual-spatial working memory in children with attention-deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, 36(6), 903-913
- South Africa. Department of Basic Education. (2010). *Report on the implementation of the convention on the rights of persons with disabilities in education*. Pretoria: Department of Education.
- South Africa. Department of Education (DoE). (1996a). *South African Schools Act no 84*. Pretoria: Government Printer.
- South Africa. Department of Education (DoE). (1996b). *White Paper on Education*. Pretoria: Government Printer
- South Africa. Department of Education (DoE). (1997). *Quality education for all: Overcoming barriers to learning and development. Report of the NCSNET/NCESS*. Pretoria: Department of Education.
- South Africa. Department of Education (DoE). (2001). *Education White paper 6 Special needs education: building an inclusive education and training system*. Pretoria: ELSEN Directorate.
- South Africa. Department of Education (DoE). (2008). National strategy on screening, identification, assessment and support. Pretoria: Government Printer.
- South Africa. Department of Education (DoE). (2008). *National strategy on screening, identification, assessment and support*. Pretoria: Government Printer)
- South Africa. Department of Education (DoE). (2010). *Guidelines for full-service/inclusive schools*. Pretoria: Department of Education.

- South Africa. Department of Education DoE). (2011). *Guidelines for responding to learner diversity in the classroom through curriculum and assessment policy statements*. Pretoria: Department of Education.
- Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: SAGE Publications.
- Stratton, K., Howe, C., & Battaglia, F. C. (Eds.). (1996). *Fetal alcohol syndrome: Diagnosis, epidemiology, prevention, and treatment*. Washington, DC: National Academy Press.
- Streissguth, A. P., Barr, H. M., & Sampson, P. D. (1990). Moderate prenatal alcohol exposure: effects on child IQ and learning problems at age 7½ years. *Alcoholism: Clinical and Experimental Research*, 14(5), 662-669.
- Streissguth, A., & Kanter, J. (Eds.). (2002). *The challenges of Fetal Alcohol Syndrome overcoming secondary disabilities*. Seattle, Wash.: University of Washington Press.
- Swanson, H. L. (1999). Instructional components that predict treatment outcomes for students with learning disabilities: Support for a combined strategy and direct instruction model. *Learning Disabilities Research & Practice*, 14(3), 129-140.
- Swanson, H. L., & Hoskyn, M. (1998). Experimental intervention research on students with learning disabilities: A meta-analysis of treatment outcomes. *Review of Educational Research*, 68(3), 277-321.
- Terre Blanche, M., Durrheim, K., & Painter, D. (Eds.). (2006). *Research in practice: Applied methods for the social sciences* (2nd ed.). Cape Town: UCT Press.
- Tongco, M. D. C. (2007). Purposive sampling as a tool for informant selection. *Ethnobotany Research and Applications*, 5, 147-158.
- Tudge, J. R. H., Mokra, I., Hatfield, B. E., & Karnik, R. B. (2009). Uses and misuses of Bronfenbrenner's bioecological theory of human development. *Journal of Family Theory & Review*, 1(4), 198-210.
- Turner, K. W. (2005). Fetal Alcohol Syndrome: Perspectives of a group of educators in Northwest Florida. Unpublished doctoral dissertation. University of West Florida.

- UNESCO. (1994). *The Salamanca statement and framework for action on special needs education*. Paris: UNESCO.
- University of South Dakota. Department of Paediatrics. Sanford School of Medicine. (2009). *Fetal Alcohol Spectrum Disorders: Education strategies*. South Dakota (NOFAS-SD): Fetal Alcohol Spectrum Disorders Institute.
- Vail, P. L. (1994). *Emotion: The on/off switch for learning*. Rosemont, NJ: Modern Learning Press.
- Vaurio, L., Riley, E. P., & Mattson, S. N. (2008). Differences in executive functioning in children with heavy prenatal alcohol exposure or attention-deficit/hyperactivity disorder. *Journal of the International Neuropsychological Society*, 14(1), 119-129.
- Viljoen, D. L., Gossage, J. P., Brooke, L., Adnams, C. M., Jones, K. L., Robinson, L. K., ... Asante, K. O. (2005). Fetal alcohol syndrome epidemiology in a South African community: A second study of a very high prevalence area. *Journal of studies on alcohol*, 66(5), 593-604.
- Visagie, G. (2006). 'n Leerder met fetale alkohol sindroom in hoofstroomonderwys: Die rol van die opvoedkundige sielkundige. Unpublished thesis (MEdPsig.). Stellenbosch: Stellenbosch University.
- Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.
- Ware, A. L., Crocker, N., O'brien, J. W., Deweese, B. N., Roesch, S. C., Coles, C. D., ... Jones, K. L. (2012). Executive function predicts adaptive behavior in children with histories of heavy prenatal alcohol exposure and attention-deficit/hyperactivity disorder. *Alcoholism: Clinical and Experimental Research*, 36(8), 1431-1441.
- Welsh, M. C., Pennington, B. F., & Groisser, D. B. (1991). A normative-developmental study of executive function: A window on prefrontal function in children. *Developmental neuropsychology*, 7(2), 131-149.
- Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology*, 25(1), 68-81.

