AUTISM SPECIFIC EDUCATION IN SOUTH AFRICAN PUBLIC SCHOOLS: PRACTICES AND CHALLENGES

CORINA (JC) BOTHA

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DEDICATED

To educators employed in Autism Specific Education within South African public schools.
Thank you for choosing to work with a challenging group of learners irrespective of limited resources, support and recognition.
Your passion, patience, dedication and creativity are an inspiration.
You make a difference!

"Do more than belong: participate. Do more than care: help. Do more than believe: practice. Do more than be fair: be kind. Do more than forgive: forget. Do more than dream: work."
William Arthur Ward

DECLARATION

I certify that the dissertation hereby submitted for the Magister in Occupational Therapy degree at the University of the Free State is my independent effort and has not been previously submitted for a degree at another University / Faculty.

I furthermore waive copyright of the dissertation in favour of the University of the Free State.

Signed:

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Corina Botha

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"You are my God, and I will praise You; You are my God, and I will exalt You.
Give thanks to the Lord, for He is good; His love endures forever."
Psalm 118:28-29

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ACRONYMS AND ABBREVIATIONS

ABA	Applied Behaviour Analyses
ADDM Network	Autism and Developmental Disability Monitoring Network
ADI	Autism Diagnostic Interview
ADOS	Autism Diagnostic Observation Schedule
ASD	Autism-Specific Disorder
CAPS	Curriculum Assessment Policy Statement
CARS	Childhood Autism Rating Scale
CDC	Centres for Disease Control and Prevention
DBST	District-Based Support Team
DISCO	Diagnostic Interview for Social and Communication Disorders
DIR®/Floortime™	Developmental, Individual Difference, Relationship-Based Model
DSM-5	Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition
ELSEN	Education for Learners with Special Educational Needs
EMIS	Education Management Information System
PDD-NOS	Pervasive Developmental Disorder Not Otherwise Specified
PECS	Picture Exchange Communication System
SANASE	South African National Association for Special Education
SBST	School-Based Support Team
SIAS	Screening, Identification, Assessment and Support
SPD	Sensory Processing Disorder
SNAP	Special Needs Adapted Programme
TEACCH	Education of Autistic and Communication-Related Handicapped Children

CONCEPT CLARIFICATION

Autism-specific education classes: Classrooms that are resourced and equipped to provide autism spectrum disorder (ASD) specific education and support due to the challenges of including learners with highly intensive support needs in regular classrooms (Burns 2013:9). In the South African context, ASD classes refer to classrooms at established schools (ordinary, full-service or special schools) that offer autism-specific education to accommodate the unique needs of learners with autism spectrum disorders.

Autism-specific education: The diagnostic and functional profiles of learners with ASD motivate the need for specialised educational approaches, since conventional special needs programmes and teaching methods are not appropriate and accessible in respect of their unique needs. The majority of learners with ASD are not only in need of a specialised curriculum and therapeutic intervention, but also require a responsive classroom setting that accommodates vital areas of development (New Brunswick Department of Education 2005:48-49). Although the study recognises inclusive policy where all learners have the right to access learning in a regular classroom, learners with ASD require an all-encompassing support programme that are appropriate to their unique learning needs.

Autism-specific school: Special schools or resource centres are resourced to provide specialised education, facilities and diagnostic-specific support for learners with ASD (School Management Team–Unica School for Autism 2012:online). In addition, services may also include parent collaboration and support, training the community and relevant stakeholders, sharing of information and facilities as well as contributing to responsible projects and research that promote awareness of autism

Barriers to learning: Difficulties that occur within all levels of the education system, the learning site (inflexible curriculums, inefficient school management, teaching strategies, etc.), the social context (socio-economic status, domestic circumstances, etc.), the environment (inaccessible and unsafe built environments) or within the learner (disability, personality, health, etc.) which influence or prevent access to learning (SA 2008(3):8). The complexity of the condition, behaviours that occur as a result of the condition, and the functional impact of these create barriers for learners with ASD to learn and develop within typical classroom settings. Systemic barriers within all levels

of the education system hamper the efficient inclusion of marginalised learners (including those with ASD). Learners with ASD are from diverse family settings and communities with unique socio-cultural and economic factors, which may create additional barriers to learning and development.

Challenges: Within the context of the study, challenges refer to those tasks or situations that educators experience as difficult to deal with (Oxford Dictionaries 2013:online). These may include systematic, institutional, managerial, administrative or learner-related factors that may cause frustration, burn-out and negative attitudes, and may create obstacles in providing appropriate support to learners with ASD.

District-based support team (DBST): Multi-professional teams of district-based officials who are responsible for the promotion of inclusive education through training, curriculum delivery, recourse distribution, identifying and addressing of barriers to learning, leadership, and general management (SA 2008:3(3),2009:49). District-based support teams are key role-players in advocating the rights of learners with ASD to education and support, to create and develop appropriate education support and to uplift systemic barriers that hamper service delivery to learners with ASD.

Full-service schools: Ordinary or mainstream schools, which are specifically resourced and transformed to accommodate the diverse learning barriers of learners in need of moderate support (SA 2001(1):9). Full-service schools offer a mainstream curriculum, curriculum differentiation and moderate education support and cannot successfully include learners with severe disability profiles.

Inclusion: Inclusive education is concerned with the child's right to participate and the school's duty to accommodate the child. In school-based settings it refers to the integration of diverse learners (irrespective of language, race, culture, disability or other individual characteristics) into the classroom with support and adjustments to make the curriculum more accessible. Inclusion recognises that all learners can learn with appropriate support and that the school should have systems in place that provide education which accommodate the needs of all learners (SA 2001(1):17). The study particularly focuses on the rights of learners with ASD to learn and to develop their full capacity in a school system that is accommodative of their unique learning style and developmental needs.

Individual support plan: A plan that is designed for learners who require additional support or expanded opportunities. These plans are developed by educators in consultation with the parents and the school-based support team to ensure that the learner is supported according to his/her unique needs (SA 2008(3):3, 2009(4):49). The use of individual support plans is considered to be a critical success factor of autism-specific education (Hughes, Katsiyannis, McDaniel, Ryan & Sprinkle 2011:58).

Mainstreaming: Mainstreaming or integration focuses on changes that need to take place in a learner in order to fit within a particular education system that provides a standard curriculum and regular classroom setting. Mainstreaming focuses on a standard classroom routine and is not concerned with changes in the system to accommodate learners with high-level support needs (SA 2001(1):17)

Maintream school: Schools that offer a mainstream curriculum are often referred to asordinary schools (SA 2001(1):1). Both terms (ordinary and mainstream schools) are reflected in literature but the term mainsream schools will be used with the purposes of this study.

Marginalised learners: Marginalised learners are those who are excluded from their right to basic education by factors such as income differentiation and social status. Marginalisation is categorised into four broad clusters, namely: group-based (race, language, religion, etc.); poverty-related (severe, continued poverty), location (rural, remote or dangerous areas) and individual (health, disability and special needs). Learners with ASD would mainly fall into the last group or combinations thereof (Chang, Oberoi, Saifi & Sharma 2014:online).

Motheo District: Motheo (meaning “foundation” or “cornerstone” in Sesotho) is a district of the Free State province in South Africa. The district is divided into three municipalities: Mangaung, Mantsopa and Naledi. Mangaung Metro includes Bloemfontein, Botshabelo and Thaba ‘Nchu. Mantsopa municipality concerns Tweespruit, Ladybrand, Excelsior and Hobhouse. Wepener, Dewetsdorp and Van Stadensrus form part of the Naledi District. Motheo District was disestablished on 18 May 2011 and Mangaung became a metropolitan municipality. Naledi and Matsopa were integrated with neighbouring districts (Motheo District Municipal Council 2011:6). These changes have not yet been introduced in the Free State Department of Education, and district-based officials are still serving schools within Mangaung, Naledi and Mantsopa

National Strategy on Screening, Identification, Assessment and Support (SIAS): The SIAS strategy deals with the process of identifying, assessing and providing programmes for all learners in need of additional support to facilitate optimal participation and inclusion. The strategy offers guidelines on admitting learners in special schools and highlights parent-educator interaction and collaboration with community stakeholders (SA 2001(1):7, 2008:1). The study also refers to the use of these national guidelines to determine the support needs of learners with ASD.

Out-of-school learners: This term refers to learners of school-going age who are currently not in a school as a result of the severity of their disability or complexity of barriers to learning and development (SA 2001(1):16).

Practices: The Dictionary defines practices as: "The customary, habitual, or expected procedure or way of doing something" (Oxford Dictionaries 2013:online). Within the context of the study, practices refer to the operational procedures, activities, methods and daily routines performed in autism-specific classrooms to optimise participation, development and learning.

School-based support team (SBST): Teams established by schools as an institution-level support mechanism, whose key function it is to coordinate appropriate and efficient school, learner and educator support services (SA 2008(3):3, 2009(4):50). School-based support teams therefore play a key role in the design of classroom support strategies and individual support plans for learners with ASD.

Special schools: Schools that are equipped to deliver education to learners in need of high-intensity educational and other support, either on a full- or part-time basis (SA 2009(4):49). These schools are focused on delivering a specialised non-discriminative service to diverse learners requiring high-intensity education and support. Special schools should also be transformed to operate as resource centres that provide support services to ordinary and full service schools (SA 2009:50). Due to the limited number of autism-specific schools in South Africa and the increased demand, some special schools accommodate learners with ASD either as part of their regular programme or in autism-specific classes.

SUMMARY AND KEY WORDS

KEY WORDS

Practices and challenges, autism-specific education, South African public schools, district-based occupational therapists.

SUMMARY

Occupational therapists employed in district-based support teams within the South African public educational system play a key role in assisting disabled learners with educational support. Learners with Autism Spectrum Disorders (ASD) have difficulty in accessing appropriate education in public schools in the Motheo District. As a short-term goal to provide the growing number of ASD learners with access to education, autism-specific classes commenced in three special schools and two full-service schools within the Motheo District in 2010. Presently, schools in the Motheo District follow their own strategies regarding the overall management and design of their autism-specific services, and there appears to be variability in the quality of autism-specific education. The development of a context-based, accessible, applicable and sustainable service model is critical. The role of district-based occupational therapists does not only entail the design of support strategies for marginalised learners, but also the monitoring of quality education to learners with ASD in public schools.

Since autism-specific education is a new addition to special needs education in the Free State, there are no sustainable service models, training programmes and self-auditing tools in place for use in the expansion and maintenance of quality autism-specific education. Hence, there was a need to determine how other provinces responded to the increased need for autism-specific education and the structuring of ASD educational services. The primary aim of the research study entailed an investigation of practices and challenges in South African public schools that offer autism-specific education with the end goal of contributing to developing tools to monitor quality education, strategies to support and develop educators and to expand quality ASD education in the Motheo District.

The literature overview highlighted that the global increase in the prevalence of ASD (c.f. 2.2.6) holds significant implications for the provisioning of specialised educational services. Autism-specific education is costly due to the high frequency of intervention by specialised staff; the extensive adjustments to learning material; intensive training programmes; assistive technology; and the need for individualised support strategies. Internationally, there has also been a shift from accommodating learners in special schools to provide inclusive education, which accommodates diverse needs in an ordinary classroom setting. White Paper 6 (2001(1):5) introduced inclusive education in South African schools, but various systemic barriers within the South African context complicate the transformation to an inclusive education system. Globally, the inclusion of learners with high-level support needs remains a challenge. There has been a dramatic increase in the quantity and range of products marketed for educating learners with ASD. Many of these programmes and training modules are not affordable, accessible or applicable to South African public schools. The mentioned challenges contributed to the need for investigating the practices and challenges of autism-specific education in South African public schools.

A quantitative approach and a descriptive study design were used. The study had five research objects that focussed on:

(i) The training and experience of educators of ASD classes;
(ii) School-based operations;
(iii) Classroom practices;
(iv) Autism-specific support strategies; and
(v) Challenges and critical success factors of autism-specific education.

Educators of autism-specific classes within the South African public sector were selected as the study population. The total population of educators who fit the inclusion criteria was surveyed, since sampling was not appropriate for the small research population. In the absence of an appropriate standardised measurement tool, a questionnaire was designed. The focus of the study was to investigate autism-specific education through a wide lens rather than to perform an in-depth study into a specific aspect of autism-specific education. An expert and evaluation committee reviewed the questionnaire concerning the appropriateness of the items in terms of the literature available and alignment with the research objectives. A research methodology was developed to optimise response rates and to facilitate a standard data collection process across schools.

Approval was obtained from the Ethics Committee, Faculty Health Sciences, University of the Free State (ECUFS no 09/2013). Permission was obtained from all the relevant authorities to conduct the study at public schools within South Africa that offer autism-specific education. A pilot study was performed to determine the viability of the study, to ensure that all processes run efficiently and to achieve objectives. A key objective in the design of the measurement process was to use methodology that optimised participation of a population that was scattered nationally, to maximise return rate on questionnaires and to ensure the collection of interpretable data. The study had a response rate of 75%.

The Department of Biostatistics at the University of the Free State did the analysis and descriptive statistics were calculated. The study found that some challenges and practices are similar to global trends, but that the South African context produces unique practices and challenges. Barriers in the South African education system (e.g. variability in the quality of education and provisioning of resources) and difficulties in the implementation of inclusive education at national, provincial, district and school level seemed to significantly affect support to marginalised learners. Autism support groups play a key role in the development and expansion of autism-specific education within the South African context. Schools are taking responsibility for the development of school- and classroom-based practices within the limitations of their infrastructure, funding model and availability of specialist resources. Educators of ASD classes are pioneers in developing context-based autism-specific education practices, but they are at risk for occupational burnout due to challenges in the South African inclusive education system.

The study provided valuable information that would aid district-based occupational therapists in the design of training programmes, service standards and strategies to develop quality autism-specific education in the Motheo District.

OPSOMMING EN SLEUTELWOORDE

SLEUTELWOORDE

Praktyke en uitdagings, outisme-spesifieke onderwys, Suid-Afrikaanse openbare skole, distriksgebaseerde arbeidsterapeute

OPSOMMING

Distriksgebaseerde arbeidsterapeute werksaam in die Suid-Afrikaanse openbare onderwyssisteem speel 'n belangrike rol in die opvoedkundige ondersteuning van gestremde leerders. Leerders met Outisme Spektrum Versteurings sukkel tans om toegang te verkry tot toepaslike onderwys in openbare skole in Motheo Distrik. As 'n korttermyndoelwit om die groeiende aantal leerders met Outisme Spektrum Versteurings van onderwys te voorsien is daar gedurende 2010 outisme-spesifieke klasse by drie spesiale en twee voldiensskole in die Motheo-Distrik geskep. Huidiglik volg skole in die Motheo Distrik hul eie strategieë m.b.t. die algehele bestuur en ontwerp van outisme-spesifieke dienste en blyk daar variasie te wees in die gehalte van outisme-spesifieke onderwys. Derhalwe is die ontwikkeling van 'n konteksgebaseerde, toeganklike, toepaslike en volhoubare diensmodel van kritieke belang. Die rol van distriksgebaseerde arbeidsterapeute behels nie net die ontwerp van ondersteuningstrategieë vir die gemarginaliseerde leerders nie, maar ook die monitering van gehalte-onderrig aan leerders met Outisme Spektrum Versteurings in openbare skole.

Aangesien outisme-spesifieke onderwys 'n nuwe toevoeging is tot spesiale onderwys in die Vrystaat, is daar huidiglik nie 'n volhoubare diensmodel, opleidingsprogramme en self-moniteringsinstumente in plek vir die uitbreiding en instandhouding van gehalte- outisme-spesifieke onderwys nie. Dit was daarom nodig om te bepaal hoe ander provinsies gereageer het op die groeiende behoefte aan outisme-spesifieke onderwys en ondersteuningsdienste. Die primêre doel van die navorsingstudie was 'n ondersoek rakende die praktyke en uitdagings van Suid-Afrikaanse openbare skole wat outisme-spesifieke onderwys aanbied. Die oogmerk van die behoeftebepaling was die ontwikkeling van monteringsinstrumente, ondersteunings- en ontwikkelingstrategieë vir opvoeders en diensstrukture vir die uitbreiding van kwaliteit outisme-spesifieke onderwys in die Motheo Distrik.

Die literatuuroorsig beklemtoon dat die wêreldwye toename in die voorkoms van Outisme Spektrum Versteurings beduidende implikasies inhou vir die voorsiening van gespesialiseerde opvoedkundige dienste. Outisme-spesifieke onderwys is duur a.g.v. die hoë frekwensie van intervensie deur gespesialiseerde personeel; die uitgebreide aanpassings aan leermateriaal; intensiewe opleidingsprogramme; ondersteunende tegnologie; en individuele ondersteuningstrategieë. Internasionaal was daar 'n skuif van spesiale onderrig na inklusiewe onderwys, waar diverse leerbehoeftes in 'n gewone klaskameromgewing geakkommodeer word. Witskrif 6 (2001:5) beskryf inklusiewe onderwys in Suid-Afrikaanse skole, maar verskeie sistemiese struikelblokke in die Suid-Afrikaanse konteks bemoeilik die transformasie na 'n inklusiewe onderwysstelsel. Wêreldwyd blyk inklusiewe onderrig aan leerders met intensiewe ondersteuningsbehoeftes 'n uitdaging te wees. Daar is 'n dramatiese toename in die hoeveelheid en verskeidenheid van produkte wat bemark word vir die onderrig van leerders met Outisme Spektrum Versteurings. 'n Beduidende hoeveelheid van hierdie programme en opleidingsmodules is nie bekostigbaar, toeganklik of van toepassing in die Suid-Afrikaanse publieke onderwyskonteks nie. Die genoemde uitdagings het bygedra tot die ondersoek na praktyke en uitdagings van outisme-spesifieke onderwys in Suid-Afrikaanse openbare skole.

'n Kwantitatiewe benadering en 'n beskrywende studie-ontwerp is gebruik. Die studie het vyf navorsingsdoelwitte gehad wat gefokus het op:

(i) Die opleiding en ervaring van opvoeders van outisme spesifieke klasse;
(ii) Skoolgebaseerde bedryfstelsels;
(iii) Klaskamerpraktyke;
(iv) Outisme-spesifieke ondersteuningstrategieë; en
(v) Uitdagings en kritiese suksesfaktore van outisme-spesifieke onderwys.

Opvoeders van outisme-spesifieke klasse binne die Suid-Afrikaanse openbare sektor is gekies as die studiepopulasie. Die totale populasie van opvoeders wat voldoen het aan die insluitingskriteria het deelgeneem, aangesien die populasie te klein was vir 'n steekproef. In die afwesigheid van 'n geskikte gestandaardiseerde meetinstrument is 'n vraelys ontwerp met die doel om huidige praktyke en uitdagings t.o.v. outisme-spesifieke onderwys in Suid-Afrikaanse openbare skole te ondersoek. 'n Ekspert- en evalueringskomitee het die vraelys hersien om die toepaslikheid van die items i.t.v. die beskikbare literatuur en die navorsingsdoelwitte te verseker. 'n Navorsingsmetodologie is ontwikkel ten einde 'n hoë responssyfer en 'n standaardbenadering t.o.v. data-insameling by verskillende skole te fasiliteer. Die fokus van die studie was om outisme-

spesifieke onderwys te ondersoek d.m.v. 'n wyelensbenadering, eerder as 'n in-diepte fokus op 'n sekere aspek van outisme-spesifieke onderwys.

Goedkeuring is verkry vanaf die Etiekkomitee, Fakulteit Gesondheidswetenskappe, Universiteit van die Vrystaat (ECUFS geen 09/2013). Toestemming is ook verkry van al die betrokke owerhede om die studie uit te voer by Suid-Afrikaanse openbare skole wat outisme-spesifieke onderwys aanbied. 'n Loodstudie is uitgevoer om die lewensvatbaarheid van die studie te bepaal, om te verseker dat al die prosesse doeltreffend verloop, en dat doelwitte bereik word. 'n Belangrike doel in die ontwerp van die metingsproses was om navorsingsmetodologie te ontwikkel wat optimale deelname van die wydverspreide populasie, maksimale reaksie op die vraelyste en die insameling van interpreteerbare data te verseker. Die studie het 'n responssyfer van 75% gehad.

Die Departement Biostatistiek aan die Universiteit van die Vrystaat het die data-analise uitgevoer en beskrywende statistiek is bereken. Die studie het bevind dat sommige uitdagings en praktyke soortgelyk is aan wêreldwye tendense, maar dat die Suid-Afrikaanse konteks unieke praktyke en uitdagings produseer. Struikelblokke in die Suid-Afrikaanse onderwysstelsel (bv. variasie in die gehalte van onderwys en die voorsiening van hulpbronne) en probleme rondom die implementering van inklusiewe onderwys op nasionale, provinsiale, distrik- en skoolvlak 'n beduidende invloed het op die ondersteuning aan gemarginaliseerde leerders. Outisme-ondersteuningsgroepe speel 'n belangrike rol in die ontwikkeling en uitbreiding van outisme-spesifieke onderwys in die Suid-Afrikaanse konteks. Skole neem verantwoordelikheid vir die ontwikkeling van die skool- en klaskamergebaseerde praktyke m.b.t. infrastruktuur, befondsing en die beskikbaarheid van spesialiteitshulpbronne. Opvoeders van leerders met Outisme Spektrum Versteurings is pioniers in die ontwikkeling van konteksgebaseerde outisme-spesifieke onderwyspraktyke, maar val binne 'n hoë risikogroep vir beroepsuitbranding a.g.v. ernstige uitdagings in die Suid-Afrikaanse inklusiewe onderwysstelsel.

Die studie het waardevolle inligting verskaf wat distriksgebaseerde arbeidsterapeute in staat stel tot die ontwerp van opleidingsprogramme, diensstandaarde en strategieë ten einde gehalte outisme-spesifieke onderwys in die Motheo Distrik te ontwikkel.

CHAPTER 1

INTRODUCTION AND ORIENTATION

1.1 INTRODUCTION

Occupational therapists employed in district-based support teams within the South African public educational system play a key role in assisting disabled learners with educational support. Learners with Autism Spectrum Disorders (ASD) currently have difficulty in accessing appropriate education in public schools in the Motheo District, and the situation is no different for rest of the Free State. There has been a significant increase in the number of South African public and private facilities that offer autism-specific education over the past three years, but demand still outweighs the supply of appropriate ASD educational services. Globally, the rapid increase in the prevalence of ASD holds significant implications for current and future needs regarding autism-specific education (c.f. 2.2.6, Centres for Disease Control and Prevention 2013(3):online, Hughes *et. al.* 2011:56). The diagnostic and functional profiles of learners with ASD necessitate the need for specialised educational approaches, since conventional special needs programmes and teaching methods are not usually appropriate and accessible concerning their unique needs (Burns 2013:9).

The researcher started working at the Free State: Motheo Inclusive in February 2011. During the execution of heir clinical duties, district-based occupational therapists had difficulty finding public schools for learners with Autism Spectrum Disorders (ASD) within the Motheo District and the rest of the Free State. The Motheo Inclusive occupational therapy database retrieved 50 learners who had been awaiting access to autism-specific education (Motheo Inclusive 2013:1). The two district-based occupational therapists found it challenging to support and advise schools concerning best operational practices, since international approaches and support strategies are not always implementable in local public schools.

The design and implementation of autism-specific education services is a challenging process due to the increased ASD prevalence, expensive resources required, variability in the severity of the condition, and contextual factors. Since autism is a spectrum disorder, it implies variability in cognitive, functional, academic and clinical profiles, where symptoms may differ in nature, intensity and severity. Although learners on the autism spectrum have certain common features, these symptoms present in different and unique combinations (Burns 2013:9 and

Wagner 2011:28-29). The characteristics of the condition include constant atypical social interaction and social communication in various contexts, a restricted range of repetitive behaviours, and unusual interests. These mentioned impairments cause significant difficulty in acquiring the skills necessary for independent living (American Psychiatric Association 2013(2):31-32). The condition may also co-occur with other neurodevelopmental disorders (e.g. intellectual disability, Attention Deficit Hyperactivity Disorder, and language impairments), co-morbidities (e.g. epilepsy, mental or behavioural disorders) or other medical conditions. Categories of severity guide the type of educational service different learners may require, but individual profiles differ and dictate the level of support required (American Psychiatric Association 2013(2):31-32).

Autism Spectrum Disorders fall within the category of neurodevelopmental disorders, where symptoms manifest in early childhood and influence development in the areas of communication, social interaction, sensory processing, behaviour and functional independence (Ashburner, Rodger & Ziviani 2008:564, Brown & Dunn 2010:475 and Hughes *et al.* 2011:56). Since the condition affects a variety of developmental domains, children with ASD mainly benefit from holistic intervention in an all-encompassing educational programme. They require a collaborative, multi-professional approach to design and provide intervention strategies focused at their individualised support needs (Brown & Dunn 2010:475). Hence, the majority of learners with ASD require a specialised curriculum, therapeutic intervention and a responsive classroom setting that accommodate critical areas of development. The knowledge, attitude, skills and experience of educators concerned with autism-specific support influence classroom practices, such as creating a responsive classroom, a structured class routine, opportunities for social interaction, positive behaviour support, etc (Roberts 2007:55-60).

Educators require specialised training to improve and maintain expertise (Hanbury 2005:1-2). Internationally, there has been a dramatic increase in the quantity and range of assessment tools, training modules, education approaches, intervention strategies, teaching programmes and assistive technology marketed for educating learners with ASD (Burns 2013:9 and Hughes *et al.* 2011:59). Due to the variability of ASD, the vast range of expensive products available and variability in the scientific evidence to support the efficacy of many programmes, it is difficult to select tools that would benefit the majority of learners in a class or school (Burns 2013:9-10 and Sapona & Winterman 2002:30). According to professional experience, many of these programmes and training modules are not affordable, accessible or applicable to public schools in the Motheo District and the rest of the country.

Autism-specific education is costly due to the high frequency of intervention by specialised staff, the extensive adjustments to learning material, intensive training programmes, assistive technology and individualised support strategies (SA 2001(1):36-43). Internationally, there has also been a shift from accommodating learners in special schools to providing inclusive education, which accommodates diverse needs in an ordinary classroom setting. White Paper 6 (SA 2001(1):5) introduced inclusive education in South African schools, but various systemic barriers within the South African context complicate the transformation to an inclusive education system. Globally, the inclusion of learners with high-level support needs remains a challenge. These implementation challenges seem to be more prevelant in developing countries. Inadequate resources, poorly developed services structures, inadequate staff training programmes, funding models anf lack of enabling legislation hampers the implementation of inclusive policy (Eleweke & Rodda 2002:113).

Nationally, there are only five autism-specific schools within the public sector, and they are filled beyond capacity. These five schools are in Gauteng, the Western and Eastern Cape, and not easily accessible for learners in the Free State. In keeping with the inclusive policy, an autism-specific school is currently not a priority within the provincial operational plan (SA 2001(1):39). The private ASD-specific educational facilities (e.g. SNAP) are costly and not affordable for parents from lower income groups. As a short-term goal to provide the growing number of learners with ASD with access to education; autism-specific classes commenced in three special schools and two full-service schools in the Motheo District in 2010. External pressure from autism support groups, the Department of Health, Motheo Inclusive Education and parents instigated the development of these classes. Currently these classes are filled beyond capacity and classes have waiting lists.

The district-based occupational therapist at the time played a key role in identifying, training and assisting schools to roll out autism-specific education in established schools. The need for more autism-specific education facilities is apparent, but not at the expense of quality autism-specific education. The development of service models, training programmes for educators and auditing tools to expand and improve quality ASD education are vital considerations (Sapona & Winterman 2002:30). In collaboration with district-based support teams, schools had established the mentioned classes on an informal service model, and they had intended to improve service delivery as the programme developed. Three of the schools attended training provided by Autism South Africa and/or visited autism-specific schools in an attempt to reproduce their service models. Since autism-specific schools offer specialised education resources and facilities for learners with ASD exclusively, their practices would possibly reflect best practices within the South African context. The reality is that new autism-specific classes

are linked to established schools and therefore need to tailor fit their service within the framework of an already established resource structure and operational framework (SA 2009(4):50). Presently, schools in the Motheo District follow their own strategies regarding the overall management and design of their autism-specific service. Hence, there appears to be variability in autism-specific education and support provided within the Motheo District.

The framework and functions of the district-based occupational therapists include classroom-based, institutional, administrative as well as environmental and health support by assisting schools with capacity building, developing and monitoring of support programmes, and resource provisioning (SA 2008(3):104-105). The role of district-based occupational therapist does not only entail the design of support strategies for marginalised learners, but also the monitoring of quality support to learners with ASD in public schools (SA 2009(4):43-46). Since autism-specific education is a new addition to special needs education in the Free State, there are no sustainable service models, training programmes and self-auditing tools in place for use in the expansion and maintenance of quality autism-specific education. The development of a reproducible, accessible, applicable and sustainable service model within the South African context is critical. Hence, the researcher is interested to see how other provinces responded to the increased need for autism-specific education and how they structure ASD educational services. The primary aim of the research study entails an investigation of practices and challenges in South African public schools that offer autism-specific education with the end goal of contributing to developing tools to monitor quality education, strategies to support and develop educators and to expand quality ASD education in the Motheo District.

1.2. PROBLEM STATEMENT

Learners with ASD have difficulty in accessing education in public schools within the Motheo District. The global increase of autism prevalence rates, the variability in diagnostic profiles, the complexity of autism-specific education in inclusive settings, and challenges within the South African educational context add to this dilemma. In an attempt to increase access to autism-specific education, autism-specific classes commenced at three special schools and two full-service schools in the Motheo District in 2010. Although there is a need to create more autism-specific classes in the Motheo District, it is important to roll out a service model and monitoring tools to optimise the quality of autism-specific education. The design of sustainable, appropriate service standards and a context-based service model necessitates the consideration of practices in other South African public schools that offer autism-specific education. As the first step towards the design of management tools to expand and improve

quality autism-specific education in the Motheo District, the researcher identified the need to investigate current practices and challenges in South African public schools that offer autism-specific education. The following objectives were identified:

The first objective was to investigate the level of training and experience of educators of autism-specific classes in public schools nationally. The high level of support required by learners with ASD motivates the need for specialised training of educators.

The second objective was to investigate school-based operations concerning admission criteria and procedures of learners with ASD, extra-curricular services, therapeutic support and parent collaboration. Children with autism benefit the most from holistic intervention in an all-encompassing educational programme, which includes additional support strategies, therapeutic support and strategies to involve and collaborate with parents. Not all schools accommodate learners with ASD so exclusively, and it was aimed to investigate whether there were variability in admission criteria and procedures.

The third objective was to investigate classroom management practices in terms of the curriculum, work schedules, monitoring of learner progress as well as activity and environmental adjustments. Autism-specific education involves classroom-based support through the planning, development and monitoring of adjusted curriculums, individual support programmes and adjusted classroom support strategies. The study was aimed to investigate how ASD educators used their knowledge, skills and experience to fit the needs and individual profiles of learners with the activity, contextual and environmental demands.

The fourth objective was to investigate use of autism-specific support strategies with reference to research-based programmes, diagnostic-specific support strategies as well as assistive technology and alternative teaching strategies. Internationally, there has been a dramatic increase in the quantity and range of assessment tools, education approaches, intervention strategies, teaching programmes and assistive technology marketed for learners with ASD. The researcher wanted to investigate the use of the mentioned products in South African public schools.

The fifth objective was to investigate the aspects educators regard as challenges and critical success factors in managing learners with ASD in public schools. The diagnostic and functional profiles of learners with ASD necessitate the need for specialised educational approaches, since conventional special needs programmes and teaching methods are not appropriate and accessible concerning their unique needs. An investigation of educators'

views on challenges and critical success factors of autism-specific education would assist the researcher in developing service models that considered the views of educators within the South African inclusive education context.

1.3. PURPOSE OF THE OF STUDY

The purpose of the study will be discussed in terms of the aim and objectives:

1.3.1. Aim

The aim of the study was to investigate current practices and challenges in autism-specific education within South African public schools.

1.3.2. Objectives

The objectives for this particular study were as follows:

1.3.2.1. To investigate the level of training and experience of educators of autism-specific classes in public schools nationally.

1.3.2.2. To investigate school-based operations concerning admission criteria and procedures of learners with ASD, extra-curricular services, therapeutic support and parent collaboration.

1.3.2.3. To investigate classroom management practices in terms of the curriculum, work schedules, monitoring of learner progress as well as activity and environmental adjustments.

1.3.2.4. To investigate the use of autism-specific support strategies with reference to research-based programmes, diagnostic specific support strategies as well as assistive technology and alternative methods.

1.3.2.5. To investigate the aspects that educators had regarded as challenges and critical success factors in managing learners with ASD in public schools.

1.4. DELIMITATIONS OF THE PROBLEM

In keeping with the aim of the study, the researcher performed a survey to investigate current practices and challenges regarding autism-specific education in South African public schools. The study specifically focused on autism-specific education due to the growing number of learners with ASD who are unable to access appropriate education within the public sector. The focus of the study was to investigate autism-specific education through a wide lens rather than to perform an in-depth study into a specific aspect of autism-specific education. The study population comprised educators of autism-specific classes in autism-specific, special or full-service schools within the South African public sector.

Consequently, the study primarily reflects the views of educators directly involved with learner intervention. The project was not representative of all stakeholders directly or indirectly involved at schools. Although the importance of functional school management systems was recognised, the researcher excluded these as a key focus area in the research process. Whole School Assessment and Quality Assurance use appropriate audit tools to assess school management systems (SA 2001(1):3-12).

The study was limited to the public sector and did not provide a comprehensive overview on approaches and service models used in the private sector. The researcher operates in the public sector and the end goal of the study was to develop tools to monitor quality education, strategies to support and develop educators and to expand quality ASD education in the Motheo District. The resources, research-based educational approaches and intervention programmes often used in private schools may not be accessible or relevant for use in public schools.

The researcher is a district-based occupational therapist and therefore selected components of autism-specific education that would be relevant to her work plan and scope of practice. The focus of district-based occupational therapists is to assist with teacher training, to screen, identify, assess and support marginalised learners and to assist learners with access to appropriate education and support (SA 2009(4):43-45).

Leedy and Ormrod (2013(2):5-6) define assumptions as underlying conditions that are commonly supposed, believed or accepted. These conditions are usually untested, basic values, or worldviews that are self-evident. The researcher has a number of own assumptions that are key to the project and that require brief discussion (Leedy & Ormrod 2013(2):6) The dramatic increase in the number of learners who require autism-specific education has

influenced the quality and variety of services available for learners with ASD over the past two to three years. Hence, variability in terms of the resources and level of specialised skills of educators is assumed, since not all schools cater exclusively for learners with ASD. The challenges in the broader South African educational and socio-economic context may impact on special needs education. The national policy and strategic plans, the availability of educational resources (financial, human, infrastructure) and systemic challenges (managerial, institutional and administrative) were assumed to influence service delivery in education.

South African schools are in a transformation process to an inclusive education system (SA 2009(4):1-5) and the researcher assumed that the educational system, resources and operational procedures would differ from developed countries such as the USA and those in Europe. The researcher assumed that all public schools are aware and supportive of national inclusive policy but that implementation is still in a process. Nationally, there is a need for more autism-specific education facilities and it was presumed that reasonable research projects, that could contribute to the expansion of appropriate education to learners with ASD, would be supported by the Department of Education and resource centres / special schools (SA 2009(4):50). All participants, as educators of ASD classes, would be literate and able to complete questionnaires.

1.5. METHODOLOGY

A quantitative approach and a descriptive study design were used. Educators of autism-specific classes within the South African public sector were selected as the study population, since they are primarily responsible for the achievement of learning outcomes and compilation of individual support plans for learners in their class. The total population of educators who fitted the inclusion criteria was surveyed, since sampling was not appropriate for the small research population.

In the absence of an appropriate standardised measurement tool, a questionnaire was designed to investigate current practices and challenges regarding autism-specific education in South African public schools (Knobel & Lankshear 2006:161). An expert and evaluation committee reviewed the questionnaire concerning the appropriateness of the items in terms of the literature available and alignment with the research objectives. The focus of the study was to investigate autism-specific education through a wide lens rather than to perform an in-depth study into a specific aspect of autism-specific education.

The questionnaire focused on demographical information, operational practises, classroom support strategies, diagnostic specific support and specialised interventions to reflect current practices and challenges in autism-specific education nationally. The questionnaire was compiled from relevant literature (Leedy & Ormrod 2013(2):196-200) regarding autism-specific education, national policies on special needs education as well as clinical expertise of district-based occupational therapists. The questionnaire was pre-tested on a small sample of participants from the intended population (pilot study) to anticipate problems of comprehension or accessibility of the questionnaire (Walliman 2006:282).

Regional representatives (occupational therapists) assisted with the distribution and collection of questionnaires from participating schools. The information letters were forwarded (e-mail/post/fax) to all participating schools to encourage educators to participate and to provide opportunity for questions prior to participation in the project. Telephonic contact was made with principals to schedule an appointment, during which the regional representatives could collect data from the participating educators. Representatives collected the data in accordance to the data collection guidelines.

Descriptive statistics, namely frequencies and percentages for categorical data and means and standard deviations or medians or percentiles for continuous data, were calculated by the Department of Biostatistics, Faculty of Health Sciences, UFS. The results were interpreted and recommendations and conclusions were made in accordance to the findings.

1.6. THE IMPORTANCE AND VALUE OF THE STUDY

Cohen, Manion and Morrison (2007:81) suggest that the audience and recipients of research need to be an important consideration in determining the value of the study. The study intended to have benefits for Motheo Inclusive, but other districts may also utilise the information and recommendations from the study in order to develop, expand and improve autism-specific education and support to educators. The research results provided valuable contextual information in the development of a service model, management tools and operational systems to improve the efficiency of autism-specific education in the Motheo District. A structured service model with a regional, autism-specific footprint may also set the landscape to expand specialised education for learners with autism within the district and to the rest of the Free State. The project may also deliver a valuable contribution in other settings.

Developing the role of the district-based occupational therapist in the Directorate Inclusive Education: Occupational therapists are not only able to contribute to clinical support at school-based level, but have the practice framework to contribute to the development of context-based support strategies and management systems at district level (American Occupational Therapy Association 2008:629).

The researcher is of the opinion that occupational therapists have the skills framework to play a key role in supporting educators of ASD classes with curriculum differentiation. The elements of curriculum differentiation include activity analyses, adjustment of tasks to set appropriate challenges for learners, and the use of the environment as a teaching and therapeutic milieu. These mentioned elements appear to link well with occupational therapy intervention approaches (American Occupational Therapy Association 2008:657-659).

Provide an overview on the uniqueness of autism-specific education within the public sector: The researcher has not been able to find any other study of this kind within her literature search and research exploration (South African Journal of Occupational Therapy 2012:online). The study provides a comprehensive overview on the unique contextual issues and practices concerning autism-specific education in South Africa. The results indicated the current use of programmes, approaches, additional support and operational models within the public sector. Theoretical frameworks describe textbook educational strategies and programmes, but the study provided insight into the practical implementation of these strategies within the context of public schools. This information will be invaluable in the design of appropriate autism-specific service models in the public sector (SA 2008(3):104-105).

Create a platform to advocate the rights of learners with ASD to basic education: The study created a platform to communicate current challenges and needs regarding autism-specific education to key role players within the Department of Education. Currently curriculum-related issues are the primary focus within education settings and the study will create an opportunity to focus on the education needs of a disadvantaged group of learners.

Personal value: The study improved the researcher's knowledge on autism-specific education. This knowledge would be utilised in the expansion of quality autism-specific education in Motheo District.

1.7. ETHICAL CONSIDERATIONS

In keeping with the obligation to professional ethics prescribed by the Health Professions Council of South Africa, the Occupational Therapy Association of South Africa as well as the University of the Free State, the following relevant ethical obligations were adhered to: approval; responsibilities towards participants; and commitment to professional ethics (Health Professions Council of South Africa 2008:1-11).

Approval was obtained from the Ethics Committee, Faculty Health Sciences, University of the Free State (ECUFS no 09/2013). The Free State, Directorate: Strategic planning, Policy and Research also approved the study. The researcher obtained permission from school management teams and school governing bodies of the participating schools to conduct research at their facility (Mouton 2009:241-243). Educators voluntarily agreed to participate in the research study by completion of the questionnaire (Cohen *et al.* 2007:55).

1.8. OUTLINE OF CHAPTERS

The dissertation consists of six chapters, arranged as follows:

Chapter 1 – Introduction and orientation: This chapter provides background and a short introduction to the study. The problem statement is declared and the purpose of the study discussed in terms of the aim and objectives. The researcher describes the scope, value, methodology and ethical considerations of the study.

Chapter 2 – Literature overview: The literature review discusses literature relevant to the study through three phases, namely: issues related to autism spectrum disorders; autism-specific education in inclusive settings; and an overview on education within the South African context.

Chapter 3 – Research methodology: This chapter focuses on the details of research methodology. The study follows a quantitative approach with a descriptive study design. The discussion on methodology includes the study designs, population, sampling, obstacles in the study, data collection, pilot study, data analysis, error of measurement and ethical aspects.

Chapter 4 – Presentation of results: This chapter presents the results obtained from the research questionnaire in the form of tables and figures with brief summaries of the findings.

Chapter 5 – Discussion of results: This chapter discusses, interprets and compares the research results presented in Chapter 4 with the literature presented in Chapter 2. The discussion aims to identify practices and challenges of autism-specific education in South African public schools against the backdrop of global trends, as well as the unique education context in South Africa.

Chapter 6 – Conclusions and recommendations: Chapter 6 discusses the limitations, conclusions and recommendations of the study. A critical overview on the research process reveals suggestions for follow-up research and changes to similar research studies. The researcher also provides recommendations for implementing the results in the design of operational systems, resources and educator training regarding autism-specific education in the Motheo District.

1.9. SUMMARY

Chapter 1 discussed the introduction, study aim and objectives, value of the study and the research process followed. The following chapter provides a comprehensive literature review regarding relevant aspects of autism spectrum disorders; key components of autism-specific education; research-based autism-specific interventions; and support strategies and the transformation to an Inclusive education system within the South African context.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Chapter 1 highlighted a number of factors that affect the provision of quality autism-specific education, namely the significant increase in ASD prevalence that consequently raises the demand for autism-specific education; the complexity of ASD education; and challenges of expanding quality ASD education within the South African education context. Globally, there is an increase in educational approaches to enhance the inclusion of learners with ASD in educational settings. Nevertheless, global ASD educational trends are not always relevant, accessible and implementable in South African public schools.

The literature discussions in Chapter 2 follow in three phases, namely an overview on Autism Spectrum Disorders (2.2); autism-specific education (2.3); and the South African context (2.4). Since the relevance of this project to occupational therapy may be a concern, the last phase of the literature discussion will also refer to the emerging role of occupational therapists in district-based support teams. The project aims to view ASD education through a wide lens and the literature study considers a broad spectrum of issues, rather than an in-depth investigation of specific aspects.

2.2 OVERVIEW ON AUTISM SPECTRUM DISORDERS

The first phase in the literature review provides an overview on the complexity of ASD and how healthcare, social and other systemic barriers affect access to autism-specific education. The discussion includes the following:

2.1.1 Changes proposed by the DSM-5 and the possible impact;
2.2.2 Concerns regarding the possible impact of the DSM-5;
2.2.3 Diagnostic tools;
2.2.4 The patho-physiology of ASD;
2.2.5 Causes of ASD;
2.2.6 Prevalence of ASD;
2.2.7 Treatment and intervention;

2.2.8 Early identification and interventions;
2.2.9 Medication and alternative approaches;
2.2.10 Prognosis; and
2.2.11 Cost of treatment and care.

A discussion on the new diagnostic criteria (American Psychiatric Association 2013(2):50-51) was included in the literature review due to the following reasons:

i) The DSM is used as the framework for the discussion of ASD characteristics and the implications for education;

ii) The new diagnostic criteria is a burning issue in ASD public and professional forums;

iii) The latest research concerning ASD is reflected in the DSM-5; and

iv) The new criteria may impact on school-based operations since schools are currently using the DSM-IV as a clinical guide.

The Diagnostic and Statistical Manual of Mental Disorders (DSM) is a global authoritarian guide to the diagnoses of mental disorders and assists clinicians to determine the level of support learners require (Kupfer 2013:online). Schools have admissions criteria (which include diagnostic criteria) to ensure that they only admit learners who would benefit from the scope of the services offered (Ladbrook 2009:49-50).

2.2.1 Changes proposed by the DSM-5 and possible impact

The American Psychiatric Association's Annual Meeting released the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) in May 2013 (Kupfer 2013:online). In many ways the DSM-5 has not changed from the previous edition, but these changes are still driving heated debates (Compart 2012:online).