- Willford, J. A., Richardson, G. A., Leech, S. L., & Day, N. L. (2004). Verbal and visuospatial learning and memory function in children with moderate prenatal alcohol exposure. *Alcoholism: Clinical and Experimental Research*, 28(3), 497-507.
- Winne, P. H. (1996). A metacognitive view of individual differences in self-regulated learning. [Electronic version.] *Learning and Individual Differences*, 8, 327-353.
- Winne, P. H. (2001). Self-regulated learning viewed from models of information processing. In B. J. Zimmerman & D. H. Schunk (Eds.). *Self-regulated learning and academic achievement: Theoretical perspectives* (pp. 153-189). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Wolf, Z. R. (2003). Exploring the audit trail for qualitative investigations. *Nurse Educator*, 28(4), 175-178.
- Yin, R. K. (2009). *Case study research: Design and methods*. Thousand Oaks: SAGE Publications.
- Yin, R. K. (2012). *Application of case study research* (3rd ed.). Thousand Oaks, CA: SAGE Publications.
- Zelazo, P. D., Müller, U., Frye, D., Marcovitch, S., Argitis, G., Boseovski, J., ... Carlson, S. M. (2003). The development of executive function in early childhood. *Monographs of the Society for Research in Child Development*, 68(3).
- Zimmerman, B. J. (2000). Attaining self-regulation: A social cognitive perspective. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.). *Handbook of self-regulation* (pp. 13-39). San Diego, CA: Academic Press.
- Zimmerman, B. J., & Schunk, D. H. (Eds.). (2001). *Self-regulated learning and academic achievement: Theoretical perspectives*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Appendix A

RESEARCH REQUEST AND INFORMED WRITTEN CONSENT

3 Februarie 2017

Besoek Mevrou Prinsipaal

Versoek vir toestemming om navorsing te doen.

Ek is Gikmah Jackson, 'n MedPsig (Opvoedkundige Sielkunde Meesters) student (US 151523750) aan die Stellenbosch Universiteit, ek beoog om 'n navorsingsprojek te onderneem met die volgende titel: *Understanding of executive functioning challenges and support for learners with FASD within a classroom.*

Daar is so min skole soos u skool, wie se onderwysers ondervinding het van hoe dit is om met leerders met FASD te werk. Om hierdie rede sou ek graag my navorsings data by U skool wou insamel, op die volgende wyse.

Deelnemers: Twee vrywillige onderwysers en hul assistente.

Observasies: In 2 klaskamers (vir 4 dae oor 2 weke)

Onderhoude: 3 oor die loop van die 2weke.

Tydsloop: Enige tyd tussen einde Maart, April of Mei wat vir U pas.

Ek neem kennis dat u onder die organisasie [REDACTED] funksioneer, ek sal graag van hul ook wou toestemming he om voort te gaan met navorsing, indien ek kan.

Hoor graag van u.

Groete

Gikmah Jackson



A handwritten signature in blue ink that reads "GICKSON". The signature is enclosed in a thin black rectangular box.

RESPONSE TO THE ABOVE REQUEST

Dear Gikmah,

I have received your enquiry regarding your research. I have spoken to the educators at [REDACTED], and you welcome to observe two of our classes over a period of 2 weeks.

We are currently half way through our first term, so second term would be a better option. Our school term will begin again on 18 April. Please let me know when would suit you to begin your observations.

Kind regards,

[REDACTED] is a B-BBEE charity. By making a cash donation to a B-BBEE charity a company may improve its Social Economic Development Score and bolster its overall BEE rating. [REDACTED] will send you a Section 18a certificate for tax benefit to facilitate this.

Important Notice: This email is subject to important restrictions, qualifications and disclaimers ("the Disclaimer") that must be accessed and read at the following address or by copying and pasting the following address into your Internet browser's address bar: [REDACTED]

The Disclaimer is deemed to form part of the content of this email in terms of Section 11 of the Electronic communications and Transactions Act, 25 of 2002. If you cannot access the Disclaimer, please obtain a copy thereof from us by sending an email to [mailto:\[REDACTED\]](mailto:[REDACTED])

From: Gikmah Jackson [[mailto:\[REDACTED\]](mailto:[REDACTED])]

Sent: 03 February 2017 10:01 AM

To: [REDACTED]

Subject: Toestemming vir Navorsing

Appendix B

LETTER OF ETHICAL CLEARANCE



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jou kennisvenoot • your knowledge partner

Approval Notice New Application

28-Mar-2017
Jackson, Gikmah G

Proposal #: SU-HSD-004291

Title: UNDERSTANDING OF EXECUTIVE FUNCTIONING CHALLENGES AND SUPPORT FOR LEARNERS WITH FASD WITHIN A CLASSROOM.

Dear Miss Gikmah Jackson,

Your **New Application** received on **10-Mar-2017**, was reviewed
Please note the following information about your approved research proposal:

Proposal Approval Period: **23-Mar-2017 -22-Mar-2020**

General comments:

The REC agrees with the applicant and DESC that this research is indeed low risk research. It does concern children, and a vulnerable group of children, but the latter will not be actively participating in the research other than be observed in their everyday class room situation. The teachers and assistants of these children and their teaching methods will be the real focus of the study.

However, the REC agrees that it is good practice and that it might even be argued that it is necessary to get the permission of the parents and the assent of the learners themselves to be observed as part of the applicant's project. The REC therefore appreciated the applicant's sensitivity to this end. The REC also want to commend the DESC for its thorough screening of the application and the very helpful and carefully-considered observations, suggestions and stipulations with which the REC is in full agreement, as well as with the applicant's response to these matters.