The previous edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) referred to Autism Spectrum Disorders as Pervasive Developmental Disorders. Pervasive Developmental Disorders had three main categories of impairment: social interaction, communication skills and the presence of stereotyped behaviour, interests, and activities. The condition included five sub-groups of disorders, namely: Autistic Disorder; Asperger's Syndrome; Rett's Disorder; Pervasive Developmental Disorders Not Otherwise Specified (PDD-NOS); and Childhood Disintegrative Disorder (American Psychiatric Association 2000(1):69-70). These five disorders varied in onset, severity, developmental course and functional prognosis. Variability occurred within each of these specific diagnostic groups. The

presence of other neurological deficits, e.g. epilepsy, intellectual impairment and attention deficit disorders (Centres for Disease Control and Prevention 2007(1):online), complicated clinical profiles.

The general approach of the DSM-5 was to streamline and simplify the diagnostic criteria of ASD, to develop measures to assess the severity of symptoms, to identify the range of problems associated with the condition (Kupfer 2013:online) and to accommodate current research (Compart 2012:online). The DSM-5 introduced five major changes, namely:

i) The deletion of the term Pervasive Developmental Disorders and the five subgroups;

ii) Reduction to two impairment categories in ASD;

iii) Inclusion of sensory behaviours;

iv) A single spectrum, but recognition of individual variability; and

v) Early onset and identification of symptoms (American Psychiatric Association 2013(2):50-51, Kaufmann 2012:online).

These proposed changes and the possible impact on autism-specific education led the following discussion:

(i) <u>Deletion of the term Pervasive Developmental Disorders and the five subgroups:</u>

An all-encompassing term called Autism Spectrum Disorder replaced the five subgroups of Pervasive Developmental Disorders (described in the DSM-IV). The term Pervasive Developmental Disorders is no longer used, and ASD falls within the category of neurodevelopmental disorders (American Psychiatric Association – DSM-5 Task Force 2013 (2):50). Kaufmann (2012:online) indicates that the DSM-IV (1994) introduced the terms Asperger's Syndrome, Rett's Disorder Childhood Disintegrative Disorder, and Pervasive Developmental Disorders Not Otherwise Specified, and questions the validity of some of these diagnostic groups.

Public and professional critics consider the removal of the diagnosis of Asperger's Syndrome and PDD-NOS as a major change (Autism Speaks 2013(b):online, Baird 2013:online and Compart 2012:online). The neurodevelopment task team, targeted to develop diagnostic criteria for ASD, indicates that there is inadequate scientific evidence to validate a clear distinction between Asperger's Syndrome and high functioning ASD (Baird 2013:online). Several research studies (Ehlers & Gillberg 1998:79-106 and Klin & Volkmar 2000:25-71) have attempted to resolve the distinction between high functioning autistic disorder and Asperger's

Syndrome. A large empirical systematic review performed by Dissanyake and Macintosh (2004:421-422) used cluster analyses and comparative reviews to compare the results of individuals from both diagnostic groups in the following developmental domains: language and communication; cognition and neuropsychological profiles; motor skills; etiological and biological factors; onset and prognosis; restricted and repetitive behaviours; and social interaction. The comparative research indicated few distinctions between Asperger's Syndrome and High Functioning Autism and showed significant similarities in associated features. The conclusion of the study was that there is not sufficient evidence to distinguish Asperger's Syndrome from Autistic Disorder, and these disorders are on a continuum. The researcher therefore uses the terms mild/high functioning ASD for the purposes of the study.There are researchers who argue that Asperger's Syndrome should exist as a separate disorder in the absence of conclusive research. The disorder also shares characteristics with schizoid personality disorder and non-verbal learning disability that require further investigation (Ehlers & Gillberg1998:79-106, Dissanayake & Macintosh 2004:434 and Klin & Volkmar 2000:25-71).

(ii) Reduction to two impairment categories in ASD:

The DSM-5 reduced the three impairment categories of the DSM-IV to two main areas of impairment: social communication and interaction as well as restricted, repetitive patterns of behaviours, interests and activities. The DSM-5 does not change the description, but recognises that it is challenging to distinguish social and communication difficulties in practice and consequently it is more efficient to combine these categories. A delay in language development is no longer a requirement for diagnosis (Baird 2013:online and Compart 2012:online). Kaufmann (2012:online) compared the DSM-IV and DSM-5 (as seen in Figure 2.1) to indicate the structural changes and other changes.

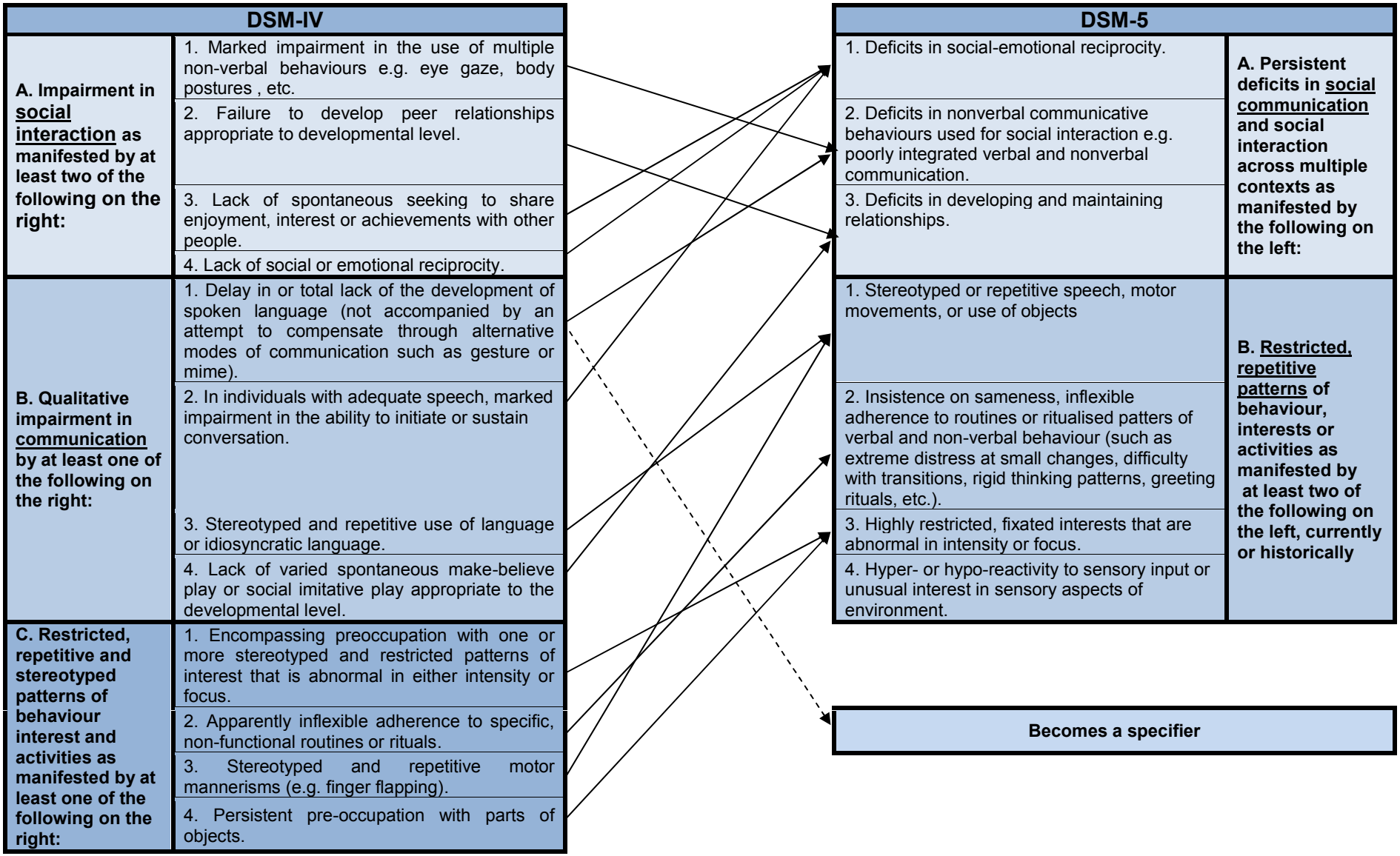

Figure 2.1. A comparison between the DSM-IV and DSM-5 to indicate the impact of structural and other changes (adapted from Kaufmann 2012:online)

(iii) Inclusion of sensory behaviours

The descriptors for "restricted, repetitive patterns of behaviours" in the DSM-5 include sensory behaviours. Sensory processing (Miller 2013:online) falls within the specialist field of occupational therapy and positions them as role players in professional teams responsible for autism-specific programmes within school- and district-based settings.

(iv) Single spectrum but recognition of individual variability

The focus of the diagnosis changed from providing a diagnosis to determining individualised needs and the impact of the condition on the individual's life. A continuum indicates the symptoms and behaviours of individuals with ASD and allows clinicians to indicate individualised variations (American Psychiatric Association 2013(2):online). The DSM-5 introduced specifiers (Baird 2013:online) that assist clinicians in the identification of the level and areas of functional domains for individual support. The levels of severity and complexity of symptoms determine the level of support required by the individual (American Psychiatric Association 2013(2):52-53). The diagnosis for ASD will now specify Level 1 (requiring support), Level 2 (requiring substantial support) or level 3 (requiring substantial support). Table 2.1 summarises the revised diagnostic criteria proposed by the DSM-5 and Table 2.2 describes the different levels of support.

The inclusion of the following ASD specifiers may also assist in describing individualised difficulties. The descriptive information encompasses: with or without accompanying intellectual or language impairment; being associated with a known medical or genetic condition or environmental factor; being associated with another neurodevelopmental, mental or behavioural disorder; and with catatonia (American Psychiatric Association 2013(2):52-53). The individualised approach of the DSM-5 may assist district-based teams in their decision making regarding school placements as well as the design of individual support plans.

(v) Early onset and indication of symptoms

The DSM-5 criteria promote early identification of ASD (Baird 2013:online) but also accommodate individuals whose symptoms present within the context of increasing social demands. ASD symptoms must be present from early childhood, even if it is only recognised later (American Psychiatric Association 2013(2):online).

Table 2.1 Summary of the diagnostic criteria for ASD as proposed in the DSM-5 (adapted from Kaufmann 2012:online)

ASD Diagnostic Criteria:
Currently, or by history, must meet criteria A, B, C, and D: **A. Persistent deficits in social communication and social interaction across contexts, not accounted for by general developmental delays, and manifested by all 3 of the following:** Deficits in social-emotional reciprocity. Deficits in nonverbal communicative behaviours used for social interaction. Deficits in developing and maintaining relationships. **B. Restricted, repetitive patterns of behaviour, interests, or activities as manifested by at least two of the following:** Stereotyped or repetitive speech, motor movements, or use of objects. Excessive adherence to routines, ritualised patterns of verbal or nonverbal behaviour, or excessive resistance to change. Highly restricted, fixated interests that are abnormal in intensity or focus. Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of environment. **Current severity needs to be specified according to the summary in Table 2.2.** **C. Symptoms must be present in early childhood, (but may not manifest completely until social demands exceed limited capacities).** **D. Symptoms together limit and impair everyday functioning.**

Table 2.2 Severity levels of ASD and support required (adapted from American Psychiatric Association 2013(2):52)

Severity level	Social communication	Restricted, repetitive behaviours
Level 1 ***Requiring support***	Without support structures, deficits in social communication are noticed. Difficulty initiating social interaction with practical examples of atypical and failed responses to social contact initiated by others. Appears to have reduced interest in social interaction.	Rigidity of behaviour leads to significant interference with functioning in various contexts. Difficulty changing between activities. Planning and organisation difficulties affect independence.
Level 2 ***Requiring substantial support***	Marked deficits in verbal and nonverbal communication skills and evident social impairments even with support structures. Limited initiation of social interaction. Reduced or atypical responses to social approaches or interaction initiated by others.	Rigid behaviour, difficulty in adjusting to change and other restricted / repetitive behaviours are repeatedly to be noticed by a casual observer and affect functioning in different contexts. Distressed at and/or trouble with shifting focus or action.
Level 3 ***Requiring substantial support***	Severe deficits in verbal and nonverbal communication skills that leads to severe functional impairments. Very limited initiation of social interaction. Minimal responses to social approaches or interaction initiated by others.	Rigid behaviour, difficulty in adjusting to change and other restricted / repetitive behaviours markedly affect functioning in all spheres. . Marked distress and/or trouble shifting focus or action.

Concerns regarding the possible impact of the DSM-5 will be discussed next.

2.2.2 Concerns regarding the possible impact of the DSM-5

Critics are concerned that a change in diagnosis may threaten access to certain healthcare services, social benefits and schools (Lopatto 2012:online). Individuals previously diagnosed with the mentioned pervasive developmental disorders would still meet the criteria for ASD in the DSM-5 or possibly another more accurate diagnosis. Individuals currently diagnosed with Asperger's Disorder will keep this diagnostic classification. However, future cases would be diagnosed with Autism Spectrum Disorder (Baird 2013:online).

Critics are also concerned about possible under- or over-diagnosis and therefore the consequent impact on ASD prevalence (Lopatto 2012:online). A re-examination of 4 453 case records of children previously diagnosed through the use of the DSM-IV was used to determine the efficiency of DSM-5 criteria in identifying children with ASD (Bisho, Duncan, Huerta, Hus & Lord 2012:1056). The review of these case records included 690 children diagnosed with other conditions, e.g. language disorders. The research results indicated the use of the DSM-5 reduced incorrect diagnoses and that the DSM-5 identified 91% of those diagnosed with ASD on the DSM-IV. The children who lost their diagnoses did not present with severe social impairments, which is a diagnostic requirement for ASD. These results are positive in the light of increasing concern that inefficient diagnostic criteria may inflate the already increased prevalence of ASD (Bisho *et al.* 2012:1056).

The researcher suspects that the changes in the DSM criteria would not have an immediate effect on autism-specific education in South African public schools. Learners currently benefiting from or on waiting lists for special schools would not be disadvantaged by these changes. Previous discussions highlighted that the new diagnostic criteria would not exclude learners previously diagnosed according to DSM-IV criteria (Baird 2013:online). Although the DSM-5 plays a key role in the initial diagnosis, it usually does not outline educational activities a learner would receive (American Psychiatric Association 2013(2):online). Nevertheless, district- as well as school-based support teams require training to ensure appropriate advice and counselling to schools and parents. The researcher is also of the opinion that the impact of the proposed changes would be communicated via relevant support groups, e.g. Autism South Africa.

2.2.3 Diagnostic tools

Although inclusive policy tries to move away from rigid categories of disability, the complexity and severity of barriers to leaning remain a concern in the education of learners with high level support needs (SA 2001(1):9-10). Formal diagnosis needs to be done via a medical specialist (Centres for Disease Control and Prevention 2013(3):online). Within the South African context, referral to neurodevelopmental and psychiatric clinics in the public sector poses challenges, since waiting lists are long. School- and district-based support teams make use of diagnostic tools to assess the severity of symptoms and to get a baseline for referral and admission to special schools (2008(3):35-46).

Centres for Disease Control and Prevention (2013(3):online) indicate that screening tools assist in the identification of developmental delays, but do not offer sufficient evidence for a formal diagnosis. The characteristics of the child, the psychometric properties, sensitivity and purpose of the tool influence the selection of a screening tool. The American Paediatric Association (American Academy of Paediatrics 2006:410-413) does not endorse the use of any screening tools. However, they state that clinicians use the following screening tools frequently: Autism Behaviour Checklist (ABC); Autism Screening Instrument for Educational Planning (ASIEP); Pervasive Developmental Disorder Screening Test – Second Edition (PDDST); Autism Spectrum Quotient – Child Version (ASQ); the Autism Spectrum Screening Questionnaire (ASSQ); Gilliam Autism Rating Scale – Second Edition (GARS); and the Asperger's Syndrome Diagnostic Scale (ASDS).

Diagnostic tools commonly include observations by professionals and the descriptions of the parents/carers concerning the child's behaviour (Centres for Disease Control and Prevention 2013(3):online). The following diagnostic tools are commonly used: Autism Diagnosis Interview – Revised (ADI-R); Autism Diagnostic Observation Schedule – Generic (ADOS-G); Childhood Autism Rating Scale (CARS); and the Gilliam Autism Rating Scale – Second Edition (GARS-2). A systematic review (Anderson, Falkmer, Falkmer & Horlin 2013:329) considered the utility, accuracy, validity and reliability of ASD diagnostic tools, and indicated the ADOS-G and the ADI-R as gold standard diagnostic procedures. The current study investigated the use of the screening and diagnostic tools in South African public schools.

The following discussion focuses on the neurophysiological explanation of the symptoms described in the diagnostic criteria.

2.2.4 Pathophysiology of Autism Spectrum Disorders

Currently, ASD does not have a collective mechanism at either molecular, cellular or systems level that guides clear diagnostic categories (Tager-Flusberg 2010:online). The condition appears to be the result of complex developmental factors that affect functional brain systems as well as disturbances in the timing of brain development (American Psychiatric Association 2013(2):56-57). Many children with autism also have comorbid conditions which involve the peripheral nervous, immune, gastrointestinal and energy production systems. This raises suspicion that autism is not purely a central nervous system condition, but rather a systemic disorder (Brimacombeb, Chaaban, Wagner, Xue & Zimmerman-Bier 2008:6-13). Efficient neurodevelopment depends on a balanced immune response, and irregular immune activity during critical stages of neurodevelopment may also contribute to the mechanism of some types of ASD. Although there is evidence of links between immune disturbances and autism, the relationship remains unclear. Research in neurochemistry indicates that individuals with ASD have abnormal levels of serotonin and other neurotransmitters in the brain (Posey, Macdougle, Stigler & Sweeten 2009:840).

Neuroanatomical studies suggest alternations of brain development soon after conception (Donald & Happe 2006:1218-1220). Environmental factors seem to influence these pathological neurodevelopmental processes (Casanova 2007:422-433). The brains of children with ASD appear to grow faster after birth, followed by slower growth later in childhood. The hypothesis of the pathological overgrowth describes a process where there is an overload of neurons that causes local over-connectivity in key brain areas, followed by disturbed neural migration in early development (Donald & Happe 2006:1218-1220). Post-mortem studies showed evidence of atypical patterns of cortical thickness and grey matter in the primary and secondary sensory cortices. This pathological mechanism includes unbalanced excitatory-inhibitory networks and disrupted synaptic development, which contributes to comorbidities such as epilepsy (Geshwind 2009:37-380 and Rezaie & Schmitz 2008:4-11).

A research report by Wass (2011:18-28) indicates that there is over-connectivity of short fibre tracts that become overused. This theory possibly describes the stereotypical, non-purposeful behaviours observed in individuals with ASD.

Research by Anderson and colleagues (Anderson *et. al.* 2001:1134-1146) supports the theory of under-connectivity where the long fibres in the brain that process and complex information across the brain are not developing typically. Evidence for this theory has been found in functional neuro-imaging and brainwave studies, which showed weak functional connections

between the frontal lobe and the rest of the cortex, as well as over connectivity in cortex of adults with ASD (Cherkassky, Just, Keller & Minshew 2007:951-961). Other evidence indicates under-connectivity within each hemisphere of the cortex, which suggests ASD to be a disorder of the association cortex (Minshew & Williams 2007:945-950).

Burns (2013:9) indicates that the results from functional brain imaging have implications for autism-specific education. Autism-specific education is characterised by individualised, one-on-one programmes to accommodate the unique needs of learners. However, the new neuroscience research implies that the observed behaviours and learning problems in learners with ASD are more unique than variable (Burns 2013:10-11). The repetitive behaviours observed vary from child to child, but have the same underlying problem: over-connectivity in short fibre activity disrupts the long integrative pathways required for learning. Individuals with ASD can become outstanding in an isolated skill due to excessive repetition in the absence of integration. Wass (2011:18-28) indicates that learners with ASD enter the school system with most of their long, integrating fibres under-developed, and incoming information diverts into circular paths of unending routes. Learners with ASD therefore do not benefit from traditional educational approaches since they do not process information efficiently. Interventions that develop long fibre interactive tracts appear to have the best long-term effect (Wass 2011:18-28). The University of California has been developing and revising a computer program (Fast forWord®) to stimulate the development of the long left hemisphere fibres responsible for acquiring reading, mathematics and writing. The efficacy of this program requires more research (Burns 2013:9). This program is currently not available in South Africa.

Although functional brain imaging assists in the identification of functional and anatomical differences in the brains of learners with ASD, the causes of these changes require investigation (Centres for Disease Control and Prevention 2012(2):online). Centres for Disease Control and Prevention in the USA indicate that the key to understanding the causes of ASD possibly lies within an understanding of the risk factors involved (Centres for Disease Control and Prevention 2012(2):online).

2.2.5 Causes of Autism Spectrum Disorders

There is currently no single cause for autism and both genetic and environmental factors contribute to the mechanism of the condition. Environmental influences do not appear to cause or prevent autism by itself, but seem to increase risk in genetically predisposed individuals (Buxbaum 2009:35-43).

Twin and family studies confirm the possibility of a genetic predisposition to autism. Identical twin studies indicate that if one twin is affected, chances are approximately 90% the other twin will also have the condition (Dawson 2008:805). Families with one child with ASD have a possible risk of 5% (or one in 20) of having a second child with the disorder, which is a higher risk than for the general population. Relatives of children with ASD may show mild impairments in social and communicative skills or engagement in repetitive behaviour (Centres for Disease Control and Prevention 2012(2):2). Approximately 10% of children with ASD have a particular genetic, neurological or metabolic disorder (Boyd, Humphreys, Odom & Sam 2010:77) e.g. Fragile X Syndrome, Tuberous Sclerosis, Down's Syndrome and other chromosomal disorders.

A number of genetic studies suggest that emotional disorders, such as bipolar disorder, occur more frequently in the families of people with ASD. Many people diagnosed with ASD also appear to struggle with attention deficit hyperactivity disorder (ADHD), depression and fluctuating mood (Gillberg, Rastam, Soderstrom & Stahlberg 2004:891). The largest genetic study of neurodevelopmental and psychiatric disorders found shared genetic risk factors amongst autism, ADHD, schizophrenia, major depression and bipolar disorder. These researchers studied genetic information on more than 60 000 people of mostly European descent. The results showed that mutations in four distinct genetic areas were significantly more evident in people with any of these five disorders. Two of these mutations were in genes that seem to be involved in balancing calcium levels in the brain, which plays a role in communication between cells (Cross-Disorder Group of Psychiatric Genomics Consortium 2013:1371).