Please take note of the general Investigator Responsibilities attached to this letter. You may commence with your research after complying fully with these guidelines.

Please remember to use your **proposal number (SU-HSD-004291)** on any documents or correspondence with the REC concerning your research proposal.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Also note that a progress report should be submitted to the Committee before the approval period has expired if a continuation is required. The Committee will then consider the continuation of the project for a further year (if necessary).

This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki and the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health). Annually a number of projects may be selected randomly for an external audit.

National Health Research Ethics Committee (NHREC) registration number REC-050411-032.

We wish you the best as you conduct your research.

If you have any questions or need further help, please contact the REC office at 218089183.

Included Documents:

DESC Report

REC: Humanities New Application

Sincerely,

Clarissa Graham
REC Coordinator
Research Ethics Committee: Human Research (Humanities)

Appendix C

INFORMED WRITTEN CONSENT FORMS FOR TEACHERS, ASSISTANTS, PARENTS AND LEARNERS' ASSENT



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STELLENBOSCH UNIVERSITY CONSENT TO PARTICIPATE IN RESEARCH

(Parents)

Understanding of executive functioning challenges and support for learners with FASD within a classroom.

Your child and all the other learners in his/her classroom are asked to participate in a research study conducted by myself, Gikmah Jackson. I am a registered student in the programme Master in Education (Educational Psychology), at the Department of Educational Psychology at Stellenbosch University. The results of this research will contribute to partial fulfilment of the requirements for the degree Master in Education (Educational Psychology) (MEdPsych). Your child's classroom was selected to be part of this study, because it complies with the requirements for the study and will allow for me to gain understanding of the ways the learners learn and are supported in the classroom.

1. PURPOSE OF THE STUDY

The study is designed to understand executive functioning difficulties learners may struggle with and to find out what do teachers do to support these functions in a classroom.

Executive functioning is the name given to a collection of skills, for instance, concentrating on your work, or keeping things in mind, or not interrupting others and also maybe something like remembering which books to take out or to bring to school.

I would like to observe how the teacher helps the learners to learn and understand the work in the classroom.

2. PROCEDURES

If you consent that your child may participate in this study, I would ask the following:

- That you allow me to observe activities in the classroom where your child is, for 2 days for 2 weeks.
- As researcher, I shall observe the regular activities in the classroom while the teacher goes on with teaching as normal. I shall audio-record all the talk and interaction in the classroom and make notes of what I see regarding difficulties and support actions by the teacher. Your child will not have to do anything different from usual, and will not be asked any questions.

3. POTENTIAL RISKS AND DISCOMFORTS

Initially your child may feel slightly uncomfortable with a stranger present in the classroom, but as I shall not talk or ask questions, this ought to not have a negative effect on your child.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

The participation of the teachers, assistants and the learners in their classrooms will benefit all teachers working with learners living with FASD. Teachers will better be able to understand difficulties learners experience with executive functioning and will be able to develop support strategies for the learners.

5. PAYMENT FOR PARTICIPATION

No payment will be given to participants, participants participate voluntarily.

6. CONFIDENTIALITY

Any information that is obtained in this study will remain confidential and will be disclosed only with your permission or as required by law. All information will be stored only on my personal computer in a folder secured by a pin code. In writing the report on the research, pseudonyms will be used so that no participant (teachers, assistants, parents, learners or the school) could be identified. Only myself, as the researcher, and my supervisor will have access to the information. Participants will also have access to information should they request it.

Verbal interactions in the classroom will be audio-recorded. Only I shall have access to these recordings, the words will be written out, after which the recordings will be deleted. The information (transcripts) will be securely stored as explained, and will only be available to myself and my supervisor. Transcripts and other written notes and documents will be saved for 5 years. You, the teacher or assistant, as well as the other participants, have the right to ask me, the researcher, to erase any information that you are not comfortable with.

When the results of the research study are published, confidentiality will be maintained as no names or any information that could identify any participant (teachers, assistants, parents, learners or the school) will be revealed.

7. PARTICIPATION AND WITHDRAWAL

You can choose whether you want your child to be in the study or not. If your child volunteers to be in this study, he or she may withdraw at any time without consequences of any kind. I may withdraw your child from this research if circumstances arise which warrant doing so. All participants are free to withdraw from the research at any time without the consent of the researcher or an explanation. Your child may also decide not participate in research even though you as parent granted permission for him/her to take part in the research study.

Should you or your child not want to be part of the study, no notes will be made about your child's behaviour in the classroom and no information about your child will be considered and used for this study.

8. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact:

Myself the researcher, **Gikmah Jackson**, cell phone: 08105746912; or

my supervisor **Ms M Perold**, cell phone: 082 359 182.

9. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development.

SIGNATURE OF RESEARCH SUBJECT OR LEGAL REPRESENTATIVE

The information above was described to by Gikmah Jackson in Afrikaans and English and I am in command of this language or it was satisfactorily translated to me. I the participant was given the opportunity to ask questions and these questions were answered to my satisfaction.

I hereby consent voluntarily that my child may participate in this study. I have been given a copy of this form.

.....

Name of Subject/Learner

.....

Name of Legal Representative (Parent or guardian)

.....

Signature of Subject/
Participant or Legal Representative

.....

Date

SIGNATURE OF INVESTIGATOR

I declare that I explained the information given in this document to [name of the subject/participant] and/or [his/her] representative [name of the representative]. [He/she] was encouraged and given ample time to ask me any questions. This conversation was conducted in [Afrikaans/*English/*Xhosa/*Other] and [no translator was used/this conversation was translated into by

.....

Signature of Investigator

.....

Date



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STELLENBOSCH UNIVERSITY CONSENT TO PARTICIPATE IN RESEARCH

(Teachers and assistants)

Understanding of executive functioning challenges and support for learners with FASD within a classroom.

You are asked to participate in a research study conducted by Gikmah Jackson, a registered student in the programme Master in Education (Educational Psychology), from the Department of Educational Psychology at Stellenbosch University. The results of this research will contribute to partial fulfilment of the requirements for the degree Master in Education (Educational Psychology), (MEdPsych). You were selected as a possible participant in this study because you hold knowledge and have experience of teaching learners with FASD.

1. PURPOSE OF THE STUDY

The study is designed to understand executive functioning difficulties learners with FASD may struggle with and to find out what teachers can do to support these functions in a classroom.

2. PROCEDURES

If you volunteer to participate in this study, your participation will entail that you...

- Attend a meeting where the nature of the research will be explained and your voluntary participation be requested
- Fill in a questionnaire asking for demographic information
- Allow me as the researcher to observe your normal day-to-day functioning in the classroom, for 2 days over 2 weeks. You will not have to do anything other than your usual teaching
- Take part in 3 interviews: approximately 35 minutes each (after learners have left school, in your classroom)

- Interview 1 - aim is to get a clear understanding of how executive functioning is understood and what difficulties learners struggle with in the classroom
- Interview 2 – aim is to check and confirm observations in the classroom
- Interview 3 – aim is to clear up any misunderstandings, tie up loose ends and allow time for questions.

I shall observe in each teacher's classroom for the first half of a day. The following day I shall observe the second half of the day. The following week I shall follow the same routine.

3. POTENTIAL RISKS AND DISCOMFORTS

You as teacher may sometimes feel uncomfortable with me present in the classroom, and may feel you have to perform in a certain way. The aim of the observations is to watch a normal teaching day, not wanting to see you do special things that are not part of the regular teaching routine, for my sake.

The scheduled time slots for the three interviews will be negotiated with you to suit your time schedule. If for any reason you do not want to or cannot take part in an interview you may do so without any explanation.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

The participation of teachers, assistants and the learners in their classrooms will benefit all teachers working with learners living with FASD. Teachers might be better able to understand difficulties learners experience with executive functioning and will be identify supportive strategies for the barriers to learning these difficulties may pose.

5. PAYMENT FOR PARTICIPATION

No payment will be given to participants, participation is voluntary.

6. CONFIDENTIALITY

Any information that is obtained in this study will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by me as researcher. After data collection, it will be safely stored on the researcher's personal computer in a folder with a pin code. Pseudonyms will be used so no teacher, assistant or learner can be identified. Only I, as the researcher and the

supervisor of the study will have access to the information. Participants will also have excess to information should they request it.

Verbal interactions in the classroom will be audio-recorded. Only I shall have access to these recordings, it will be transcribed after which the recordings will be deleted. The information (transcripts) will be securely stored as explained, and will only be available to myself and my supervisor. Transcripts and other written notes and documents will be saved for 5 years. You the teacher or assistant, as well as the other participants, have the right to ask me, the researcher, to erase any information that you are not comfortable with.

When the results of the research study are published, confidentiality will be maintained as no names or any information that could identify any participant (teachers, assistants, parents, learners or the school) will be revealed.

7. PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. The researcher may withdraw you from this research if circumstances arise which warrant doing so. All participants are free to withdraw from research at any time without consent of researcher or explanation given.

8. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact:

Myself the researcher, **Gikmah Jackson**, cell phone: 08105746912; or

my supervisor **Ms M Perold**, cell phone: 082 359 182.

9. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development.

SIGNATURE OF RESEARCH SUBJECT OR LEGAL REPRESENTATIVE

The information above was described to by Gikmah Jackson in Afrikaans and English and I am in command of this language or it was satisfactorily translated to me. I the participant was given the opportunity to ask questions and these questions were answered to my satisfaction.

I hereby consent voluntarily to participate in this study/I hereby consent that the subject/participant may participate in this study. I have been given a copy of this form.

.....

Name of Subject/Participant
Teacher/ Assistant

.....

Name of Legal Representative (if applicable)

.....

Signature of Subject/
Participant or Legal Representative

.....

Date

SIGNATURE OF INVESTIGATOR

I declare that I explained the information given in this document to [name of the subject/participant] and/or [his/her] representative [name of the representative]. [He/she] was encouraged and given ample time to ask me any questions. This conversation was conducted in [Afrikaans/*English/*Xhosa/*Other] and [no translator was used/this conversation was translated into by

.....

Signature of Investigator

.....

Date

Appendix D

INTERVIEW SCHEDULE'S 1 AND 2 FOR TEACHERS AND ASSISTANTS AND RESEARCHER OBSERVATION GUIDE

Opening

A. (**Establish Rapport**) [shake hands] My name is Gikmah Jackson we have met during my introduction but I thought it would be a good idea to do an interview so I can get to know you, your classroom and school better and you can ask some questions if there's anything you are unsure about. I'll also take this opportunity to give you a brief description of what I will observe in your classrooms.