Genetic factors strongly appear to affect the risk for developing autism, but the sudden increase in the prevalence of the condition raises suspicion for the influence of environmental factors. Environmental risk factors refer to non-genetic influences such as maternal health, birth complications, nutrition as well as exposure to toxins (Autism Speaks 2013(a):online). Maternal influenza associated with prolonged episodes of fever and the use of various antibiotics appears to be potential risk factors for ASD (Atladóttir, Henriksen, Schendel & Parner 2012:online). Children born to older parents are at slightly higher risk. A study by Kong and Colleagues (Besenbacher, Frigge, Kong & Masson 2012:online) indicates the significance of a father's age concerning genetic mutations that can result into ASD and schizophrenia. Children who are born prematurely or with low to very low birth weights showed a small risk for developing ASD. The taking of harmful drugs such as thalidomide and valproic acid during pregnancy has also been indicated as a possible risk factor (Office of Autism Research Coordination- Interagency Autism Coordinating Committee 2012:16-18). The childhood

vaccine hypotheses lack convincing scientific evidence, but many parents still believe that their child was typically developing until vaccinated (Centres for Disease Control and Prevention 2012(2):online, Croen, Daniels & Newschaffer 2007:242).

Herbert (2012:online) refers to the sum of the impact of environmental factors as “Total Load”. Years of toxic exposures – including malnutrition, severe stress, chemical exposure, etc. – affect metabolism. Depending on current lifestyle and genetic predisposition, chronic illnesses may develop, e.g. autoimmune conditions, cancer, diabetes, etc. Chronic conditions often have common underlying problems such as deficits in energy production in the mitochondria, oxidative stress, and inflammation (Ataíde, Borges, Diogo, Garcia, Grazina, Marquess, Miguel, Oliveira & Vicente 2005:185). A resent meta-analysis study explored a possible link between mitochondrial disorder and ASD, since basic cellular abnormality may produce a range of deficits in various body systems. The study indicated that about 5% of children with ASD have classical mitochondrial disease and that 72% to 80% of children presented with some form of mitochondrial dysfunction (Ataíde *et al.* 2005:185). The cause for the mitochondrial dysfunction is uncertain since only 23% of children with both ASD and Mitochondrial Disease present with mitochondrial DNA abnormalities (Frye & Rossignol 2010:290). The “Total Load” theory indicates that parents can reduce the total load of environmental factors by leading healthy lifestyles (nutrition, adequate sleep, exercise, etc.), avoidance of exposure to chemicals and populated environments, etc. Although these factors could not prevent autism as such, it helps to decrease the total load of possible risk factors that may activate a genetic predisposition (Herbert 2012:online).

The causes and risk factors for ASD do not directly affect autism-specific education. However, the focus of occupational therapists in South African education settings has shifted from only focusing on the clinical needs of learners within school-based and district-based settings to the empowerment of communities through healthy lifestyle choices (Anderson, Fisher, Flack, Greenhough, Kendal, Shadwell & Sonday 2012:5-6).

2.2.6 Prevalence of Autism Spectrum Disorders

Centres for Disease Control and Prevention in the USA monitor the prevalence of ASD through the Autism and Developmental Disability Monitoring (ADDM) Network (Centres for Disease Control and Prevention 2013(3):online). ADDM Network reports indicate that nearly five times as many boys are diagnosed with ASD compared to girls (one in 42 compared to one in 189). Hispanic children (110%) and black children (91%) showed the largest increase in prevalence rates for 2002-2008. Greater awareness and improved identification amongst these groups

possibly contributed to the increased prevalence. Nevertheless, all racial and socio-economic groups show an increase in the diagnosis of ASD. On average, the diagnosis for moderate to severe autistic disorder is earlier (four years) compared to the diagnosis of Asperger's disorder / high functioning ASD (six years and two months) (Centres for Disease Control and Prevention 2013(3):online).

Epidemiological reports from the ADDM Network (Centres for Disease Control and Prevention 2013(3):online) estimate that one in every 68 children in the USA (14.7 per 1 000) fall on the autism spectrum. Table 2.3. provides a summary of the combined prevalence rates from 2002-2010 in the USA. Fombonne (2003:35-64) indicates three possible contributing factors to the increased ASD prevalence, namely changed diagnostic criteria (as introduced by the DSM-IV), increased public and professional awareness as well as tendencies where a diagnosis is required to access public support. Two primary factors appear to have contributed to the increased ASD prevalence in California, USA:

i) More children are diagnosed early in life;

ii) Increase in the diagnosis of children on the milder side of the spectrum (Boyd *et al.* 2009:90).

Nevertheless, the assessment of whether or not there is a true increase in the incidence of ASD is complex, since methodological differences across studies need to be controlled tightly (Centres for Disease Control and Prevention 2013(3):online and Hughes *et. al.* 2011:56).

Table 2.3 Prevalence of ASD as indicated by the ADDM Network 2000-2010 (Centres for Disease Control and Prevention 2013(3):online)

IDENTIFIED PREVALENCE OF AUTISM SPECTRUM DISORDERS ADDM Network 2000-2008 (Combined data from all sites)				
Surveillance Year	**Birth Year**	**Number of ADDM Sites Reporting**	**Prevalence per 1,000 Children (Range)**	**Estimate**
2000	**1992**	**6**	**6.7 (4.5-9.9)**	**1 in 150**
2002	**1994**	**14**	**6.6 (3.3-10.6)**	**1 in 150**
2004	**1996**	**8**	**8.0 (4.6-9.8)**	**1 in 125**
2006	**1998**	**11**	**9.0 (4.2-12.1)**	**1 in 110**
2008	**2000**	**14**	**11.3 (4.8-21.2)**	**1 in 88**
2010	**2002**	**11**	**14.7 (14.3-15.1)**	**1 in 68**

The Autism South Africa Annual Report 2011-2012 estimates that the application of these prevalence rates to the South African population would be that 11 198 children born yearly in South Africa would develop ASD. This further implies 933 new cases of ASD monthly in South Africa (Autism South Africa:Executive Committee 2012:3). Research by Autism South Africa and Prof L Jacklin (Jacklin in Autism South Africa:Executive Committee 2012:3) in 2010 indicate that less than 1% of children with ASD in South Africa receive any form of formal education. Dr DJ Griessel from the Department of Paediatrics: University of the Free State (Griessel 2012, pers. communication November 2012), an expert in the field of autism, indicated that although no formal ASD prevalence studies have been done in the Free State, a sharp increase of new diagnoses has been reported. He also reported that prevalence studies are challenging in the Free State due to the limited healthcare resources and appropriately trained clinicians in low socio-economic and rural settings. Healthcare workers are encouraged to develop research networks and databases to efficiently record and monitor learners diagnosed with ASD.

A total of 46% of children diagnosed in the USA presents with average and above-average intellectual ability (Centres for Disease Control and Prevention 2013(3):online). Nevertheless, increases occur in the estimated prevalence of ASD at all levels of intellectual ability. The functional profiles of the majority of learners currently seen by the Motheo district-based occupational therapists appear to correlate with the estimates of Alaimo and Heflin (2007:30)

where 67-75% presents with intellectual disability. Griessel (Griessel 2012, pers. communication November 2012) suggests that this tendency is possibly the result of decreased awareness and identification of mild autism spectrum disorders in South Africa, especially in rural and low socio-economic communities with limited resources.

The current prevalence estimates hold significant implications for current and future needs regarding autism-specific education and the Department of Education needs to develop strategies to expand autism-specific education in public schools. However, critics may argue that improved treatment and interventions for ASD may assist in decreasing the impact of the condition on education systems.

2.2.7 Treatment and intervention

Currently there is no cure for autism, and intervention strategies aim to improve the symptoms of ASD, behaviour and quality of life. Since autism affects all aspects of a child's development and capacity to engage in activities, treatments focus on all-encompassing, holistic programmes to address all aspects of development and behaviour (Rapin & Tuchman 2008:1129-1146). These treatments include early identification and intervention; medication to improve symptoms and behaviours; therapeutic intervention; education and development programmes; as well as alternative support strategies (Autism Speaks 2013(c):online). Therapeutic intervention and ASD-specific programmes will be discussed later in the literature review. The role of early identification, medication and alternative support strategies follows.

2.2.8 Early identification and interventions

Early identification and autism-specific support programmes that start at the age of three and younger contribute to better developmental and behavioural outcomes in children with ASD (Matson, Rieske & Tureck 2011:1319-1320). Ongoing studies link early warning signs to developmental outcomes in later stages of life (Boyd *et al.* 2010:78-79). Experts developed valid screening and assessment instruments for use in toddlers and infants who appear to be at risk for ASD (Matson *et al.* 2011:1322-1324). Retrospective (e.g. video analysis) and prospective studies assist in the identification of behavioural and psychological warning signs for ASD. These assessment tools will not be discussed for the purposes of this study, since the Department of Education mainly focuses on learners of school-going age. However, the Department of Education supports early assessment and intervention since it contributes to better behavioural and developmental outcomes over time (Boyd *et al.* 2010: 92). Access to

quality, evidenced, early intervention strategies may reduce ASD symptoms due to the benefits of neuroplasticity during this critical stage of development (Landa 2008:147).

In the absence of extensive evidence-based practices for early intervention with ASD, most early intervention programmes originated from ASD practices for older children (Boyd *et al.* 2010:84). The National Professional Development Centre of Autism Spectrum Disorders set criteria by which they identified evidenced based practices concerning different aspects of development and behaviour (Boyd *et al.* 2010:84 and Brown, Frey, Karasu, Odom, Smith-Carter & Strain 2003:176-181).

Educational support for younger children (2-5 years) with autism remains a challenge and a long-term objective is to provide affordable, specialised education to learners between the ages of 3-18 with ASD (SA 2001(5):11-17). Private facilities attempt to create educational support for learners between the ages of 3-6 years, but these services do not seem to be accessible to learners from lower socio-economic groups. Early intervention focuses on basic self-management skills (e.g. toilet training), pre-linguistic skills (e.g. joint attention), socio-communication, improved behaviour and reduction in the severity of symptoms (Dawson, Donaldson, Greenson, Munson, Rogers, Smith, Varley & Winter 2010:online). School-aged learners with ASD with no early intervention often do not meet the admission criteria to enter a formal school system. Currently, approximately 30% of learners with ASD on the waiting list for special schools in Motheo cannot enter a formal programme due to severe ASD symptoms, incontinence and/or a high burden of care (Motheo Inclusive 2013:2). Early intervention appears to be a critical success factor for school admission and educational prognosis (Dunlap, Huber, Iovanne & Kinkaid 2003:online).

2.2.9 Medication and alternative approaches

Medical practitioners use a variety of medications to treat the symptoms of ASD that affect participation in school- and home-based settings. Anticonvulsants, antipsychotics, anti-depressants and stimulants are commonly used. Comorbid mental, physical, medical and neurodevelopment conditions co-occur in individuals with ASD (American Psychiatric Association 2013(2):40). These comorbid conditions include cerebral palsy, epilepsy, attention deficit disorders, anxiety, depression, sleep disturbances and gastro-intestinal distress (Autism Speaks 2013(a):online). Many children with autism may have atypical responses to medication and require close medical follow-up (Oswald & Sonenklar 2007:348-355). There are schools in the Motheo District that prefer learners with ASD to be on medication to enhance the efficiency of educational programmes. The researcher observed that learners from low socio-economic

and rural areas have limited access to medical intervention. Efficient medical follow-up, access to appropriate medication and monitoring of the effects of medication appear to be problematic in these areas.

Some 30 to 90% of families in the USA caring for children with ASD use complementary and alternative medication. These approaches include melatonin (a natural hormone that regulates sleep-wake patterns), nutritional supplements (B12 injections, anti-oxidants, probiotics, etc.), omega 3 fatty acids, as well as casein- and gluten-free diets. The safety and efficacy of these treatments have not been adequately researched and therefore these treatments should not replace research-based approaches (Henderson 2013:online).

2.2.10 Prognosis of Autism Spectrum Disorders

The core difficulties of ASD tend to persist throughout life, but the severity of symptoms appears to improve with age (Rapin & Tuchman 2008:1129-1146). There are only a limited number of research-based studies available concerning the long-term prognosis of ASD, and no study could be found that focuses on autism after midlife. Factors that positively influence long-term prognosis include acquiring language before the age of six years; IQ above 50; having a marketable skill; as well as having moderate to mild autism traits (Tidmarsh & Volkmar 2003:17-25). Since autism is a spectrum disorder, one may argue that individuals with milder traits of autism may have a better prognosis in terms of independent living, employability and community integration. However, social and communication difficulties usually persist that affect social adjustment in various contexts (Volkmar & Woodberry-Smith 2005:235-240). Social impairments often have negative outcomes, such as social failure, peer rejection, high anxiety levels and behavioural difficulties (Bellini, Benner, Hopf & Peters, 2007:153). This may possibly explain why individuals with mild autistic traits and high functioning autism appear to have an increased prevalence of comorbid psychiatric conditions such as major depression and anxiety disorders, which may affect their prognosis (Volkmar & Woodberry 2009:2-11).

Individuals with moderate to severe autism have less promising functional outcomes, and the majority require care and support. A study on long-term prognosis (Goode, Howlin, Hutton & Rutter 2004:212-229) focused on 68 individuals with ASD and a performance IQ of 50 and above during childhood, who were followed up as adults. Results indicated that minority of adults achieved high levels of independence and remained significantly dependent on family support, supervision and structure. Participants with a childhood performance IQ of more than 70 had a significantly better outcome compared to those with lower IQs. Individuals within the

typical IQ range had variable functional outcomes and IQ did not proof to be a prognostic indicator (Goode *et al.* 2004:212-229). A Canadian study indicated similar results and reported that 56% of adults (with IO's beyond 70) were employed at some stage in their life, mostly in volunteer or sheltered labour (Eaves & Ho 2008:739-347).

Unfortunately, the researcher could not find any South African studies related to long-term prognosis. Given the current unemployment rate, poverty and limited educational access in South Africa (SA 2011(5):49-51), the researcher suspects that local outcomes may be even worse compared to first-world countries.

2.2.11 Cost of treatment and care

The previous discussion indicated that autism is a lifelong condition that influences health, social integration, employability and quality of life of both the affected individual and families. The burden of care in terms of finances and energy are high for parents and individuals living with ASD. A study (Beecham, Knapp & Romeo 2009:317) performed in the United Kingdom estimates the yearly costs of supporting children with ASD are £2.7 billion and for adults £2.5 billion. The lifetime cost for an individual with ASD and intellectual ability is approximately £1.23 million and these estimates include place of residence, cost of services and lost productivity. The challenges in adulthood include residential care, vocational training, job placement, sexuality, social integration and long-term care (Baker & Sharpe 2007:247-264). Medical care makes up 10% of the estimated cost; 30% goes to extra education and care, while loss of economic productivity absorbs 60% of the cost. The challenges are that public programmes are usually inadequate or inappropriate for children with ASD, and that parents need to pay privately for these expenses (Ganz 2007:343-349). Due to the challenging behaviour of children with ASD, it is usually difficult to access childcare, which affects parental employment. A survey performed in the USA during 2008 indicated that families of children with ASD had a loss of 14% of their annual income due to expenses related to ASD (Halterman & Montes 2008:821).

The researcher could not find any South African studies that focus on the financial implications of having a child with ASD. The high cost of medical care, therapeutic intervention, education and loss of productivity appear to mostly affect families in rural and poverty-stricken areas. Not only are these areas limited in terms of appropriate resources, but parents also appear to have difficulty to access resources and facilities in urban areas (Bentaar 2013:154-155). Families in low-income groups usually receive a care dependency grant of R1 200 per month for a child with severe ASD. Those who foster a child receive an additional R750 per month (South

African Social Security Agency 2013:online). The huge financial burden on parents is a primary drive in expanding autism-specific education in public schools. Access to autism education in a private educational facility (excluding therapeutic intervention) costs approximately R2 500 or more per month in the Free State (Smith 2014, pers. comm. 24 May 2014). The increased prevalence of autism does not only hold significant financial implications for families, but also for the South African economy in general. Increased numbers of individuals with disability do not only imply an increase in lifelong disability grants, but the poor employability of individuals with severe ASD also implies loss of economic productivity. The researcher is therefore of opinion that vocational and social training should be a central feature in the school curriculum to enhance marketable skills and possible employability.

Autism-specific education is also costly from a specialised education perspective. White Paper 6 indicates that specialised education is expensive due to the high frequency of intervention by specialised staff; the extensive adjustments to learning material; intensive training programmes; assistive technology; and individualised support strategies (SA 2001(1):36-43). Table 2.4 indicates the distribution of special schools, learner enrolment and expenditure per learner across different provinces as recorded in 2001. An added concern is the significant portion of disabled learners (including those with ASD) who are not yet identified or do not have access to special education.

Table 2.4 **The distribution of special schools, learner enrolment and expenditure per learner across different provinces as recorded in 2001 (SA 2001(1):13).**

AVERAGE ANNUAL COST OF SPECIALISED EDUCATION PER LEARNER IN SOUTH AFRICA DURING 2001					
Provinces	**Number of special schools**	**Number of learners in special schools**	**% of learners in special schools**	**% of total number of special schools in province**	**average expenditure per learner**
Gauteng	**96**	**25 451**	**1.62%**	**25.26%**	**11 049**
Western Cape	**82**	**9 213**	**0.96%**	**21.58%**	**28 635**
KwaZulu-Natal	**58**	**7 631**	**0.28%**	**15.26%**	**21 254**
North West	**42**	**4 364**	**0.46%**	**11.05%**	**13 015**
Eastern Cape	**41**	**6 483**	**0.28%**	**10.79%**	**13 746**
Free State	**19**	**3 127**	**0.40%**	**5.00%**	**22 627**
Northern Province	**19**	**4 250**	**0.23%**	**5.00%**	**16 609**
Mpumalanga	**15**	**2 692**	**0.29%**	**3.95%**	**17 839**
Northern Cape	**8**	**1 392**	**0.68%**	**2.11%**	**15 749**
TOTAL:	**380**	**64 603**	**0.52%**	**100.00%**	**17 388**

The high cost of specialised education, the estimate that only 1% of learners with ASD in South Africa have access to formal education, and increasing prevalence rates hold significant financial implications for autism-specific education in the public sector.

2.3 AUTISM-SPECIFIC EDUCATION

The second phase of the literature discussion focuses on autism-specific education. The model of Hanbury (2005:16) is used to discuss the following:

2.3.1 The impact of ASD on learning,

2.3.2 Behaviours and socio-emotional responses resulting from the condition; and

2.3.3 The attitudes of others towards the symptoms and behaviours of learners with ASD.

This discussion is followed by an overview of:

2.3.4 Inclusion as a global trend; and

2.3.5 The critical success factors of autism-specific education.

2.3.1 Impact of the condition itself

Hanbury (2005:16) indicates that the "perceived uniqueness" of each child with ASD complicates the design of a standard educational approach for learners with ASD. Since autism is a spectrum disorder, it implies variability in functional, academic and clinical profiles, where symptoms may differ in nature, intensity and severity (American Psychiatric Association 2013(2):50-51, Kaufmann 2012:online). Although learners on the autism spectrum have certain common features, these symptoms present in different and unique combinations (Hughes *et al.* 2011:56). The design of special needs programmes for learners with ASD involves an integrated reasoning process that shifts from knowing the condition towards understanding the impact of the condition on each individual (SA 2008(3):26-31). According to Hanbury (2005:17), Autism Spectrum Disorders impact on the child's learning through three different key processes:

i) The impact of the condition itself;

ii) The behaviour that presents as a result of the condition; and

iii) Attitudes of others that develop as a result of the condition and behaviour.

The researcher chose Hanbury's model, since it considers the complex interaction between the child and the learning context. The model also fits in with the inclusive approach where barriers to learning include learner-specific and external factors.

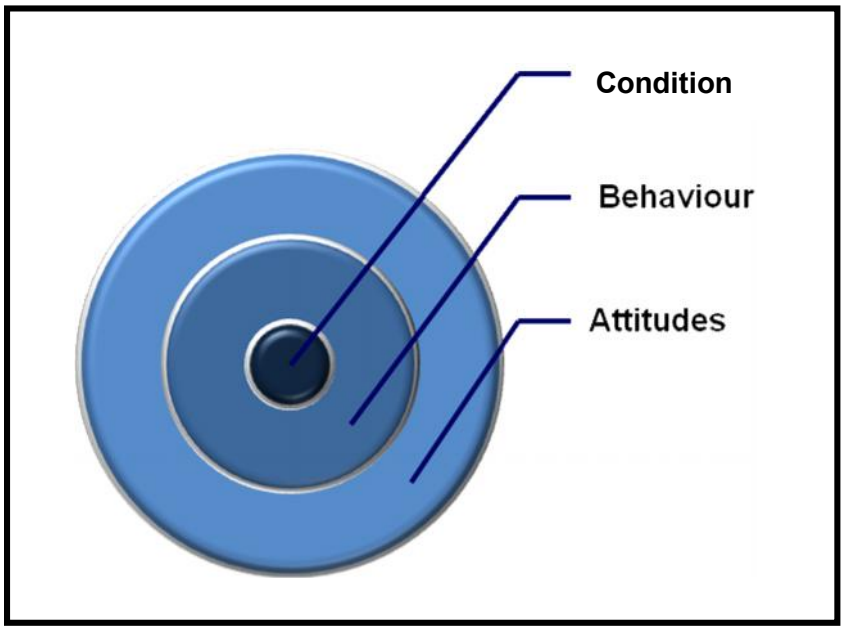

Figure: 2.2 Autism impact on learning through three processes: (i) the impact of the condition itself; (ii) the behaviour resulting from the condition; and (iii) attitudes that develop from (i) and (ii) (Hanbury 2005:17).

Learners with ASD present with difficulty in social interaction, socio-communication, restricted interests and behaviours, sensory processing difficulties, unusual patterns of behaviour and motor deficits that create barriers to learning and development (American Psychiatric Association 2013(2):50-5). An overview on each of the key features of ASD, the implications of these traits for education, and a table that summarises classroom strategies to enhance these deficits are provided.

The discussion on the impact of the condition itself focuses on the following aspects:

2.3.1.1 Social interaction deficits;

2.3.1.2 The implications of socio-communication and social interaction deficits for education;

2.3.1.3 Socio-communication deficits;

2.3.1.4 The implications of socio-communication for education;

2.3.1.5 Restricted, repetitive patterns of behaviour, interests or activities;

2.3.1.6 The implications of restricted, repetitive patterns of behaviour, interests or activities for education;

2.3.1.7 Sensory processing difficulties;

2.3.1.8 The implications of sensory processing difficulties for education;

2.3.1.9 Associated factors: unusual patterns of attention;

2.3.1.10 The implications of unusual patterns of attention for education;

2.3.11 Motor deficits; and

2.3.12 The implications of motor deficits for education.

2.3.1.1 Social interaction deficits

Individuals with ASD present with deficits in social interaction in different contexts and settings. These challenges usually present in following three areas: social-emotional interaction; non-verbal communication; and the development and maintenance of relationships. Although these deficits may range in severity, all individuals struggle with these three components of social interaction. Social interaction is usually severely affected in learners with moderate to severe ASD (American Psychiatric Association 2013(2):50).