Like I have mentioned, you are not obligated to anything except go on with your normal class routine during my visit.

If you don't mind, I would like to make an audio recording during the interview. This is to enable me to go back to in case I have forgotten what you have said. It would take me a long time to write down everything you say. Is that okay with you?

Thank you for allowing me to record our conversation.

B. (**Time Line**) The interview should take about 35 minutes. You may leave if we go over the time.

C. (**Purpose**) I am going to ask you a few questions about your classroom. I'm also going to give you a short description of what I'm going to observe and you will soon realise that you can relate to most of the difficulties since you experience it in your class on a daily basis.

D. (**What will be observed**)

I'll be observing executive functioning difficulties with which the learners struggle.

Before I start, you are free to jump in and to comment if you have anything to add.

1. How would you describe a child who have been diagnosed with FASD?
2. How do you understand executive functioning? If NO, go to 10.

3. What role do you think executive functioning difficulties play in children who have been diagnosed with FASD?
4. What are the component(s) of executive functioning difficulties that you observe in your classroom?
5. The most common?
6. The least common?
7. What component(s) provide the biggest challenge for you as teacher?
8. What component(s) provide the least challenges for you as teacher?
9. How do you approach your teaching with regard to executive functioning difficulties?
10. Please tell me how you understand the following learner behavioural patterns in your classroom and the effect of these behaviours on your teaching strategies and –planning for your class.
 - 10.1 Metacognition (Understanding the big picture of oneself in a situation.)
 - 10.2 Initiation (Beginning a task without undue procrastination in a timely fashion.)
 - 10.3 Sustained Attention (Maintaining attention and effort for a prolonged period of time.)
 - 10.4 Working memory (Holding information in mind while completing a complex task.)
 - 10.5 Organising (Obtaining and maintaining necessary materials to complete a sequence and achieve a goal.)
 - 10.6 Planning and sequencing (Developing steps to reach a goal.)
 - 10.7 Time management and prioritization (Revising plans in view of mistakes and the adaptability to change)
 - 10.8 Inhibition (Resisting impulsivity in saying or doing something)
 - 10.9 Flexibility and ability to shift between tasks (Revising plans in view of mistakes and adaptability to changing conditions)
 - 10.10 Self-regulation (Managing emotions to achieve goals or control and direct behaviour)

10.11 Focussing and attention (Focusing attention on the most relevant information in the environment or situation while ignoring less relevant events.)

10.12 Storing information (Moving information to the present into storage for retrieval at a later time.)

10.13 Retrieving information (Finding and retrieving previously stored information.)

E. (**Motivation**) I hope to use this information to provide many teachers in mainstreams schools with information about the difficulties learners with FASD experience with executive functioning as well as how they can go about supporting these learners.

F. (**Transition**): Are you available to respond to some questions at this time? Let me begin by asking you some questions about your teaching at Amathemba.

G. **Head** (Topic) Experience at school

1. What made you decide to work at Amathemba school?

2. How do you experience working with learners with FASD?

(**Transition**: Well, it has been a pleasure finding out more about you and your classroom. Let me briefly summarize the information that I have recorded during our interview.)

III **Closing**

Is there anything you would like to ask about the study?

I appreciate the time you took for this interview. Is there anything else, that you think would be helpful for me to know so I can understand observations in your classroom?

(Action to be taken) Here are the questions I asked and my contact details if you want to call me to change something you have said or if you would like to add to what has been said.

I should have all the information I need for now. Would it be alright to call you at home if I have any more questions? Thank you again. I look forward to observing your classrooms.

PROPOSED OBSERVATION SCHEDULE IN CLASSROOMS

Grade class:

Teacher name:

Assistant name:

Date observing:

- I shall watch for learners' **behavioural patterns** pertaining to executive functioning and the **corresponding teaching strategies** employed, or responses by teachers.
- I shall also note any **emotional responses and behaviour** that may follow intense emotional experiences in order to differentiate those behaviours from behaviours representing only cognitive processes.
- The following components of executive functioning (EF) (Blaschke, Mataverne & Struck, 2009) will guide my observations related to EF:

1. Metacognitive strategies employed and demonstrated by learners, positive and/or negative	Ways that teacher/assistant encourages and promotes this skill, responds to it, as well as responds to the absence or ineffectuality of learners' skills
Careless mistakes, check work.	
Making sure rules were followed.	
Recognising he/she has a problem.	
Asking for help when needed.	

Evaluating his/her own performance.	
Seeing effects of his/her behaviour on the group, individual or situation.	
2. Skill: Initiation	
Getting started on task, failure may appear as oppositional behaviour.	
3. Skill: Sustained Attention	
Attention as long as task demands, attention may be only briefly attained or focussed but not sticking with something long enough to complete it.	
Good initial performance followed by decreases in consistency as time goes on.	
4. Skill: Working Memory	
Following directions, classroom routines and procedures.	
Writing down, completing or handing in assignments or bringing appropriate materials.	
Using appropriate processes/operations for assignments (long division, proper headings).	

Performing responsibilities, for example, to hand in homework or do chores.	
Looking after possessions, or losing things at home, school, on the bus, in the locker room, etc.	
Taking necessary materials such as books, workbooks, assignment notebook, worksheets, permission slips, etc ... home.	
5. Skill: Organization	
Organising important papers or possessions like books, gym clothes, pencils, etc., or alternatively losing it.	
Handing in completed work, or failing to do so.	
Work according to a realistic schedule.	
6. Skill: Planning and sequencing	
Starting task with necessary materials.	
Leave enough time to complete tasks.	

Following all steps in multi-step task, or skipping some steps.	
Ability to relate a story chronologically, or alternatively having difficulty doing it.	
Appropriate social interaction, or “jumping the gun” socially, impulsively inappropriate behaviour.	
7. Skill: Time Management and Prioritization	
Ability to estimate how long it will take to finish a task.	
Appropriate time allocation to tasks according to importance, may waste time doing small projects and fail to do big projects.	
Identification of which material to record in note-taking projects.	
8. Skill: Inhibition	
The ability to respond appropriately and inhibit impulsive responses like interrupting others, may appear distractible or impulsive.	
Appropriate verbal and physical responses, not lashing out without warning (blurting out, taking others’ belongings, hitting, kicking, shoving).	

Being able to await turns. May prefer smaller, more immediate reward over larger, delayed reward.	
Ability to consider consequences before acting, if not able to do this, personal safety may be compromised.	
9. Skill: Flexibility and ability to shift between tasks	
Ability to stick to one approach and able to adapt to changes in conditions or routines.	
Ability to revise plans or strategies in view of mistakes, and not continue to try one plan or strategy even when the results are negative.	
Knowledge on how to access appropriate resources.	
Ability to control emotions and resist easily becoming frustrated and throwing temper tantrums.	
Ability to stop one activity and move on to the next.	
Ability to avoid rigid adherence to routine regardless of circumstances.	
Ability to shift between different tasks when necessary, and resist the need to do only one task at a time.	

10. Skill: Self-Regulation	
Ability to exhibit appropriate reactive response to situation, rather than over- reactive responses like becoming easily frustrated, throwing temper tantrums, becoming easily upset.	
11. Skill: Focussing attention	
Hang on to important information needed to complete a task.	
Realising a person needs to sometimes change behaviour based on setting or situation.	
12. Skill: Storing information	
Keeping hold of all information needed to complete task rather than fail to complete task due to loss of information.	
Remember day to day events.	
Ability to recall information after a delay.	
13. Skill: Retrieving Information	
Consistent performance, no fluctuation in learners' ability to retrieve stored information.	

Ability to use language in a pointed way, and not talk around topic and rather describing the word instead of saying the word.	
Raise hand to answer a question but sometimes forgets what wanted to say when opportunity arise to answer.	

Teacher/ Assistant Interview 2

Grade class:

Respondent name: Teacher/Assistant

Date of Interview:

Which of the following difficulties do students present in the classroom?

1. Skill; Metacognition	Answers and comments
Makes careless mistakes, fail to check work.	
Fails to check work, not making sure rules where followed.	
Does not recognise that he/she has a problem.	
Do not ask for help when needed.	
Fail to evaluate own performance.	
Fail to see how their behaviour affects the group, individual or situation.	
2. Skill: Initiation	
Difficulty getting started on task, may appear as oppositional behaviour.	
3. Skill: Sustained Attention	
Attention may briefly attained or focussed but tot sticking with something long enough to complete it.	

Good initial performance, followed by a decrease in consistency as time goes on.	
4. Skill: Working Memory	
Not following directions, forgetting to follow classroom routines and procedures.	
May not write down, complete or hand in assignments or bring appropriate materials to school.	
May forget the appropriate process to use for assignment (i.e. long division operations, proper headings, etc).	
Forgets to perform responsibilities, for example: forget to hand in homework or forget to do chores.	
Losing things at home, school, on the bus, in the locker room, etc.	
Not taking necessary materials such as books, workbooks, assignment notebook, worksheets, permission slips, etc ... home.	
5. Skill: Organization	
May lose important papers or possessions (books, gym cloths, pencils, etc.).	
May fail to hand in completed work.	
Work may lead to creating unrealistic schedule.	

6. Skill: Planning and sequencing	
May start task without necessary materials.	
May not leave enough time to complete task.	
May skip steps in multi – step task.	
May have difficulty relating a story in chronological fashion.	
May “jump the gun” in social situations.	
7. Skill: Time Management and Prioritization	
Cannot estimate how long it will take to finish a task.	
May waste time doing small projects and fail to do big projects.	
May have difficulty identifying what material to record in note-taking projects.	
8. Skill: Inhibition	
May interrupt and appear distractible or impulsive.	
May lie verbally, or physically lash out without warning (blurting out, taking others ‘belongings, hitting, kicking, and shoving).	

Difficulty waiting turns, may pick smaller, immediate reward over larger, delayed reward.	
Personal safety may be compromised due to inability to consider consequences before acting.	
9. Skill: Flexibility and ability to shift between tasks	
May get stuck on one approach and be unable to adapt to changes in conditions or routines.	
Continue to try one plan or strategy even when the results are negative, unable to revise plans or strategies in view of mistakes.	
May not know how to access appropriate resources.	
May become easily frustrated and throw temper tantrums.	
May be slow to stop one activity and move on to the next.	
Rigid adherence to routine regardless of circumstances.	
The need to do only one task at a time and unable to shift between different tasks when necessary.	
10. Skill: Self-Regulation	
May exhibit inappropriate or over-reactive response to situation. (easily frustrated, throwing temper tantrums, becoming easily upset).	