Learners with moderate to high functioning autism may be able to match certain nonverbal cues with feelings when presented in an isolated situation. However, they struggle to integrate and interpret these when presented simultaneously or in a group setting. These learners usually engage in basic, automatic social interaction (e.g. basic greetings and general topics), but have difficulty to initiate and sustain more complex discussions (Smith-Myles 2005:1).

Smith-Myles (2005:1) indicates that difficulties with social interaction are best observed in interactions with peers; stressful situations; unstructured situations without predictable routine; new situations; changed routines; and in the presence of sensory stressors. Since learners with ASD misinterpret situations, feel out of control in unstructured settings and may process sensory stimuli differently, they often become distressed (Mayo Clinic Staff 2010:online). Learners with ASD struggle to express their own fears, stress and anxiety efficiently. Most learners do not have the verbal skills to express their needs, stressors and excitement, and cannot use nonverbal skills (tone of voice, pitch, body language, etc.) to efficiently communicate their experiences within a certain social context (Minaham & Rappaport 2013:34).

Play creates opportunities for children to explore with thoughts, to engage in a fantasy world, to imagine themselves in future situations and to practise social interaction. The severe impairments in socio-emotional interaction, communication, sensory processing and inflexible thinking present fundamental barriers to typical play development in learners with ASD. Children with ASD therefore need to learn how to play by engaging more appropriately with objects and people in their environment. The challenge is that impairments in social interaction make it difficult for learners with ASD to take turns, handle conflict and show appropriate

emotional responses. Inflexible thinking hampers appropriate interaction and play due to the preoccupation with certain themes and restricted behaviours (Hanbury 2005:19).

Increased social awareness does not always develop as they get older, since the complexity of social contexts also increase with time. Learners with high functioning ASD may mask some of their deficits with jargon and a well-developed vocabulary. However, they experience high levels of anxiety in social contexts as well as an inability to build peer relationships (Minaham & Rappaport 2013:34). Learners with more severe symptoms of ASD may show a total lack of interest in other people and may present with severely challenging behaviour in social contexts that they perceive as stressful (American Psychiatric Association 2013(2)51-52).

2.3.1.2 Implications of social interaction deficits for education

There are a number of play-related classroom activities that require imagination, flexibility and adaptive behaviour, e.g. story time, role-play, group work, etc. Engagement with toys and playground apparatus is also restricted since they tend to play with parts of toys or play inappropriately (e.g. line toys up, break toys to play with the wheels, etc.). Smith-Myles (2005:76) refers to the rules of the social context in a school as the hidden curriculum, which includes teacher expectations; knowing how to make friends; class rules; and how to adjust social behaviour from one context to another. Educators do not directly teach these rules which typically developing learners know intuitively. The lack of consistency in social rules is challenging for learners with ASD and they therefore require structure and routine to help them adjust (Bellini *et al.* 2007:153-154).

Hence, learners with ASD need to acquire a number of social skills in order to cope with the social demands of the classroom, playground and other contexts. These skills include the following (New Brunswick Department of Education 2005:45):

i) Waiting;
ii) Taking turns in activities;
iii) Transitions from one context or task to another;
iv) Initiating and finishing activities and conversations;
v) Flexibility; and
vi) Being quiet when expected.

Educators require a multifaceted approach of instruction, interpretation of social behaviour and coaching to assist children with ASD to develop these skills (New Brunswick Department of Education 2005:42-47, Smith-Myles 2005:80-85). Table 2.5 provides an overview on some

classroom strategies (functional assessments, research-based programmes, environmental adjustments, classroom strategies and assistive technology) to enhance social skills in learners with ASD.

Table 2.5 Classroom strategies to enhance social skills in learners with ASD (compiled by the researcher).

CLASSROOM STRATEGIES, ASSESSMENT AND SUPPORT: SOCIAL SKILLS
Functional assessment
The educator needs to identify target social skills through observation in different contexts. Video modelling appears to be a successful tool in identifying social strengths and weaknesses. The process involves the assessment, listing, prioritisation and setting targets (Cook, Earles-Vollrath & Ganz 2011:10).
Research-based programmes and approaches
Direct Instruction: Teaching of social skills as a specific subject, where educators teach skills in a specific sequence and hierarchical order. This structured instruction may include aspects such as starting a conversation; staying on topic; taking turns in conversation; using body language; personal space; understanding humour and abstract language; expressing feelings and needs; as well as using appropriate greetings. Educators often develop curriculums from traditional curriculums, e.g. Barker's Social Skills Training for Children and Adolescents with Asperger's Syndrome (Smith-Myles 2005:80-81).
Social Stories™: Social Stories™ assists children with ASD with the social information they require to cope in a certain situation. Carol Gray developed the concept in 1991 to describe situations that are difficult for children with ASD, to acknowledge attempts to improve behaviour, and to promote social behaviours. Social Stories™ explains "a situation, skill, or concept in terms of relevant social cues, perspectives, and common responses in a specifically defined style and format" (Gray 2012:online). The story should consist of behaviours that the child does well, but should also provide guidance on all possible behavioural triggers in order to guide the child on how to respond in each situation (Kincaid, Powell-Smith & Sansosti 2004:194). The story should consider the cognitive level of the learner, prompting and practising of the desired skill (Lynch, Simpson & Spencer, 2008:58). Gray (2012:online) designed criteria for the development of a story, which vary from 5-10 sentences. Social Stories™ should: (i) Specifically define the behaviour of concern; (ii) Identify an applicable substitute behaviour; (iii) Incorporate pictures and drawings to assist the child to identify with the desired behaviour;

(iv) Include sentences that indicate the purpose of the story and supply options for expected behaviours

Extensive research regarding social stories has not been done. However, it seems to be a promising behavioural intervention system for learners with ASD, since it assists in the facilitation of social behaviours and decrease of antisocial behaviours (Kincaid *et al.* 2004:198-204 and Lynch *et. al.* 2005:149).

The Developmental, Individual Difference, Relationship-Based Model (DIR® / Floortime™): This is a comprehensive, interdisciplinary approach that focuses on the individual needs of children with disability, especially ASD. Dr SI Greenspan and Dr S Wieder (Greenspan & Wieder 2006(2):1-10) developed the model. The approach includes social-emotional capacities; thinking and learning processes; and motor and cognitive processes (Hughes *et al*. 2011:60). The aim of the model is to build a foundation for social, emotional and intellectual capacitates instead of targeting isolated skills and behaviours. This process includes the stimulation of the capacity to attend, remain calm-alert, engage with others, initiate and respond to different types of communication, social affect, shared social problem-solving, and to play creatively. Only a few controlled research studies focused on Floortime™, but these all support positive outcomes for learners with ASD (Hughes *et al.* 2011:61). A play training programme that incorporates Floortime™ found that 45,5% of the children involved in the study made significant progress in their functional development through the programme. Some 80% of parents involved in the project approved the programme (Greenspan & Wieder 2001(1):11-19). Since the DIR®/Floortime™ has a primary focus on social interaction, emotional development and relationships, it may complement a behavioural teaching programme. Although it appears to be effective in individual therapy sessions, the researcher is uncertain about the practical implementation of the programme in public schools.

Environmental adjustments and support

Round table: Learners sit in a circular formation in order to enhance their interaction (New Brunswick Department of Education 2005:42-47).

Classroom strategies and assistive technology

Power card strategy: The use of a small card as a visual aid to help understand situations, reinforce behaviour and help reach target behaviour. The card usually includes a picture and a summary of the solution, e.g. the steps in greeting a person (Smith-Myles 2005:85)

Acting and role-play: Role-play is where children learn to interpret emotions and practise social skills (LaMarca 2008:online). Social skills can also be practised through board games and informal play (Koegel, Koegel, Lang & Matos-Fredeen 2011:5)

Self-esteem building: Celebrating all achievements, recognition of positive behaviours, and a focus on what the learner is doing well. Giving compliments and teaching the child to compliment others (Smith-Myles 2005:86).

Self-awareness: This category includes visually-based activities that assist learners to identify and label their emotions; indicate the intensity of the emotion; redirect negative thoughts into positive thoughts; identify environmental stressors; and select a strategy to calm them down (Smith-Myles 2005:87).
Video modelling: Video self-modelling involves learning new skills by watching videos of others. The combined use of video modelling, direct instruction and guidance in natural environments appear to have the best results. The technique appears to improve social interaction, conversation skills, daily living and play skills, and reduce problem behaviour (Cook *et al*. 2011:10,17)
Support of existing friendships: Educators and families should encourage play dates, helping learners to understand one another's emotions, opportunities for enjoyment of cooperative games, etc. (New Brunswick Department of Education 2005:47).

A discussion regarding the impact of socio-communication deficits in education follows in the next section.

2.3.1.3 Socio- communication deficits

Although delayed onset of language is currently not a diagnostic criterion for ASD, most individuals with ASD present with varying levels of language deficits. These deficits range from receptive and expressive difficulties; absence of speech; echoed speech; and overdeveloped vocabularies (American Psychiatric Association 2013(2):50 and Kaufmann 2012:online). Approximately one-third (35-40%) of children with autism are nonverbal (Hughes *et al.* 2011:56). Thus, these learners struggle to communicate; process and integrate information from the environment; establish and sustain relationships; and participate in new environments. Hanbury (2005:18) indicates that learners with ASD struggle to engage in ordinary classroom settings since they battle to interpret discussions; read the social situations; express themselves; or respond appropriately to stimuli in the environment.

Learners with high functioning ASD have difficulty comprehending abstract language, e.g. idioms, analogies and metaphors. These deficits do not only affect their social interaction, but also impacts negatively on academic success since they tend to misinterpret abstract concepts. Although language ability may appear intact from a grammatical and vocabulary perspective, the use of abstract language and pragmatics remains impaired (Smith-Myles 2005:1-2).

2.3.1.4 The implications of socio-communication on education

Communication skills are complex and do not develop naturally in learners with ASD. Educators and families struggle to teach and improve these skills in learners with ASD. Although educators could teach communication skills in simulated environments, the best practice is to develop these skills in natural settings where they have application value (Koegel *et al.* 2011:3-4).

Learners with ASD who are verbal have limited opportunity for communication during a school day. Hence, educators should create opportunities for communication as part of the classroom routine (Koegel *et al.* 2011:3-4). Learners need to learn how to listen to instructions and strategies such as joint attention is often a prerequisite for developing communication and language skills (Abbott, Dawson, Estes, Liaw, Munson, Osterling & Toth 2003:271). Educators should provide verbal instructions with visual supports and adjust verbal communication to provide clear and direct messages. Learners should be motivated to express their needs verbally (e.g. need for water) and opportunities for choices should be created (Chiang 2009:165, Koegel *et al*. 2011:online). A variety of strategies uses the learner's current fixations and manner of communication as a starting point to initiate oral speech. Many learners struggle with echolalia and would repeat television commercials and echo back what other say to them. The approach is then to make functional associations with phrases by linking the verbal expression with objects, pictures, etc. (New Brunswick Department of Education 2005:12-13).

Since communication is such a complex field, educators need the support of a multi-professional team and the input of the speech and language therapists is particularly helpful in this regard. Collaboration and integrated goal-setting between the therapist, educators and parents are vital in the acquisition of speech and language skills (New Brunswick Department of Education 2005:92). Learners with more severe communication deficits require intensive intervention. Table 2.6 provides an overview on some classroom strategies (functional assessments; research-based programmes; environmental adjustments; classroom strategies; and assistive technology) to enhance communication skills in learners with ASD.

Table 2.6 Classroom strategies to enhance communication skills in learners with ASD (compiled by the researcher)

CLASSROOM STRATEGIES, ASSESSMENT AND SUPPORT: COMMUNICATION AND LANGUAGE
Functional assessment
A speech therapy assessment is the golden standard. However, educators could also perform a functional assessment where they target the following language and communication skills: listening skills; receptive and expressive language skills; and non-verbal communication. Identification of the learner's strengths to use the skills in the improvement of weaker areas, e.g. good matching skills, can be helpful in the use of a communication board (New Brunswick Department of Education 2005:12-13).
Research-based programmes and approaches:
The **Makaton Language Programme** is a multimodal approach used to train language and literacy through a mixture of speech signs and graphic symbols in accordance to a learner's individualised needs. The name Makaton has been compiled from three key role-players: *Ma*rgaret Walker (a speech therapist who developed Makaton), and to visitors from the Royal Association for Deaf with the names *Ka*therine Johnston and *Ton*y Comforth (Makaton 2013:online). Margaret Walker (1977:3) performed the initial research in 1972, and this guided the development of the Makaton Core Vocabulary. The research on Makaton Core Vocabulary initially focused on institutionalised deaf, cognitively impaired adults at Botsley Park Hospital in Surrey, UK. The Core Vocabulary consists of approximately 450 concepts that are trained though eight stages. The first stage focuses on communicating basic needs, but complex, abstract vocabulary follows in later stages (Grove & Walker 1990:15-28). The Makaton Vocabulary Development Project changed to become the Makaton Charity in 2007 (Makaton 2013:online). Makaton appears to have a positive impact on the speech and language development of children with learning disability (Duffy & Sheehy 2009:11).
The **Picture Exchange Communication System (PECS):** Lori Frost and Andy Bondy developed the system in the 1980s based on their intervention with children with ASD. The approach focuses on utilising visual strengths and a capacity to learn better in a structured, systematic way while accommodating for deficits in language development. The design of PECS takes the learner through six phases, namely (Bondy & Frost 1994:1-19): (a) Initiating communication; (b) Expanding the utilisation of pictures; (c) Choosing a message in PECS; (d) Introducing a sentence structure in PECS; (e) Teaching the child to answer simple questions; and

(f) Teaching commenting.

The complexity of tasks increases during each stage and reaching generalisation of behaviour is a critical success factor to ensure that behaviour has functional benefits in daily life. Generalisation of behaviour follows during the second stage when the teacher takes less initiative for communication. Discrimination of different symbols follows in the third stage (Bondy & Frost 1994:1-19). The Picture Exchange Communication System appears to have benefits for learners with ASD The use of objects as symbols appears to be successful in the facilitation of communication skills in learners with ASD (Carr & Felce 2006:780-787 and Lund & Thorba 2008:719-730).

Environmental adjustments and support

Help the learner understand that everything in the environment has a name by labelling furniture and objects in the environment (Smith-Myles 2005:21).

Classroom strategies and assistive technology

Alternative augmentative communication refers to communication methods that compensate or replace speech or written language due to severe speech and language impairments (Lee & Low 2011:23). Strategies to convey message may include:

Low Tech

- Use of gestures and body movements (e.g. shaking the head to indicate yes or no);
- Use of concrete objects (e.g. bring a glass to ask for something to drink);
- Use of picture representations (e.g. the Picture Exchange Communication System)
- Use of communication boards;
- Use of the voice without using regular words (e.g. saying “lala” to indicate the need to sleep); and
- Use of recognised sign language (e.g. South African Sign Language, etc.).

These strategies need to be considered in hierarchical order, starting from more abstract to concrete (highly abstract signing; written sentences and phrases; drawings; photographs; gestures; miniature objects; and concrete full-sized objects) (New Brunswick Department of Education 2005:40-41).

High Tech

- Use of a communication device (e.g. speech generating devices, voice output communication aids, tablet computers with adapted components and software, etc.) (New Brunswick Department of Education 2005:41).

Learn to listen:

- Structured lessons in listening; and
- Reinforcing components of listening (New Brunswick Department of Education 2005:37).

Develop language comprehension: - Use of visual aids (photographs, pictures, objects, etc) and object picture matching; - Use of gestures and signing symbols with verbal communication (visual over verbal); - Following of one-step commands (Low & Lee 2011:23 and New Brunswick Department of Education 2005:37).
Develop verbal expression: - Encourage and reinforce attempts to communicate; - Expand vocabulary with visual aids; - Use concrete objects to assist expression; - Classroom discussions; and - Use alternative/augmentative communication systems where required (New Brunswick Department of Education 2005:40).
Music Therapy: A randomised control study by Gold and colleagues (Elefant, Gold & Wigram 2010:9) focused on the effect of music therapy on individuals with autism. Study results indicated positive, short-term effects concerning verbal and nonverbal skills, but behaviour outcomes showed no significant improvements. The use of music therapy to enhance language and communicate skills in learners with ASD requires more research.

The impact of restricted, repetitive patterns of behaviour, interests, or activities on education follows next.

2.3.1.5 Restricted, repetitive patterns of behaviour, interests, or activities

Learners with ASD engage in restricted, repetitive non-functional speech (echolalia, repetition of phrases, etc.), movement patterns (hand flapping, rocking, etc.) or object use (obsessive spinning of objects). A factor analytical study by Aman and Lam (2007:855) studied restricted, repetitive behaviours in ASD and indicated five different factors:

i) Ritualistic behaviour;
ii) Restricted interests;
iii) Compulsive behaviour;
iv) stereotyped behaviour; and
v) Self-injurious behaviour.

There are two groups of repetitive stereotyped behaviours (Blanchard, Blanchard, Bolivar, Defensor, Oasay, Pearson & Pobbe 2011:online) namely “higher level behaviours” that include insistence on sameness, restricted interests and preoccupations, and “lower level behaviours” that refer to repetitive movements. Higher-level repetitive stereotyped behaviours relate more specifically to autism than lower level behaviours and may be on a spectrum with obsessive-

compulsive traits (Blanchard *et al.* 2011:online). Although the high-level restrictive, repetitive behaviours in ASD share some similarities with obsessive compulsive disorders (e.g. preoccupations, strict adherence to rituals, resistance of change in routines and environments and insistence on sameness), there are differences. Individuals with ASD engage more commonly in repetitive ordering, hoarding, telling and asking, repetitive sensory-motor actions and self-injurious behaviours (Kyrios, Prior & Zandt 2007:online). Self-injurious behaviour is considered to be "lower level" behaviour and to date the most efficient intervention strategy is various combinations of behaviour modification (LoVullo & Matson 2008:61).

2.3.1.6 Implications of restricted, repetitive patterns of behaviour, interests, or activities for education

Learners with ASD have excessive devotion to routines and ritualised patterns of verbal and nonverbal behaviours (American Psychiatric Association 2013(2):50). Hence, these learners resist changes in their environment and routines. These behaviours posses many challenges to educators since change is inevitable in any classroom setting. Learners with ASD usually respond to these changes with challenging socio-emotional behaviours, e.g. tantrums. Learners with ASD also present with severely fixated, restricted interests. This limited mental flexibility and adjustability make it difficult for them to move from one classroom activity to another (Hanbury 2005:81).

Hanbury (2005:81) indicates that developing flexible thinking in learners with ASD is one of the greatest challenges, since there is variability in the type, level and intensity of rigidity in thinking. These may range from spinning a piece of string to expert knowledge in certain areas (dinosaurs, trains, etc.). An understanding and efficient use of the learner's restricted interest is usually the best starting point for developing flexible thinking and then to add a new dimension to the activity or thoughts (New Brunswick Department of Education 2005:30).

Since learners with autism resist change, they require routine, structure, predictability consistency and thorough preparation for change. Table 2.7 provides an overview on some classroom strategies (functional assessments, research-based programmes, environmental adjustments, classroom strategies and assistive technology) to reduce restricted, repetitive patterns of behaviour in learners with ASD.

Table 2.7 Classroom strategies to reduce restricted, repetitive behaviours in learners with ASD (compiled by the researcher)

CLASSROOM STRATEGIES, ASSESSMENT AND SUPPORT: RESTRICTED, REPETITIVE PATTERNS OF BEHAVIOUR
Functional assessment
The assessment entails an understanding of the learner's unique interests, responses to environmental stressors, learning style and individual needs (New Brunswick Department of Education 2005:16-17).
Research-based programmes and approaches
The Treatment and Education of Autistic and related Communication Handicapped Children (TEACCH): Eric Schopler developed the concept of TEACCH in 1971. TEACCH involves the use of structured teaching through visual support to maximise the independent functioning of a child with ASD and educational facilities use this technique frequently. The programme consists of four vital components, namely (Hume & Odom 2007:1166-1180): i) Physical structure and organisation of the workspace; ii) Schedules indicating details about the required task; iii) Work systems that provide detailed expectations of individuals during the task; and \ iv) Task organisation describing the learning task.
Environmental adjustments and supports
A well-structured and organised classroom proves to be beneficial for learners with ASD, since it offers the structure, predictability, visual support and limited sensory distractions required for leaning. A structured classroom provides guidance for classroom expectations and assist learners to organise themselves. Examples of general organisation may include: well-defined areas for different activities; visual supports to reinforce classroom expectations; adequate spacing of at least 60 cm between learners; and colour-coded or labelled classroom materials. Individualised environmental adjustments need to be built into the individual support plan, since strategies could then be monitored and revised more efficiently (Smith-Myles 2005:21-25).
Classroom strategies and assistive technology
Daily routines(Smith-Myles 2005:23-24): - Structured daily routines displayed in visual schedules of charts; and - Individual preparation of learners regarding the activities of the day through visual-over-verbal communication.
Visual supports (Smith-Myles 2005:23-24):

- Posting of daily schedules, cards with classroom rules; - Creating individualised mini-schedules, choice boards, steps in personal and class routines, activity checklists, etc.; - Labelling and colour-coding of books, material, etc.; and - Visual cues to support oral information or teacher directions
Organisational skills: - Use personal schedules, checklists and calendars with pictures; and - Use picture cues and desk pads with Velcro to order material (Smith-Myles 2005:23-24).
Preparation for change: - Prepare for potential changes in work schedules and environment by using pictures, schedules, and social stories (Hanbury 2005:82-83).
Restricted range of interests (New Brunswick Department of Education 2005:52): - Limit perseveration by setting firm expectations; provide opportunities for learners to focus on their interests; and - Incorporate and develop on interest in activities and topics
Academic difficulties (New Brunswick Department of Education 2005:52): - Ensure that learners understand information copying and repeating of information does not necessarily indicate comprehension; - Grading: Concrete to more abstract – same vs new; - Use of activity-based learning and practical examples; - Use of graphic organisers; - Breaking down tasks into smaller steps or present it in another way; - Provision of direct instruction as well as modelling; and - Avoidance of verbal overload
Technological and other devices (New Brunswick Department of Education 2005:45): - Data projectors and interactive white boards to facilitate visual structure during teaching. - A Time Timer® is often used to provide feedback to learners regarding the time they need to spend on a structured task.

The impact of sensory processing difficulties on education follows next.