11. Skill: Focussing attention	
Lose important information needed to complete a task.	
Do not realise they need to change their behaviour based on setting.	
12. Skill: Storing information	
Fail to complete a task due to loss of information.	
Don't remember day to day events	
Unable to recall information after a delay.	
13. Skill: Retrieving Information	
Inconsistent performance - some days learner will retrieve stored information and some days learners cannot.	
Talk around topic, may describe a word rather than saying the word.	
May raise hand to answer a question but then forgets what he/she wanted to say when opportunity arises to answer.	
What are some strategies or interventions being used to address problem areas currently and how successful are they?	
Intervention	How successful is it?

Appendix E

EXAMPLE OF CODING OF TRANSCRIPT

Grade class: [REDACTED]

Teacher name: [REDACTED]

Assistant name: [REDACTED]

Date observing: 25/04/17 and 02/05/17

- I shall watch for learners' **behavioural patterns** pertaining to executive functioning and the **corresponding teaching strategies** employed, or responses by teachers.
- I shall also note any **emotional responses and behaviour** that may follow intense emotional experiences in order to differentiate those behaviours from behaviours representing only cognitive processes.
- The following components of **executive functioning** (EF) will guide my observations related to EF:

1. Metacognitive strategies employed and demonstrated by learners, positive and/or negative	Ways that teacher/assistant encourages and promotes this skill, responds to it, as well as responds to the absence or ineffectuality of learners' skills
Careless mistakes, check work	<p>Teacher give learners' pictures and they have to write the name of the picture next to it. One learner doesn't understand what to do and write all the wrong answers next to the words. The first picture is a pot of clue. The teacher physically takes out a pot of clue to show the learner what she must write down.</p> <p>Teacher gives enough instructions so that the learner can go on with work by himself. If learner don't want to do the work the teacher tells the learner they going to get a surprise and learner starts working.</p> <p>A lot of activates learners only have to complete questions. Work is differentiating for each learner on her own level. Work very abstract.</p>
Fails to check work	Teacher repeats what learners need to do.
Making sure rules where followed	<p>Many a times instructions need to be repeated before learners respond.</p> <p>Divide work in smaller parts.</p>

Recognizing he/she has a problem	Learner don't realise she made a mistake, sometimes it takes a while for the teacher to realise the learner struggle and the learner don't ask for help. Takes long for the learner to realise she has a problem. Sometimes learners just stare or look around in the classroom when they don't know what to do.
Asking for help when needed	Sometimes learner will just and do nothing if the teacher don't come and explain what to do next. Learner start to fidget and walk around but actually the learner needs help with the work. Most learners are lost without individual attention. The teacher and the assistant are busy whole walking around helping learners.
Evaluating their own performance	The teacher often uses the words Good job, beautiful, thank you, high five, very nice, you impress me today, well done, you are such a clever girl, yes!, I am very proud of you, excellent to motivate learner to improve their performance in what they busy with (many praise words). Learner follows instructions and check self if his work correlates with what the teacher wants him to do. Learners tend to give themselves higher marks then they deserved.
Seeing effects of their behaviour on the group, individual or situation	Teacher gives the learner the opportunity to leave the group because he misbehave and when he doesn't want to work with the group. The learner goes to his desk. The teacher gives the learner another opportunity to take part in the group when the learner behaves. The learner ignores the teachers. The teacher just ignores the learner as well. After class the teacher go talk to the learner in private.
2. Skill: Initiation	We use routine to form habits of initiation for example writing the word date on the each assignment and using bold to highlight the main ideas. Slower learners get pictures and they have to write the words next to it. Faster learners need to make a book with 5 pages (Learners start of by just drawing pictures for their stories). Teacher gives them one instruction at a time. The faster learner just gets a heading and they need to write their own story. Some listen to the story told by the teacher. They get a mixed outline of the story and they have to cut the outline out and stick it in their books according to how they remember the story that is being told by the teacher. One learner has the story in front of her but some of the words in the story is missing so she just need to fill in the missing words.

EXAMPLE OF TRANSCRIPT AND ANALYSIS PROCESS: INTERVIEW 1

1	Ok I see, I've heard you do that. That was quite interesting.	
4	We do it a little differently. We also have our intro into the day , which you would have seen. You know we play a little game , [REDACTED] sometime sings songs . It just sort of gets them more interactive. If we go straight into work, we'll never have their attention, but it settles them from playing, so we'll do that. But as soon as we start our lessons, routine become an automatic action that we do . We're not teaching subjects like History and Geography where you need to remember what happened yesterday. We are just building foundations . Ja ...	
1	Can I ask something about what I observed that was quiet interesting? The routine that you talked about? Is that, for example, the activity I observed, with the cards in the plastic bowl? Do they choose one card and then choose the other card until they done with the cards?	
3	It relaxes them	
4	It follows a numerical order. So they are ... say there is 1.7 and it would be pages 1 to 40, so they will start on page one and tomorrow they will do page two, page three and when they have finished all their notes, they start on like 1.8. So it basically is just mental maths plus the minus sums, bonds that sort of thing.	
3	But because they struggle so much with maths , uhm ... they have to practice every day . So it's not part of their curriculum, it's just extra practice for them.	
1	In your books, I saw you already wrote ... like the structure in their books . Is that now written out after each day?	# #
3	No, we prepare at the end of each week .	
1	Ok, that's a lot of work	
3	You get used to it	
4	You get used to it, because they can't do it themselves.	
3	Well, our Grade ones, twos and threes still get prepped in our class, but ours cannot prepare in books . You'll see even with the dates, I'll put a mark on every single book where they must write a date and I will put a little line where they must write it, because they can't do that themselves .	# # #
1	Interesting	
3	And they've been doing it for two years. So people tell me, 'but they haven't practised' . No, they've been doing it for two years and if I leave them, they will still say: 'Where must I write the date?' And they've done it, they do it three times a day, every day.	# # # The writing of the date ... is this an abstract