2.3.1.7 Sensory-processing difficulties

The DSM-5 recognises sensory processing difficulties as a contributing factor to repetitive, restricted behaviours in ASD. Learners with autism have unique sensory processing patterns that include unusual responses to sensory experiences. These children may be hypersensitive

to a certain type of sensory stimulus (e.g. auditory), which may lead to a severe overreaction or withdrawal (Angley, Baker, Lane & Young 2010:112). Behaviours may include sensory sensitivity (e.g. covering of the ears to block out sounds; averse responses to touch; and avoidance of certain food textures); hypo-responsiveness to stimuli (e.g. pain or temperature) or seeking behaviours (rocking, making noises, etc.). These difficulties in sensory processing affect social interaction, attention, arousal and the capacity to adjust in different contexts (Brown & Dunn 2010:474-475).

A retrospective review by Dunn and Tomcheck (2007:190) indicated that 95% of learners with ASD assessed on the Short Sensory Profile had deficits in sensory processing and scored significantly lower on 92% of the items compared to learners without ASD. The greatest differences between the two groups (learners with ASD and those who were typically developing) were in the following sections: under-responsiveness / sensory seeking; auditory filtering; and tactile sensitivity. A model-based cluster analyses (Angley *et al.* 2010:119) indicated three sensory processing subtypes in ASD:

i) Sensory-based inattentive seeking;
ii) Sensory-based with movement sensitivity; and
iii) Sensory modulation with taste and smell sensitivity.

The first cluster links well with the findings of Dunn and Tomcheck where under-responsiveness / sensory seeking, auditory filtering and tactile sensitivity are associated with difficulties in attention. Learners in this group often present with inattention, distractibility, hyperfocused attention and impulsivity (Dunn & Tomcheck 2007:190). Auditory processing difficulties occur commonly in children with ASD. The previously mentioned study by Tomcheck and Dunn (2007:196) indicated that 77.6% of the learners with ASD struggled with auditory filtering, and background noise tended to distract them. Children also responded poorly to language, which further indicates difficulty with auditory processing. Auditory filtering difficulties, sensory under-responsiveness, and sensory seeking are associated with academic underachievement in the children with ASD (Ashburner *et al*. 2008:564).

Learners with ASD seem to learn well through visually-based approaches that assist them to focus on relevant stimuli; to condense content to the essential; to make abstract concepts concrete; and to shift attention in a structured way (Cook *et al.* 2011:8). Visual support (visual scripts, schedules, photographs, line drawings, words, visual task analyses, etc.) as well as video modelling have been proven efficient in increasing work completion for learners, increasing social skills, improving communication and decreasing problem behaviours (Fettig, Meadan, Michna, Ostrosky & Triplett 2011:29-35). Research by Mostofsky (2012:1-3) indicates

that when forming internal models of behaviour, children with autism are more reliant on intrinsic generalisation, which depends on intrinsic proprioceptive feedback. They rely less on extrinsic generalisation, which depends on the visual system. The inclusion of proprioceptive inputs should therefore be a key element in the planning and design of classroom strategies and individual support plans.

2.3.1.8 Implications of sensory processing difficulties for education

Since sensory processing is a complex field, educators and parents may benefit from collaborating with a sensory integration trained occupational therapist. Various profiling measures, e.g. Sensory Profile, School Companion and Sensory Processing Measure, provide insight in the interaction between neurological thresholds and behaviour. It has been mentioned that learners with ASD struggle with sensory modulation difficulties which affect their arousal, attention, emotional responses and general behaviour in class (Henderson, Koenig, Moya, Pheiffer & Sheppard 2011:76). Hence, they may be distracted by a cluttered desk or by the movements of another learner who is sitting too close. They struggle to organise themselves and to adjust activities and environments (Hanbury 2005:68). Educators therefore need to find strategies to best accommodate the sensory needs of individual learners. Table 2.8 provides an overview on some classroom strategies (functional assessments, research-based programmes, environmental adjustments, classroom strategies and assistive technology) to enhance sensory behaviours in learners with ASD.

Table 2.8 Classroom strategies to enhance sensory behaviours in learners with ASD (compiled by the researcher)

CLASSROOM STRATEGIES, ASSESSMENT AND SUPPORT: SENSORY PROCESSING
Functional assessment
An occupational therapist trained in Sensory Integration may provide the educator with a profile on the learner's sensory processing, modulation and behaviours. However, sensory overload checklists (Hanbury 2005:68) and indicators for sensory behaviours that often occur in learners with ASD are available for educators (New Brunswick Department of Education 2005:35).
Research-based programmes and approaches
Sensory Integration and Sensory Processing: Dr. AJ Ayres pioneered the development of the conceptual model and practice framework of sensory integration, which originated as a speciality field of occupational therapy. The conceptual model and practice framework entails a comprehensive

sensory integration assessment and interpretation of clinical findings to design a child-directed intervention plan, which aims to improve functional performance. Sensory integration treatment involves challenging the child through sensory-based activities (just-right challenges). The successful mastering of these challenges leads to the mastering of new skills that contribute to adaptive response and active engagement in a wide range of occupations (Henderson *et al.* 2011:76). Various other researchers contributed to the field of sensory integration and Dr Lucy Miller currently pioneers research in Sensory Processing Disorders and ASD (Miller 2013:online). Although there are general strategies available to assist educators in managing sensory difficulties in learners with ASD, literature recommends collaboration between educators and therapists to optimise outcomes.

Tomatis® method: Tomatis® is a sound sensory stimulation technique that involves auditory stimulation as well as vibration though the cranium. Sound perception contrasts through the filtering of music (usually Mozart) to create the Tomatis® effect. The professional treatment sessions involve active and passive listening sessions aimed at improving auditory processing, perception, listening and communication (Tomatis® 2013:online). The researcher could not find a recent reliable study regarding the efficacy of the technique for learners with ASD.

Environmental adjustments and support

Visual structure: Visual structure includes a reduction of non-purposeful visual stimuli (e.g. classroom posters) and grey desk dividers to decrease distractibility (Smith-Myles 2005:23-24).

- **Avoid auditory overload caused by environmental stimuli** (New Brunswick Department of Education 2005:33):
- Minimise loud, distressing sounds and background noise;
- Music and “white noise” to mask background noise;
- Earplugs if noise or reaction is intense;
- Opportunities and space for quiet time (time-out tents and sensory rooms); and
- Grey dividers to decrease the distractibility of learners during the performance of structured tasks

Trampolines are often used in classrooms to increase the activity levels of learners with low registration (Kensignton 2011:online).

A **Sensory Room** resourced with sensory activities and equipment to calm or stimulate learners with ASD. Although there are various guidelines publically available for educators to set up and manage sensory rooms (The National Autistic Society Task Team 2013:online) the researcher is of opinion that the processes should be guided by a therapist trained in sensory integration.

Classroom strategies and assistive technology

Sensory overload charts and individual support plans: The unique sensory processing and

behavioural patterns of each child should be considered in the compilation of individual support plans to assist with behavioural analyses, environmental support and improvement of general class room performance (Hanbury 2005:68).

Opportunities to explore with different sensory stimuli: This includes e.g. finding objects in water. sand, rice, jelly, etc. Provide opportunities for learners to explore and learn cause and effect. A wide variety of products is available for visual, tactile, proprioceptive, auditory, gustatory and olfactory stimulation (Autism Speaks 2013(b):online). Although vestibular proprioceptive and tactile brushing products are also available, the researcher is of the opinion that educators should not use vestibular activities without proper training.

Weighted vests: Educators and therapists often use weighted vests to assist learners with ASD with calming, decrease of repetitive body movements, decrease hyperactivity and increase attentiveness. Carter and Stephenson (2009:114) reviewed seven studies regarding the clinical application of weighted vests and the results indicate that there is currently little scientific evidence to support clinical efficiency. Literature recommends further research and more reliable research methodologies. As South African study (Bester, Buckle an Franzsen 2011:41) investigated the effect of wearing weighted vests on the in-seat behaviour of learners with ADHD within the school context. Evidence from the study indicated that the inseat behaviours and attention to task of the target group improved with the use of weighted vests in the classroom. In the absence of a standardised protocol the study suggested a vest that is calibrated to 10% of the child's body weight. Wests should be worn for 45 minutes at a time during the school day. It is uncertain whether weighted vests would have the same effect on learners with ASD. The study concluded that a weighted vest may be useful tool in the classroom sinc it does not impact on the normal classroom routine. However, the vests shold be used in collaboration with a sensory integration trained therapist who could also advice on a complementary sensory diet. A variety of weighted toys, blankets, cushions, deep pressure wraps and clothing products are available (Autism Speaks 2013(b):online).

Sensory cushions: Therapists use various alternative seating devices (therapy balls, wedged balls, therapy cushions) to promote in-seat behaviour and productivity during desktop tasks. A study by Deitz and Umeda (2011:159) assessed the effect of therapy cushions on in-seat and task-on behaviour in a case study of two learners with ASD. Although the cushions made no significant impact on the mentioned behavioural outcomes, it suggested that therapy cushions possibly do not provide intense sensory feedback (Deitz & Umeda 2011:159). Therapy balls that promote more dynamic adjustments and movements appeared to be more efficient (Schilling & Schwartz 2004:432).

Strategies for modulation: Learners with autism present with sensory processing difficulties and use different sensory modalities to help them modulate (Brown & Dunn 2010:483). Many of these strategies may not be socially acceptable or have cost implications, e.g. chewing of clothing and stationery, breaking objects when fidgeting, etc. A variety of sensory tools, toys and products are

available for oral-motor stimulation, fidgeting toys, etc. (Autism Speaks 2013(b): online).
Art and crafts: Art and crafts provide learners with opportunities for visual and tactile stimulation using different textured materials, finger paint, etc. Additional benefits include the development of social skills, group awareness by sharing materials, creative expression and decision-making (Ullmann 2013:online).

The following section will discuss other factors commonly associated with ASD and that impact on learning and educational profiles.

2.3.1.9 Associated factors: unusual patterns of attention

Learners with ASD demonstrate unusual patterns of attention, which affect their social, communication and academic skills. Learners often present with behaviour where they fixate their attention to a part of an activity or selected stimuli in the environment and then avoid relevant or vital other stimuli. Joint attention difficulties occur where learners struggle to share attention between two people or tasks. They also have difficulty in shifting their attention from one task to another, which contributes to their restrictive, rigid patterns of behaviour (New Brunswick Department of Education 2005:18-19). Sleep disorders (prolonged sleep, sleep fragmentation, daytime sleepiness) occur commonly in this group of learners and affect their concentration skills during the day. Efficient diagnosis and treatment of sleep disorders are vital to optimise daytime performance (Ming & Walters 2009:online).

In addition to the classical diagnostic criteria of ASD, learners experience the symptoms of inattention, hyperactivity and impulsivity seen in Attention Deficit Hyperactivity Disorder (ADHD). Symptoms of inattention include: poor attention to detail; difficulty sustaining attention; poor response to direct verbal instructions; poor task completion; difficulty organising tasks; distractions by external stimuli; and losing focus on objects (American Psychiatric Association 2013(2):59). Hyperactive impulsive symptoms include: fidgeting; challenging in-seat behaviour; inappropriate running and climbing; disturbance of others; and increased psycho-motor activity (American Psychiatric Association 2013(2):59). Learners with severe symptoms of both ASD and ADHD often present with lower cognitive functioning, social processing difficulties, motor deficits, poor executive functions and delays in adaptability (Landa & Rao 2013:online and Murray 2010:online). These behaviours affect the child's capacity to focus on activities, to cooperate in the classroom and to benefit from the educational programme.

2.3.1.10 Implications of unusual patterns of attention for education

Attention problems in the classroom usually present as poor task orientation, distractibility, poor organisation, and difficulty with sustained attention. The researcher has discussed the relationship between sensory processing difficulties (Deitz & Umeda 2011:152), rigid thought processes and poor organisational skills as well as the teaching strategies to improve these aspects. Sensory strategies; visual structure; a reduction of environmental distractions; routine; clear expectations regarding task completion; breakdown of activities into smaller achievable components, and frequent redirection to tasks are mentioned as strategies to enhance concentration skills (New Brunswick Department of Education 2005:71). Chairs with postural straps are used at times to enhance in-seat behaviours in learners with hyperactive behaviours. However, therapy balls appear to be more efficient since it addresses the possible need for vestibular-proprioceptive inputs (Schilling & Schwartz 2004:423). The use of these assistive strategies appears to require more research.

2.3.1.11 Motor deficits

Dyspraxia and sensory discrimination deficits are key features of ASD and affect postural control, limb coordination, integration of movement and the efficient use of objects (Schaaf 2009:4). A study (Apostu, Denckla, Dziuk, Gidley-Larson, Mahon & Mostofsky 2007:739) investigated to which extent dyspraxia contributes to the motor deficits seen in learners with ASD. This specific study indicated that dyspraxia does not account for all motor deficits and that there are other neuro-motor factors that also play a role. However, learners with high functioning ASD tested significantly lower on dyspraxia tests, compared to typically developing learners within a similar IQ range. Difficulty with dyspraxia also contributed to deficits in communication, social interaction and behaviour.

A retrospective review performed by Brimacombeb and colleagues (Brimacombeb, Ming & Wagner 2007:565) focused on the prevalence of motor deficits in ASD with specific reference to hypotonia, toe-walking, gross motor deficits, dyspraxia and ankle mobility. The results of the mentioned study indicate that hypotonia occurred in 51% and apraxia in 34 % of the 154 cases reviewed, with a reduction in symptoms of both these conditions with increased age. It is however uncertain whether the decreased prevalence of motor difficulties in older children with ASD is the result of natural improvement/development over time, the effects of early therapeutic intervention or a combination of both. Toe-walking occurred in 19% of cases while deficits in ankle mobility appeared to be rare (Brimacombeb *et al.* 2007:565).

2.3.1.12 Implications of motor deficits for education

Classroom activities (e.g. cutting, writing, pasting, threading, counting, painting, etc.) involve visuo-motor skills such as postural control, in-hand manipulation, bilateral integration and sequencing skills, mature grips and in-hand manipulation skills. It has been mentioned that most learners with ASD struggle with these components and frustration may also contribute to difficult behaviours. Clumsiness, motor planning difficulties and poor motor control also affect personal management skills such as dressing, grooming, toileting, etc. (New Brunswick Department of Education 2005:71). Table 2.8 provides an overview on some classroom strategies (functional assessments, research-based programmes, environmental adjustments, classroom strategies and assistive technology) to enhance motor skills in learners with ASD.

Table 2.9 Classroom strategies to enhance motor skills in learners with ASD (compiled by the researcher)

CLASSROOM STRATEGIES, ASSESSMENT AND SUPPORT: MOTOR
Functional assessment
Occupational- and physiotherapy assessments may be useful in determining the sensory-motor and neurological processes contributing to motor deficits in learners with autism. Sensory-motor checklists are also available to guide educators regarding the fine and gross motor development of learners with ASD (New Brunswick Department of Education 2005:95-96).
Research-based programmes and approaches
Therapeutic horseback-riding is often used to improve postural control and decrease sedentary activities in children with autism. An experimental study by Bass and colleagues (Bass, Duchowny & Llabre 2009:1261) reviewed the effect of therapeutic horseback-riding on social skills and the results showed benefits for social interaction and physical endurance levels.
Physical exercise: A systematic review (Ashbaugh, Ence, Koegel, Lang, Regester, & Smith 2010:576) focused on the effects of physical exercise in learners with Autism Spectrum Disorders. The results of the systematic review indicated that fatigue because of physical exercise reduced stereotype type movement and self-stimulatory behaviours. Positive effects were also noted regarding accuracy and proficiency in classroom activities. The study identified four important considerations for the design of exercise programmes for learners with ASD: i) Rigorous exercise (jogging, biking, etc.) seem to be more efficient than milder exercise; ii) Learners appear to benefit more from several exercise sessions during the day than one session;

iii) Physical exercise presented as part of age-appropriate, structured games appeared to encourage participation; and iv) Visual prompts and praise are required to re-enforce participation. Physical exercise should involve a number of activities, e.g. jogging, ball skills, arm and body movements, etc. Further research is required regarding the link between physical exercise and stereotype movements as well as the best practices to each physical exercise.
Water exercise swimming programmes appear to have benefits for social interaction, aquatic skills and fitness of learners with ASD (Pan 2010:9)
Environmental adaptations and support
Structured, safe play areas that provide opportunities for running, climbing, etc. (The National Autistic Society Task Team 2013:online).
Classroom strategies and assistive technology
Compensating for clumsiness and poor in-hand manipulation (New Brunswick Department of Education 2005:71): - Velcro work sheets and games; - Velcro desk organisers to keep stationery on the table; - Dycem mats to keep worksheets and books in situ; - Thick whiteboard markers and wipe-off boards; or - Typing on computers instead of writing

The following discussion will deal with the behavioural difficulties that develop as a result of the condition:

2.3.2 Behaviour and socio-emotional responses as a result of the condition

The mentioned features of ASD (socio-communicative difficulties; rigidity; sensory-motor difficulties; difficulty to organise thoughts and associated features) affect learning and development. These difficulties also have a secondary impact, which is noticed through the effect of the impairments on behaviour. Autism is a behaviour-defined condition and therefore behavioural analyses are essential in developing educational support strategies (Adreon 2005:59-60). The current section discusses the behaviour and socio-emotional responses as a result of the condition, while the implications for education will be discussed in the next section.

Children with autism often present with an overwhelming state of fear, which may be a direct result of their difficulties in interpreting their physical and social context. Since their capacity to learn is restricted by the condition itself, learners with autism struggle to understand their environments and are often fearful of the unknown. Difficulties in sensory processing may also affect the way in which they perceive and experience their environments, which in return may lead to atypical responses to situations that appear to be harmless. Children with ASD appear to make strong sensory associations with certain objects and experiences, which could elicit additional fear responses in the future. Fear, anxiety and tension are therefore not only a consequence of the condition but a further barrier to learning (Hanbury 2005:20). Literature also make mention of learners who show no fear and recognition for potential dangers in their environment. These learners may present with atypical sensory seeking behaviours, which may lead to injury (Dunn & Tomcheck 2007:191). Children with autism avoid stressful situations by means of flight responses, which may include running away, refusal to participate, self-absorption or obsession. These behaviours may occur in isolation or in varying combinations and usually provide the child with some control over the situation. The fears and frustration that learners with ASD experience often result in aggressive behaviour. Fighting is usually the last resort in children with ASD whose needs are not met, and this limits social interaction even further (Hanbury 2005:20-21).

Educators need to understand the factors that contribute to behaviour, the cycle of tantrums and strategies to enhance self-awareness, regulatory and calming activities. Adreon (2005:61:69) describe a cycle of tantrum, rage and meltdown in learners with ASD that usually present in three phases:

i) Rumbling;
ii) Rage; and
iii) Recovery.

During the rumbling phase, learners usually present with muscle tension, poor cooperation, fidgeting, changes in voice volume, tapping, tears, etc. During this phase educators need to remain calm by the use of a quiet voice, deep breaths, flexibility and limited verbalisation. The aim is prevention of the rage phase by trying to understand the child's response and analysis of what triggers the symptoms. A time-out tent, space or house base is often used to temporarily remove the child from the situation (Adreon 2005:67). The rage phase includes emotional, explosive behaviour; screaming; tantrums; kicking; self-injury; aggression; hitting, etc. The most important goal during this phase is the safety of the child and others, protection of property and to help the child regain control in a dignified manner. During this stage, the anxiety levels of educators also increase and it is vital for them to be calm and in control. Other

children need to be removed from the situation if necessary, or the learner needs to be moved to a quiet area where he can recover (Adreon 2005:68). A number of recovery behaviours are observed in these children, which include withdrawal into an own world, being emotionally fragile, sleeping, or denial of the behaviour. During this stage the educator needs to remain calm and should try to redirect the learner into a structured activity (Adreon 2005:67).

2.3.2.1 Implications of emotional and behavioural challenges for education

Since learners with autism lack insight in social rules and behavioural expectations, they struggle to adhere to educator-imposed classroom rules and reprimands. They also respond differently to praise and recognition due to their limited awareness of views and emotional experiences of others. The challenges in social interaction do not only affect functioning in the classroom, but also affect engagement in playground and sport activities. Classmates and peers may also be disturbed and negatively affected by the behaviour of learners with ASD. While some may be fearful; others may respond with teasing and bullying. Learners with ASD are already struggling with social interaction and these conflicting attitudes towards them create further obstacles in building relationships. A key factor in working with learners with autism is therefore to promote and sustain positive attitudes by creating a better understanding of the condition and the dynamics involved (Hanbury 2005:22-24).

Positive behaviour support (Fisher 2011:32-35), social skills intervention (Bellini *et al*. 2007:153-154) and alternative augmentative communication strategies (Lee & Low 2011:20) should be central features in addressing behavioural difficulties. Educators also need to translate their expectations and classroom rules in a way that learners with ASD can understand. Table 2.10 provides an overview on some classroom strategies (functional assessments, research-based programmes, environmental adjustments, classroom strategies and assistive technology) to enhance emotional and behavioural support in learners with ASD.

Table 2.10 Classroom strategies to enhance emotional and behavioural support in learners with ASD

CLASSROOM STRATEGIES, ASSESSMENT AND SUPPORT: EMOTIONAL AND BEHAVIOUR
Functional assessment
The behavioural assessment is aimed at identifying the root of the problem. The process involves the gathering of information, which includes a description of the function, occurrence, consequences, intensity, and frequency of the behaviour (New Brunswick Department of Education

2005:64).

Research-based programmes and approaches

Applied Behaviour Analysis (ABA) is a systematic process where observable behaviour is studied and modified through manipulation of the environment. The theory of ABA is described as an ABC model, which characterises the different aspects of behaviour. The A (antecedent) describes the stimulus or events that preceded the behaviour. The B (behaviour) describes the child's response to the behaviour. The C (consequence) indicates the outcome of the behaviour. A critical success factor of ABA is to provide consistent, intense and constant feedback and modification of a child's behaviour. Initially, intensive one-on-one instruction is recommended (20-30 hours per week) and parent involvement is critical to optimise the transition of learner behaviours across different environments (e.g. school, home, etc.). The aim is to gradually replace negative behavioural patterns with learned behaviours and to facilitate learned behaviours to become more automatic (Hughes *et al.* 2011:60).

Environmental adaptations and support

Avoid sensory overload: Adjust the environment to prevent sensory overload.

Visual structure: Maximise structure in the environment through visual aid.

Relaxation area: Provide a space for the learners to retreat or calming down (e.g. a time-out tent or space)

Safe classroom and playground environment: Since not all learners have insight in safety precautions, risk management and environmental adjustments (e.g. security gates, safety glass, etc.) are required to ensure the safety of learners (New Brunswick Department of Education 2005:58).

Classroom strategies and assistive technology

Positive programming interventions:

- Use tokens and positive feedback to reinforce appropriate behaviours; and
- Provide opportunities to relax and clam down in order to prevent sensory overload and negative behaviours due to fatigue (New Brunswick Department of Education 2005:59).

Reinforce education expectations and class rules

General education expectations are divided into four groups:

i) Response to educator;
ii) Peer interaction;
iii) Self-regulation; and
iv) Classroom performance.

Educators employ different strategies to communicate with learners (sign language, pictures,

tutors, etc.) to get learners with ASD to respond to them. A variety of behavioural modifications also assists in creating structure, routine and some understanding of expected behaviours. Opportunities for structured peer interaction through which classroom rules are reinforced in a concrete manner also play a role in understanding behavioural expectations. Self-regulation strategies include task completion, participation in classroom activities and efficient self-regulation strategies. Classroom performance refers to those behaviours that influence general classroom conduct such as the use of classroom resources and working independently (Smith-Myles 2005:12-16).

The effect of the ASD symptoms and behaviours resulting from the conditions on the attitudes of educators will be discussed next.

2.3.3 Attitudes towards behaviours

Educators have basic expectations of classrooms behaviours, irrespective of the setting in which they are teaching. Self-control, cooperation, discipline and the capacity to follow educator related instructions are described as critical behavioural expectations. Nevertheless, intolerable classroom behaviours include: self-injurious behaviours, tantrums, refusal to obey classroom rules, physical aggression, damage to property, ignorance of warnings, loudness and disturbance of others (Smith-Myles 2005:2-5). The behaviour that occurs because of ASD, as well as secondary behaviours that occur in response to interaction with the environment, poses challenges to educators since it is not aligned with expected classroom behaviour. The challenging behaviour of learners with ASD often leaves educators feeling unskilled. (Hanbury 2005:24). However, a positive attitude towards these learners and willingness to learn more about the management of the condition are vital to the success of teaching this challenging population. The role of the educators' attitude as a critical success factor in autism-specific education is discussed in 2.3.5.2 (Attitude and job satisfaction). A study by Robertson and colleagues (Chamberlain, Kasari & Robertson 2003:online) focus on the attitudes of educators towards including learners with ASD, and the results indicated better social adjustment and less behavioural challenges when educators display positive attitudes towards them.

Many educators perceive learners with autism as unmanageable, rude and beyond their scope of expertise. Historically, the special needs education system excluded learners with special needs from mainstream schools both internationally and in the South African context. Schools referred learners who were not typically developing (including those with ASD) to special classes and special schools. Inclusive policy rejects the concept of special schools and focuses on the child's right to basic education and the school's duty to accommodate the child.

Currently, there is more pressure on educators to manage diverse functional profiles and behaviours within an ordinary classroom setting (Olson 2011:6-8). Inclusive education as a global trend will be discussed next.

2.3.4 Inclusion as a global trend

Globally, increased research, changes in socio-political norms and pressure from human rights groups have forced education systems to align with principles of democracy. International theories and best practices for the education of learners on the autism spectrum have changed accordingly and there is a strong focus on inclusion and co-teaching programmes (Simpson 2005:150). However, there is still great variability in educational approaches for learners with ASD, which ranges from one-on-one educational programmes to full and partial inclusion. Although inclusive policy moves away from the concepts of special schools, the system recognises that learners with severe and complex barriers to learning have intensive support needs and require individual support programmes **(**SA 2008(3)8-9).

Inclusive principles move the responsibility of providing efficient support for each learner back to the educator in the classroom. Educators need to implement curriculum modifications or adaptations to accommodate the needs of the learner. These adaptations may include adjustments to the content, differentiated teaching methods, modified assessment strategies, etc. (Sisonke Consortium 2006(a):13, 134). Research by Olson (2011:1-2) indicates that there is a strong correlation between the educator's attitude towards inclusion and the efficiency of including learners with disability. These findings were also supported by local research (Roberts 2007:54-60) where teacher's perspectives on the mainstreaming of students with ASD was studied. The study also indicates several other factors that affect the implementation of classroom adaptations that include the self-efficacy of the educator; external support structures; the type and severity of the disabilities; and the ease of implementation of strategies.

Inclusive education is intended to be cost-efficient, improve academic progress and to develop the education system by changing school and teaching practices to accommodate the needs of all learners. However, critics indicate that the implementation of inclusive practices is challenging and that learners with disability usually do not receive the specialised support they require (Alper *et al.* 2010:38,53 and Frederickson & Jones 2010:1094). Not all learners are suitable candidates for inclusion due to their disruptive classroom behaviours. The successful inclusion of learners with high-level support needs into existing special schools and mainstream schools is challenging, since conventional special needs programmes and

teaching methods are not appropriate and accessible concerning their unique requirements (Wagner 2011:27-28). Although mainstream schools may provide opportunities for increased social interaction, there is often lack of individualised support programmes that could assist learners to adjust and integrate efficiently in the school system. Current research regarding inclusion of learners in mainstream schools focuses more on negative experiences such as peer isolation, increased anxiety, bullying as well as limited academic support (Frederickson & Jones 2010:1094 and Moreno, Rodriguez & Saldaña 2011:online). The inclusion of learners with ASD into mainstream settings is significantly challenging in schools without specialised resources. In the absence of support structures and ASD networks, educators in mainstream settings show negative attitudes towards teaching learners with ASD in mainstream settings (Adeniyi, Fokolade & Tella 2009:online). The challenges regarding the implementation of inclusive policy in the South African context are discussed in 2.4.1 (introduction of inclusive education in the South African education system).

Globally, the high cost of special needs education necessitates the need for strategies that could facilitate the successful inclusion of learners with ASD and other disabling conditions (Daily 2012:online).

2.3.5 Critical success factors of autism-specific education in inclusive settings

Dunlap and colleagues (Dunlap *et. al.* 2003:online) describe a number of critical success factors of autism-specific education: Individualised support for learners and families; systematic instruction; structured learning environments; specialised curriculums; and a functional approach to behaviour. Boutot (2013:online) views the following aspects as critical success factors: understanding learners with ASD; promotion of positive peer interaction; utilisation of behavioural strategies that promote successful learning; the development of a plan to assess challenging behaviour; the utilisation of strategies to accommodate individual needs; and respect for the learner's right to dignity and autonomy.

The following critical success factors of Autism-specific Education will be discussed:
2.3.5.1 Individualised, well-coordinated approach;
2.3.5.2 Attitude and job satisfaction;
2.3.5.3 Training, knowledge and skills;
2.3.5.4 Collective teams and leadership;
2.3.5.5 Parent involvement and positive parent-educator relationships;
2.3.5.6 Curriculum and extra-curricular activities;
2.3.5.7 Multiple, context-based assessment strategies; and

2.3.5.8 Research-based interventions and programmes.

2.3.5.1 Individualised, well-coordinated approach

An individual support plan (also referred to as an individual education plan) is the centrepiece of a special education programme and describes the support targets that are critical in meeting the learners' unique needs. These support needs may include learner-specific interventions such as a behavioural programme; grading and adjustment of learning material; environmental and classroom adaptations; the use of assistive technology; and specialised teaching strategies (Hughes *et al.* 2011:58). Although educators are mainly responsible for the coordination of individual support plans, the design of the plan should involve a collaborative approach of all the stakeholders involved (parents, therapists, school management team, carers, etc.) (Sisonke Consortium 2006(b):55).

2.3.5.2 Attitude and job satisfaction

The importance of a positive attitude of educators towards inclusion and learners with ASD has been mentioned (cf. 2.3.3). It is, however, vital to consider the factors that influence the attitudes and job satisfaction of educators teaching learners with ASD.

A comparative study performed in Iran (Ahmadi, Arsalani, Mohammadi & Zarafshan 2013:20) focused on job burnout, job satisfaction and general mental health amongst three groups of educators teaching learners with

i) ASD;
ii) Hearing loss; and
iii) Severe intellectual impairment.

The study focused on the interaction between the following variables: age; general mental health; career background; level of education; job satisfaction; and occupational burnout. Findings indicated that general mental health difficulties and occupational burnout were significantly higher in the group of educators of ASD learners compared to the other two groups. Poor working conditions and limited benefits were indicated as contributing factors to poor job satisfaction and burnout. Females also have a higher tendency to develop general health issues and job burnout compared to males. However, most educators of ASD classes in Iran are female and this limited gender comparisons (Ahmadi *et al.* 2013:20-27). The majority of educators (71%) in South Africa are female (Burger & Van den Berg 2010:17), but the

researcher could not find any statistics regarding the gender ratio's concerning educators working with ASD.

The study also indicated that with increased career experience, general mental health problems and job burnout decrease, and those educators are less likely to leave the field (Ahmadi *et al.* 2013:20-27). However, decreased self-efficacy, emotional exhaustion and poor job satisfaction increased the risk of mental health problems. Educators with positive attitudes towards their jobs, supervisors and general work conditions showed less signs of burnout and increased job satisfaction. Level of education, age, and career background were dismissed as predicting factors for burnout, poor job satisfaction and mental health difficulties. However, studies that indicate younger educators are at higher risk for occupational burnout are also mentioned (Ahmadi *et al.* 2013:20-27).

A study by Moreno and colleagues (2011:online) focused on the factors that affect positive attitudes towards the education of learners with special needs. The factors included: the need for training; support; perceptions regarding resources; and experience. The study indicated that the majority of educators showed positive attitudes towards the learners they teach, relationships with their families, and their ability to have a positive impact on the development of children with ASD. The availability of a support network at school was indicated as one of the strongest predictors for having a positive attitude towards teaching learners with ASD. Educators with experience in ASD and those who had access to adequate human recourses (e.g. support staff) showed more positive attitudes towards teaching learners with ASD. Although some educators indicated positive attitudes towards being in a mainstream setting, insufficient specialised recourses in mainstream schools affected attitudes negatively. Involvement in an ASD network or membership to an autism-specific support group or association also increased positive attitudes.

A Norwegian study (Skaalvik & Skaalvik 2009:1068-1069) indicated the following factors that contributed to burnout, decreased job satisfaction and self-efficacy: time pressure and high administrative loads; insufficient teacher-parent relations; reduced teacher autonomy and a supportive culture in schools; as well as trust, emotional and cognitive support from school leadership. A Nigerian descriptive survey (Adeniyi *et al.* 2009:online) indicated that female educators, those with professional qualifications, and those who are married, showed more positive attitudes towards learners with special needs. This study also highlights the impact of demographical factors, individual personality traits and the social circumstances of educators on their attitudes.

A study performed in the South African context (Burger & Van den Berg 2010:33) analysed the earnings of educators to determine whether they were adequately compensated. Currently, the average age of educators in the private and public sector is 41 years (Burger & Van den Berg 2010:17), that there is a tendency that the average age of educators is declining due to the limited financial prospects and other incentives for more experienced educators. The study revealed that educators are paid better than the average worker in other labour sectors, possibly because of their higher level of education. Teachers at the start of their careers are overpaid, while those at the top of their earning are underpaid. Experienced educators only stay in the profession because of favourable working conditions, personal factors or other incentives. The researcher was interested to determine whether educators of ASD classes experienced accomplishment and what they perceived as challenges in the South African education context.

Hanbury (2005:24) indicates that there is a strong relation between an understanding the condition and attitudes towards learners with autism. The following discussion focuses on the role of training, knowledge and skills in managing learners with ASD.

2.3.5.3 Training, knowledge and skills

Educators can only design individual support plans and adapt the classroom setting if they understand the condition, how it affects each learner and the strategies available to better fit the learner's needs with the activity, contextual and environmental demands (Wagner 2011:29). Hanbury (2005:1-2) indicates that classroom practices (creating a responsive classroom, a structured class routine, opportunities for social interaction, positive behaviour support, etc.) are predominantly influenced by the knowledge, attitude, skills and experience of educators concerning autism-specific support. School-based teams do not only need to be trained in understanding the needs of specific diagnostic groups, but should also understand the principles of inclusive education in order to transform from traditional approaches to an inclusive education system (Olson 2011:11,12).

In spite of a dramatic increase in the prevalence of ASD and the availability of programmes, there appear to be a decline in literature focusing on educator training and effectives. There are a number of ways in which educator training could be implemented, including: distance training such as video conferencing; intensive one-week training courses; in-service training; and peer socialisation. Nevertheless, training is costly and time-consuming and it is often difficult for schools to release staff for training and research due to the costs and unavailability of replacement staff (Koegel *et al.* 2011:6-7). Teachers in special schools appear to have a

lower demand for training, but it is argued that they are in well resourced, specialised units with better access to ASD support networks and in-service training. Educators in mainstream schools show a six times higher need for training, and lack of access to specialised training affected attitudes negatively (Adeniyi *et al.* 2009:online and Moreno *et al.* 2011:online).

The South African education system appears to have unique challenges concerning the training of educators. The significant number of under- and unqualified educators in South Africa increases the number of marginalised learners and poor education outcomes in low performing schools. A recent publication on eNews Channel Africa (Hawker 2013:online) indicated that there were 7 076 unqualified educators on the payroll of the Department of Education during September 2013. Kwazulu-Natal appeared to be mostly affected (Hawker 2013:online) and a newspaper publication in 2011 (South African Press Association 2011:online) indicated a total of 4 303 underqualified educators in the area. These educators only had a matric certificate and no formal post-matric education. The South African Council of Educators is collaborating with various stakeholders to upgrade unqualified educators to have at least a three-year post-matric qualification (South African Council of Educators 2013:online). The training of un- and under-qualified educators is a costly and challenging task since many unqualified educators have been in the system for decades. Nevertheless, there have been significant improvements of educators who have postgraduate qualifications compared to 1994 (Hawker 2013: online).

Greame Bloch in Hawker (2013:online), a South African educational analyst, indicates that the basic educational qualifications of educators are only part of the problem, since educational outcomes in schools are still poor despite improvements in post-basic qualifications. Poor commitment to self-development and lack of responsibility concerning the progress of learners are two major concerns. Bloch in Hawker (2013:online) reports that a university degree or diploma is not enough to ensure high standards of practice and that educators need to take responsibility to continuously develop professionally and personally. The minimum qualification for educators working in Finland, where there is a literacy rate of 99%, is a master's degree, majoring in special education. In addition, educators also need to qualify in a professional competence programme that allows them to teach the subjects taught in mainstream classes. They also need to follow additional training programmes in special education to equip them in the management of diverse support needs (The Trade Union of Education in Finland 2008:online)

Obtaining information on basic qualifications, postgraduate studies, autism-specific educator training and the strategies for self-development of educators in South Africa have been targeted as an objective in the study.

2.3.5.4 Collective teams and leadership

The efficiency of classroom-based activities is strongly influenced by the commitment of school management teams and educators to implement research-based practices (Koegel 2011:online). School management teams play a central role in designing operational systems, training and support, monitoring of classroom practices and the provision of appropriate resources to autism-specific educators. Collaboration between educators, consistency in staffing, and providing positive role models to learners are mentioned as golden standards for success in autism-specific education (New Brunswick Department of Education 2005:89, Wagner 2011:28-29). School management teams also play a significant role in designing strategies to involve parents and to create opportunities to develop positive parent-educator partnerships (Geldenhuys & Wevers 2013:8-9).

The barriers regarding leadership and support in schools and at district, provincial and national level are discussed in 2.4.3 (Barriers in the mesosystem that affect the implementation of inclusive policy).

2.3.5.5 Parent involvement and positive parent-educator relationships

Parent involvement, integrated goal-setting and transfer of learning skills to the home environment are critical in providing an integrated educational approach (Bellini & Pratt 2010:online, Wagner 2011:29). Regular communication and collaborative planning, goal-setting and review sessions with parents are suggested. Efficient home and school coordination has proven to facilitate the achievement of target behaviours and facilitates positive behavioural changes (Koegel *et al.* 2011:online). Parent involvement includes assistance with homework; attending school-based activities, communication with educators and general support of school activities. Sapona and Winterman (2002:34) indicate that frequent, direct communication with parents regarding the individual support plan of their child should take place once a quarter, and six weekly feedback sessions are recommended. Routine collaboration with parents increases trust in the school programme and educators (Wagner 2011:29). Parents have personal experience in handling their child with ASD and schools should consider their inputs as a primary resource in the design of individual support plans. Parents should also be allowed in the selection of intervention strategies and to

implement these at home and other community settings. A collaborative teacher-parent approach assists learners to generalise skills across contexts (Bellini & Pratt 2010:online).

Current challenges concerning parent involvement and positive parent-educator relationships are discussed in section 2.4.2 (Barriers in the microsystem that affect the implementation of inclusive policy).

2.3.5.6 Curriculum and extra-curricular activities

Education systems have the responsibility to equip children for the challenges of adulthood and to provide the tools needed to develop learners for participation in purposeful life activities (Bazyk & Case-Smith 2010:713). Education is therefore not only concerned with achievement in academic domains but should also be focused on developing an increased sense of independence, personal responsibility and capacity to contribute to the community (New Brunswick Department of Education 2005:48-49). The majority of learners with ASD are not only in need of a specialised curriculum, but also require additional support strategies that accommodate critical areas of development. Positive behaviour support (Fisher 2011:32-35); social skills intervention (Bellini *et al*. 2007:153-154); alternative augmentative communication strategies (Lee & Low 2011:20); as well as self-care, self-monitoring and vocational skills (New Brunswick Department of Education 2005:48-49) should be central features in the autism-specific education process. Each developmental stage poses different contextual and functional challenges to learners with ASD and a curriculum that accommodates the developmental needs from early ages (three years) to 18 years is recommended (National Autism Centre Task Team 2009:online).

The National Curriculum Statement has recently been complemented with the Curriculum Assessment Policy Statement, which has been phased into all the different educational phases (foundation, intermediate and senior phase, as well as further education and training) (SA 2011(5):29-30). The South African National Association for Special Education (2011:online) has adapted the CAPS foundation phase curriculum to accommodate learners with severe cognitive impairments. Learners are therefore exposes to basic lieteracy, reading and writing skills. Since learners with ASD do not always benefit from conventional special needs programmes, many schools make use of custom-designed curriculums to improve the behaviour and development of learners. An objective of the study was to determine which curriculums are currently used for learners with ASD.

2.3.5.7 Multiple, context-based assessment strategies

Clear objectives with valid, reliable outcome measures are essential to accurately monitor the progress of learners with ASD (Simpson 2005:144). Simpson (2005:144) indicates that not all educational approaches come with clearly defined learning objectives and reliable methods to achieve these goals. This also affects outcomes measurement since it is unclear when, how, by whom and how frequently these assessments need to be performed. Learners with ASD often struggle with formal assessments and standardised tests due to the complexity of their barriers to learning. In addition, criteria and observation lists are used in natural environments. Nevertheless, these assessments are also influenced by a variety of variables and contextual factors. Koegel and colleagues (2011:online) indicate that various contexts and sources should be considered in the compilation of learning objectives. An assessment process with four steps is required to increase the accuracy of assessments:

i) Review of learner records;
ii) Interview with carers, teachers, etc.;
iii) Observation in natural environments; and
iv) The use of standardised instruments and outcomes measures.

2.3.5.8 Research-based interventions and programmes

In recent years, there has been a dramatic increase in the quantity and range of focused interventions, comprehensive treatment models and teaching programmes proposed for learners with ASD. These programmes also include strategies that have limited scientific proof regarding their efficiency (Simpson 2005:140-141). Internationally, the most popular research-based educational practices for learners with ASD include: Applied Behaviour Analyses (ABA); the Developmental, Individual Difference, Relationship-Based Model (DIR/Floortime); the Picture Exchange Communication System (PECS); the Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH); and Musical Interaction (Hughes *et al.* 2011:59-63). The Makaton Language Programme is also widely used as a structured multimodal approach to teach language and literacy skills by the use of speech, signs and graphic symbols (Duffy & Sheehy 2009:91).

Interventions are developed from different professional frameworks which focus on improving dimensions of the condition such as behaviour, communication, emotional control, etc. Different approaches have been found effective in improving the functioning of individual learners. However, no single approach is effective with all children and could be considered as a answer/cure for autism (Koegel *et al.* 2011:online). According to Hanbury (2005:16-17) a

combination of elements from different approaches, which considers the interaction of different parts of the syndrome, appears to be the most effective intervention strategy. An analytical overview (Koegel *et al.* 2011:online) focused on research-based practices for reducing challenging behaviour, enhancing communication and improving social interaction, followed by an investigation of challenges in implementing these practices. The results of the review indicated that educators do not consider research-based evidence as an important factor for selecting a teaching strategy, but rather factors such as focus on ease of implementation, personal views and the availability of resources to support the strategy. Educators do not implement strategies in its purest form, but rather make adjustments to ensure compatibility with current practices and programmes. Although Koegel and colleagues (2013:online) are supportive of an eclectic approach, it is argued that customised usage of research-based programmes may affect the efficacy and validity of these evidence-based practices.

Simpson (2005:140-141) shares a similar view and raises concern regarding the common use of strategies and methods that lack efficacy and scientific support. Educators, other professionals and parents need to critically question the efficacy, anticipated outcomes, possible risks and outcomes measures when selecting intervention strategies for learners (Simpson 2005:143). A critical evaluation of interventions and treatments for learners with ASD indicated that the following strategies are considered to be scientifically based practices: Applied Behaviour Analyses; Discrete Trail Teaching; and Pivot Response Training (Simpson 2005:146). Promising practices include: Sensory Integration; Picture Exchange Communication System (PECS); the Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH); and Augmentative Alternative Communication. Interventions with limited scientific support include: Gentel Teaching; the Developmental, Individual Difference, Relationship-Based Model (DIR®/Floortime™); Fast forWord®; power cards; and music and art therapy (Simpson 2005:146).

Nevertheless, there are conflicting reports regarding the efficiency of different programmes. Simpson (2005:146) did not consider DIR®/Floortime™ to be an evidence-based practice, but positive outcomes for learners with ASD are reported (Hughes *et al.* 2011:61). A play training programme that incorporates Floortime™ found that 45,5% of the children involved in the study made significant progress in their functional development through the programme, while 80% of parents involved in the project approved the programme (Greenspan & Wieder 2001(2):11-19). The Fast forWord® programme is now also considered to be promising in the light of new neuro- anatomical evidence (cf. 2.2.4). The programme appears to have promise concerning attention, receptive and expressive language skills, speech intelligibility and pragmatic skills (Burns 2013:10-11).