		idea or do learners understand why they are writing a date?
1	You know what was so interesting is that when the learners got to their tables everyone knew what to do. I have to explain like at least 15 minutes what we are going to do for that to happen.	
4	But that's the routine that [redacted] referring to. Every single morning they will start with the exact same thing. Each group knows what they need to be doing and that's how they able to function like that.	Need to know what is expected Organisation and structure
1	And then the three buckets that's on top of their shelves, what's in there?	
4	The drawers in my class. The top one is the maths drawer, the middle is their English, and bottom is their Life Skills drawer. So their drawers are their different subjects so they can keep organised that way.	# # #
1	Ok ok	
4	Yes each subject is stored in a different drawer.	
1	Ja but just theirs are marked, so I knew, but they can read, that's why.	
4	The older learners are responsible to manage their own books.	Differences in phases
1	But in [redacted] class they still need a lot of guidance.	
3	Like if you had to change that routine, you would watch the wheels fall off.	
1	Is it?	
3	Ready to show if you really want to?	
1	I do believe you	
3	You should never say don't do that, you should rather say if you do that the result will be.	
1	Thank you very much for that. Then we go to sustained attention. Maintaining attention is an effort for a prolonged period of time. So how do you plan to sustain, I think some of the stuff we might have said, but how do you plan to sustain their attention? Uhm, what kinds of teaching strategies do you use to sustain their attention?	
4	In our class we change activities fairly often , so even though they are doing maths, they will be doing the ELS maths and then they'll be doing work on the carpet with me and then they will be doing additional activities. So they are always changing activities. You can't ... if they don't sustain attention; there is nothing you can do to make them. Our little ones, ... so when we have our two hours in the morning, it has, it's always changing and then after first break we do an hour of English and then we have about 10 minutes of brain breaks, where they watch videos and they dance and they sing along and then we do our last part of the lesson.	# # # # # # Planning of teachers # # #

Appendix F

EXAMPLE OF CODING OF THEMES

2. MEMORY

2.1 Working memory

4. We give learners one instruction at a time. When we have you four activities for English, we will first look at the first one and explain it, the learners then have to repeat back what they need to do and then we will always go and check that they still doing what they should be doing.

O- The teachers always walking around to bring the learners back on task. We are always walking around and breaking the work down in smaller parts for the learners to understand what they should be doing

2.2 Short term memory

1. It really depends on how severely affected the child is by adversity. So our higher functioning kids and the younger they are, the worst they are at remembering but the older they get the more responsible they get, the less they forget. But then you get learners that is in the intermediate phase already that will lose everything all the time.

2. There's very rarely a project that goes home because learners tend to forget what they should do and if there is an project that goes home, parents would be phoned and explained, exactly what has to happen and then and then it will come back done, but this only happened like two or three times a year. Most of the work gets done in the classroom.

1. When learners forget alot we tend we will ask for example. If I see you holding your jersey in your hands, where are you going to put them? So we all kind of know where to look for it when the learner forgets where he/she has put it.

O- They playing the game I spy with my little eyes something that begins with a? When the learner guessed right and gets the change to ask she forgets what to do. Teacher need to explain what she needs to do.

O-Learner on the carpet gets asked to go get his pencil at the table and when he is there he forgets why he is there and dwell on something else at the table. The assistant go to the table to remind him way he is at his table to get him back on course.

O-Learner often forgets school materials at home but the teachers are well prepared they make sure the learner has everything they need to complete daily task. Everything learner needs for the day's work is already on the table

2.3 Long-term retention

There are a lot of learners that has a very low attention span. To remember what was done yesterday, or been able to do it yesterday and do it today. You need to have patience with the learner otherwise you'll get nothing done. You can't do anything else; the child's is not purposefully not doing what you want them to do. It's not something you doing wrong, you just have to know that every day you starting fresh and you going to see if the learners are can remember what you did yesterday and if they can't, no problem. We go right back where we started yesterday. Some days you get surprised, because they then they actually remember what has been done.

O-The teacher does a lot of repetition of work done previously before starting with new work. First the teacher teaches the learner the work and then the learner writes the work down on a white board. The learner then goes back to their desk and writes the work done on the white board down in their books

3. ATTENTION

3.1 Sustained attention/Focussing attention

1. The desks are set up, so that it limits attention form wondering. Each learner has his own cubicle so that that the they don't get distracted by the learner next to them or their surroundings.

2. It is very important that there are no distractions on their desk, so they always have to keep their desks clear for example they know when they done working with one book it has to go into the work pile before they start working on a next task.

1. We always have our intro into the day, which you would have seen, you know we play a little game.

Appendix G

JOURNAL ENTRY