Personal experience suggests that many of the programmes are not accessible or applicable to the South African context due to financial and contextual barriers. The Childrens Disability Centre developed an eclectic approach called Fishbowl, which provides structured guidelines to parents and educators regarding the management of learners with moderate to severe ASD. Autism South Africa presents a new programme called Hands-On Autism (Autism South Africa 2014:online). Due to the cost-effectiveness of training and the strategies offered, the programme appears to be popular. Training sessions are offered countrywide and assist many schools to start autism-specific classes (Autism South Africa 2014:online). Tiny Handz is a training programme that was compiled in 2008 by the mother of a deaf child who used her hands and facial expressions as a tool of communication. Recognised South African Sign Language is incorporated in the training programme. The Tiny Handz training offers Sign Language courses for carers, families, teachers and therapists who work with young children in the special needs spectrum (Will 2013:online).

The Special Needs Adapted Programme (SNAP) was developed in Cape Town because of the increasing demand for an education system to assist learners who require specialised support regarding learning and development. The programme is based on the critical success factors of early intervention and is aimed to empower, support and involve parents in the education and development of their child. The need for an individualised one-on-one approach also became apparent due to the increased learner-educator ratios because of the increased demand for autism-specific education. SNAP offers parent consultations; one-on-one tutoring; foundation phase schooling; social interaction classes to enhance social skills; support groups; training; and outreach programmes (Van Risjwijk 2012:online). Due to the cost of the programme, it is currently used more in private educational settings.

2.4 SOUTH AFRICAN CONTEXT

Contextual dilemmas regarding autism-specific education need to be viewed at the backdrop of the bigger education system in South Africa. The Department of Basic Education is facing serious challenges as prioritised in the Strategic Plan for 2011-2014 (SA 2011(5):9-16). These focus areas include: improved Grade 12 results; better results on the annual national assessment (especially for grades 3, 6 and 9); improved results in the Trends in International Mathematics and Science Study (TIMSS); reduction in the number of learners who drop out of school; strengthening of poorly performing schools; and the implementation of the Curriculum Assessment Policy Statement for all learning phases (SA 2011(5):20-23).

Socio-economic (poverty, child-headed households, foster children, teenage pregnancies, etc.) and healthcare dilemmas (HIV/Aids, substance abuse, etc.) contribute to challenges in education and significantly increase the numbers of marginalised learners. The education system in South Africa is under severe pressure and policy-makers align resources according to these perceived priorities (SA 2011(5):49-51). Although the Department of Education recognises the challenges of learners with Autism Spectrum Disorders, national priorities guide the provision of resources.

Spaull (2012:online), a researcher from the Department of Economics at the University of Stellenbosch, performed a study where the current South African schooling system was compared to those of other African countries. The South African government spends 20% of the total budget on education, of which 78% is paid towards educators' salaries. Nevertheless, the education system does not contribute to social mobility, since learners from poverty-stricken areas do not have positive future prospects. The current system continues to produce inequality, since functional schools are not accessible to the poor from a geographical and financial viewpoint. Statistical analysis of the national assessment results indicates that the average South African learner does not exist from a statistical perspective. The results indicate that 75% of learners score significantly below average while 25% scores significantly higher than the average. Spaull (2012:online) indicates that there isn't a single education system in South Africa, but rather two systems that differ considerably. Consequently, the South African education system remains unequal and inefficient. Table 2.11 describes the differences between the performing and underperforming schools.

Table 2.11 Characteristics of dysfunctional and functional schools (Spaull 2012:online).

DYSFUNCTIONAL SCHOOLS (75%)	FUNCTIONAL SCHOOLS (25%)
Poor accountability	Good accountability
Incompetent school management	Capable school management
Deficient culture of learning, discipline and order	Culture of learning, discipline and order
Inadequate educator content knowledge	Adequate educator content knowledge
High educator absenteeism	Low educator absenteeism
Slow curriculum coverage, limited homework and continuous assessment	Adequate curriculum coverage, weekly homework and continuous assessment
High grade repetition and dropout (Gr. 10-12)	Low grade repetition and dropout (Gr. 10-12)
Extremely low performance on standardised assessments	Adequate performance on standardised assessments

The same scenario seems to apply for special schools. Special schools in deep rural areas often have insufficient infrastructure, limited access to specialists and appropriately qualified staff. Consequently, the quality of education in these schools is also a concern (SA 2007(2):5-7). The abovementioned discussion highlights that a significant number of learners in public schools are marginalised because of their social circumstances, educational barriers as well as barriers in the education system as a whole. The challenges in implementing an inclusive education system within the South African context are discussed next.

2.4.1 Introduction of inclusive education in the South African education system

The implementation of inclusive policy is a challenging process and strategic areas of change have not been efficiently implemented yet (SA 2011(5):10-16). Implementing an inclusive education system implies a radical transformation of the education system as a whole (Sinsonke Consortium 2006(a):13). A qualitative, phenomenological study by Geldenhuys and Wevers (2013:1) focused on ecological factors that hamper the implementation of inclusive policy in schools in the Eastern Cape. These researchers adopted Bronfenbrenner's Ecological Framework to explain the challenges of implementing inclusive policy within the South African context, and the current study proposes the same structure. The framework is divided into five subsystems: the micro-, meso-, exo-, macro- and chronosystem. The chronosystem refers to

changes that occur in one of the first mentioned systems (Geldenhuys and Wevers 2013:1). Barriers in the microsystem (2.4.2), the meso- and exosystem (2.4.3) the macrosystem (2.4.4) will be discussed next.

2.4.2 Barriers in the microsystem that affect the implementation of inclusive policy

The microsystem refers to the individual's immediate context with regard to family relationships and close friends (Geldenhuys & Wevers 2013:3). Active, frequent and direct parent involvement has previously been indicated as critical success factors for learner progress and academic success (cf. 2.3.5.5). Nevertheless, research in the South African context (Geldenhuys & Wevers 2013:8-9 and Ladbrook 2009:119) refers to unsupportive home environments, insufficient parenting skills, and poor parental involvement in school activities. Parents show little support for parent meetings, fundraising events, response to school communication and other events. Contributing factors to this tendency include family breakdowns, single parents and working mothers. Decreased levels of accountability and a delegation of responsibilities to aftercare services are also mentioned as areas of concern (Ladbrook 2009:120-124). In disadvantaged communities, unemployment; poor literacy and education levels; poverty; lack of parenting skills; and perceptions that the child's education is the responsibility of schools contribute to poor parental involvement. Child-headed households, increasing numbers of foster children, and children staying with family while parents work in other cities affect parent support and involvement (Geldenhuys & Wevers 2013:8-9). Limited respect, empathy and insight in the needs of learners with special needs cause further barriers to learning and development. Schools often expect a culture of uninvolved parents and do not display constructive efforts to increase parental involvement (Geldenhuys & Wevers 2013:8-9). The researcher could not locate a South African study that focuses on the involvement and support of parents of learners with ASD.

A descriptive survey (Blumberg, Boyle Rice, Schieve & Visser 2007:115) focus on the relationship between autism and the stress of parenting. The results of the study indicated that stress levels of parents with newly diagnosed children with ASD and whose child struggled with access to specialised services were significantly higher than those of parents whose children did not require special services. Factors that contribute to stress levels include:

i) The severity of behavioural and cognitive symptoms;
ii) The child's current level of functioning; and
iii) The parent's perception of the severity of symptoms and burden of care.

The study further revealed that parents of children with ASD may have unique support needs and that support services need to be designed to address the specific needs of parents (Blumberg *et al.* 2007:120). Given the South African context where parents struggle to access specialised services and support, it may be assumed that parents experience high stress levels.

Autism South Africa and other autism support groups provide regional support services to parents (Autism South Africa 2014:online). Although these support groups offer opportunities for emotional support, skills training and empowerment; many parents indicate that they are unable to attend these sessions since they cannot access alternative care for their child. Action in Autism is non-profit organisation and actively supports, raises funding, and fights for the rights of individuals with ASD. Through parent involvement, lobbying and advocacy campaigns, Action in Autism has convinced the KwaZulu-Natal Department of Education to commence autism-specific classes at 13 schools. An autism indaba was held with the KZN Department of Education in 2010, which stimulated the initiative to provide autism-specific education at 72 special schools in KZN by 2014. Unfortunately, the implementation this project is also falling behind due to limited resources within the Department of Education (Action in Autism 2014:online).

The researcher is of opinion that parents in the Motheo District are often supportive of actions that advocate better service delivery to learners with ASD, but that they are less actively involved once their child has accessed these services.

2.4.3 Barriers in the mesosystem that affect the implementation of inclusive policy

The mesosystem refers to the interaction of more than one microsystem in which the developing child actively engages, e.g. the school, home situations, circle of friends, the neighbourhood, etc. For the purposes of this study, special, mainstream and full service schools are discussed (Ladbrook 2009:38). The Strategic Plan: 2011-2014 (SA 2011(5):49-53) acknowledges the significant variability in service delivery at schools and the urgent need to support and develop underperforming schools in disadvantaged communities. Former Model C schools are better resourced and situated in urban areas, where the socio-economic situation is usually better compared to township schools. There also appear to be contextual differences between these schools (Ladbrook 2007:124). The efficient implementation of inclusive policy is dependent on efficient infrastructure; management and leadership; qualified and committed educators; as well as parental and community involvement. The discussion on the mesosystem involves specials schools / resource centres (2.4.3.1), mainstream and full

service schools (2.4.3.2), and resources, therapeutic support and extra-curricular activities (2.4.3.3).

2.4.3.1 Specials schools / resource centres

As discussed earlier, the conceptual shift from a medical model (special needs) to a social model (inclusivity) has affected the roles of special schools. In addition to providing specialised support for learners with high levels of support, special schools have a new role of serving as resource centres. This new role includes the provision of expertise and support to neighbourhood schools, especially full service schools (SA 2001(1):3,21-22). Special schools are uncertain regarding their new role as resource centres (Ladbrook 2007:45, 52).

Hay and Kgothule (2013:34-35) highlight that there is lack of a collaborative vision for education. South African special schools have their own vision statements and admissions criteria by which they define services offered, as well as the requirements learners need to meet in order to benefit from the school programme. Admissions criteria play a key role to ensure that only learners with high level support needs from diverse communities are accommodated in special schools (SA 2007(2):7-8). Schools and parents cannot refer learners directly to special schools and recommendation for placement is done through district-based support teams who ensure that admissions policies abandon discrimination and unequal opportunities (SA 2007(2):8-9). District-based support teams usually accommodate learners within their district first and therefore it is challenging for learners from another district, country or province to access educational services.

2.4.3.2 Mainstream and full service schools

Full service schools are mainstream schools that are equipped and supported to accommodate learners with mild to moderate barriers to learning within an inclusive setting. The identification and phased conversion of a number of mainstream schools (starting with 30 schools in each district) are key strategies in the development of an inclusive education system (Sisonke Consortium 2006(a):140-145). Educators in full service schools and mainstream schools experience the following challenges regarding the implementation of inclusive policy in South African public schools (Ladbrook 2009:6):

i) Inadequate knowledge, skills and training regarding inclusive policy;
ii) Inadequate infrastructure and human resources;
iii) Negative learning culture caused by poverty and emotional deprivation;
iv) Stress factors that impact on job satisfaction; and

v) Negative attitudes towards inclusion.

Factors that cause stress to educators are large class sizes; cultural and language differences; lack of parental and community involvement (cf. 2.4.2); increase in the demand to fulfil many roles for learners (e.g. parent, councillor, nurse, etc.); unsafe learning environments; and high administrative loads (Ladbrook 2009:59-69).

Educators have different levels of training (Hawker 2013:online), experience and personal views that affect their attitude towards learners with disabilities. Lack of in-service training and support often leads to low confidence levels, insecurity and negative attitudes towards learners with complex needs (Eloff, Engelbrecht, Oswald & Swart 2003:307). Inadequate mentorship and support, limited assistive devices, limited access to educational programmes and teaching aids, poor infrastructure and insufficient facilities as contributing factors to negative attitudes regarding inclusive education. Lack of specialised professional support (therapists, psychologists, social workers, etc.) also increases stress levels since educators do not have specialised skills to handle learners with high level support needs (Ladbrook 2009:103-118). Ladbrook (2009:110) highlighted educators' views that inclusion without appropriate support puts marginalised learners at risk.

2.4.3.3 Resources, therapeutic support and extra-curricular activities

Schools vary in terms of the availability of resources, additional services provided, level of curriculum differentiation and school management. Schools with community involvement through their school governing bodies, parent involvement and fundraising teams usually offer a wider range of additional services (e.g. therapeutic intervention, parent training and support, hi-tech assistive devices, etc.) and extra-curricular activities (e.g. horseback-riding, drama, art, etc.) to their learners (SA 2007(2):9-16). Not all schools provide hostel accommodation and, considering the high burden of care of learners with ASD, hostel accommodation may pose additional challenges, costs and efforts. Learners with ASD usually have rigid routines, food preferences and nutritional needs which may also complicate hostel accommodation (Cutler *et al.* 2004:1611) Hostels at some special schools in the Motheo District have waiting lists of five years. The Department of Education has strict guidelines in place to ensure the safety and efficient management of marginalised learners in hostels (SA 2007(2):17). The researcher could not allocate scholarly articles regarding the challenges of providing hostel accommodation for learners with ASD. Nevertheless, it is assumed that the financial burden and logistical challenges are also higher for parents who need to accommodate their child in a specialised ASD facility far from home.

A collaborative, multi-professional approach is required to design and provide intervention strategies focused at individualised support needs of learners with ASD (Brown & Dunn 2010:475). Access to therapeutic resources differs and is strongly influenced by operational frameworks, the availability of resources and school management models. Within the South African context, special schools are variably resourced with therapeutic equipment and staff (SA 2007(2):13-17). None of the public full-service or mainstream schools in the Motheo District is resourced with on-site therapeutic resources. However, some schools have employed therapists through school governing bodies or have access to private therapeutic resources. District-based support teams are intended to play a key role in assisting schools with support strategies for learners, but district offices are significantly under-resourced (Ladbrook 2009:90-92).

The roles of therapists has also changed from removing a child from the classroom in order to provide one-on-one therapy, to moving into classrooms and equipping educators with curriculum differentiation strategies. Occupational therapists, for example, need to provide training regarding environmental adaptations, assistive technologies, the adjustments of classroom activities, assessment strategies and teaching methods to accommodate the needs of all learners (Anderson *et al.* 2012:5). The intervention approach of the occupational therapist consequently shifts from remediation to promotion, modification and prevention (American Occupational Therapy Association 2008:627). Occupational therapists have to adjust their approach and clinical reasoning from focussing on individualised treatments to accommodate a systems and community focus. School-based teams (including occupational therapist) are often resistant to these changes and continue to focus on the traditional approaches where learners are removed from the classroom for individual or group sessions. Occupational therapists have the responsibility to communicate their new role to educators and to equip themselves to align with inclusive policy (Anderson *et al.* 2012:5-6).

Although the researcher is supportive of the conceptual shifts, the implementation of therapeutic strategies in classrooms must be implemented with care. The following aspects require consideration:

i) Educators do not have specialist training in all areas of development and may apply strategies to the disadvantage of learners;

ii) Educators may be burdened by the extra responsibilities;

iii) Resources should be in place to ensure the efficient support and monitoring of educators regarding the application of classroom strategies; and

iv) Educator support could not substitute all the benefits of one-to-one therapeutic intervention.

2.4.4 Barriers in the exosystem that affect the implementation of inclusive policy

The exosystem refers to systems in which learners and educators do not necessarily participate in but influence the operations of settings in which the child interacts (Geldenhuys and Wevers 2013:5). The roles of district-based support teams (2.4.4.1); school-based support teams (2.4.4.2) as well as school management teams and school governing bodies (2.4.4.3) are discussed next.

2.4.4.1 District-based support teams

District-based support teams (DBST) promote inclusive education through training, distribution of resources, providing support strategies to barriers of learning and operational efficiency. These teams consist of remedial educators (learner support facilitators); educational psychologists; social workers; speech therapists; and occupational therapists. The professionals should have specialised skills and experience in inclusive education (SA 2001(1):47). A primary function of the DBST is also to work closely with SBSTs to plan, advise and implement appropriate support programmes for individual learners as well as groups of learners (Ladbrook 2009:52-53, SA 2001(1):47).

The challenges at district level include the following (Geldenhuys & Wevers 2013:12-13, Ladbrook 2009:90-92):

i) The majority of therapists and educational psychologists in district-based support teams are not representative of all the racial and language groups in South Africa, which impacts on service delivery;

ii) District members are not actively advocating inclusive policy and tend to continue with traditional assessment procedures;

iii) Under-qualified and inexperienced educators are often promoted to district level, which hampers the delivery of expert support;

iv) Inadequate leadership at district level affects the implementation of efficient management and operational procedures; and

v) Inadequate resources and services structures to deliver efficient support to educators and marginalised learners.

District-based support teams indicate a number of challenges that affect their service delivery, and these include (Motheo Inclusive 2014:1-4):

i) Limited resources (transport, equipment, consumables, etc.);

ii) Limited structure, support and guidance from higher levels;

iii) Inadequate human resources, considering the large number of schools and learners that need to be served;

iv) Limited insight from other sections regarding the role of inclusive education; and

v) Schools showing resistance to change.

Amongst other duties, the district-based occupational therapists are currently driving ASD-specific issues within Motheo Inclusive, and a key duty is to facilitate quality, specialised education to learners who require high levels of support. The researcher is of the opinion that the emerging role of the occupational therapist at district level creates opportunities for active marketing of the profession; developing community-based practice frameworks for occupational therapists within South African education; and reinforcing the significance of occupational therapists, not only as clinicians but also advocates, consultants and managers.

2.4.4.2 School-based support teams

In accordance to White Paper 6, school-based support teams need to be established to develop well-coordinated learner and educator support services at school level. Schools need to develop systems to identify and attend to school-, educator- and learner-specific needs. District-based support teams support schools through intervention strategies for learners and curriculum differentiation (SA 2001(1):29). However, schools need to present evidence of support provided by the school and how they intend to implement strategies recommended by district-based support teams. Although most schools have school-based support teams, the functionality of these teams varies significantly, with the majority being dysfunctional (Geldenhuys & Wevers 2013:12). The following aspects are considered challenges in establishing efficient school based support teams (Geldenhuys & Wevers 2013:7, Ladbrook 2009:116-117):

i) Limited support from school management teams;

ii) Inadequate support from district-based support teams;

iii) Limited teamwork and expertise amongst educators;

iv) Insufficient involvement of parents and community members; and

v) Inadequate knowledge, skills and commitment of educators to implement inclusive strategies.

2.4.4.3 School management teams and school governing bodies

Empirical investigations (Geldenhuys & Wevers 2013:11 and Ladbrook 2009:88-89) indicate that senior management teams in mainstream schools portrayed negative attitudes towards the inclusion of learners with complex barriers to learning, and prefer a system where they could be referred for special education. These negative attitudes and lack of leadership to implement inclusive strategies in mainstream schools also impact negatively on the functionality of school-based support teams and the attitudes of educators (Geldenhuys & Wevers 2013:12). However, Ladbrook (2007:155) indicated that educators from schools with managers that encouraged democratic decision-making, teamwork, integrated planning and training showed more positive attitudes towards assisting learners with more complex barriers to learning.

School management teams indicate the following challenges in implementing inclusive strategies:

i) Inadequate support and insufficient service delivery by district-based support teams;
ii) Limited human and other resources in all levels of the education system;
iii) Stressed educators who have limited capacity to absorb changes and additional challenges;
iv) Inadequate training and infrastructure to efficiently support learners with individualised needs; and
v) Language of teaching and learning that creates additional barriers (Geldenhuys & Wevers 2013:11-12).

Educators indicated that school governing bodies are not active enough in policy development, maintenance and creation of infra structure, assistance with provision of assistive devices and insufficient networking with stakeholders in the community (Geldenhuys & Wevers 2013:12).

South Africa has the highest rate of absenteeism in the South African developing community countries, with 10% of educators absent from work for an average 19 days per year. The high rate of absenteeism amongst educators nationally reflects poor school management, inefficient administration, serious neglect of duties as well as a lack of responsibility and professionalism (South African Government News Agency 2013:online).

2.4.5 Barriers in the macrosystem that affect the implementation of inclusive policy

Macrosystem refers to the roles and responsibilities of the National Department of Education and Provincial Head Offices in the formulation of policies and implementation, which include efficient implementation strategies and financial resources (Ladbrook 2009:37). The discussion on barriers in the macrosystem refers to provincial (2.4.5.1) and national (2.4.5.2) level.

2.4.5.1 Provincial level

Decreased knowledge and skills regarding the true meaning of inclusive policy at national and provincial level hamper the efficient role of White Paper 6 (Dalton, Kahonde & Mckenzie 2013:online). Officials in provincial offices appear to have different understandings of how policy should be implemented, which results in conflicting information at lower levels. Provincial teams are also far behind in the implementation of approved curriculums; special needs programmes; the development of resource centres at full-service schools; as well as the monitoring of learner progress in inclusive settings. Special schools have long waiting lists and many learners who cannot access schools (Ladbrook 2009:46).

2.4.5.2 National level

National policies and strategic guidelines on inclusion highlight the right of learners with disabilities to receive appropriate support and specialised education within the public sector. The policy framework does, however, recognise implementation challenges and that contextual factors impact strongly on the transformation process. (SA 2001(1):11-17). Ladbrook (2009:46) considers the following four aspects as challenges on macro level that impact on the efficient implementation of inclusive policy:

i) Slow implementation of White Paper 6;
ii) Insufficient development of a network of skilled support educators;
iii) Limited financial support and resources for efficient implementation of strategic plans; and
iv) Significant delays in the development of full service schools and resource centres/special schools.

The National Strategy on Screening, Identification and Support (SIAS) has been developed to assist schools to determine the level and intensity of learner support needed. SIAS also provide guidelines regarding the assessment process and the type of support that is required

at different levels. The SIAS process therefore also indicates whether a learner is a candidate for special education, as well as the type of support that is needed within the specialised setting (SA 2008(3):1-2). The SIAS process is used with little success, since the efficiency of the support guidelines is dependent on the availability of resources and efficient training of educators (Geldenhuys & Wevers 2013:12). Many educators are also uncertain about their roles in the SIAS process because of insufficient training (Geldenhuys & Wevers 2013:12). The need became apparent that the system requires adjustment to ensure that it would meet the contextual realities of all provinces. Refinement of the SIAS document has been discussed at the interprovincial inclusive meeting held in February 2013, and an implementation plan was discussed which included strategies for the provision of resources and training at provincial, district and school levels. The implementation plan is far behind schedule, since implementation is dependent on adequate resources and service networks in communities (Free State 2013:1-4).

Figure 2.2 provides a summary of the complex dynamics that hamper the efficient implementation of inclusive principles in South African public schools (Geldenhuys & Wevers 2013:7).

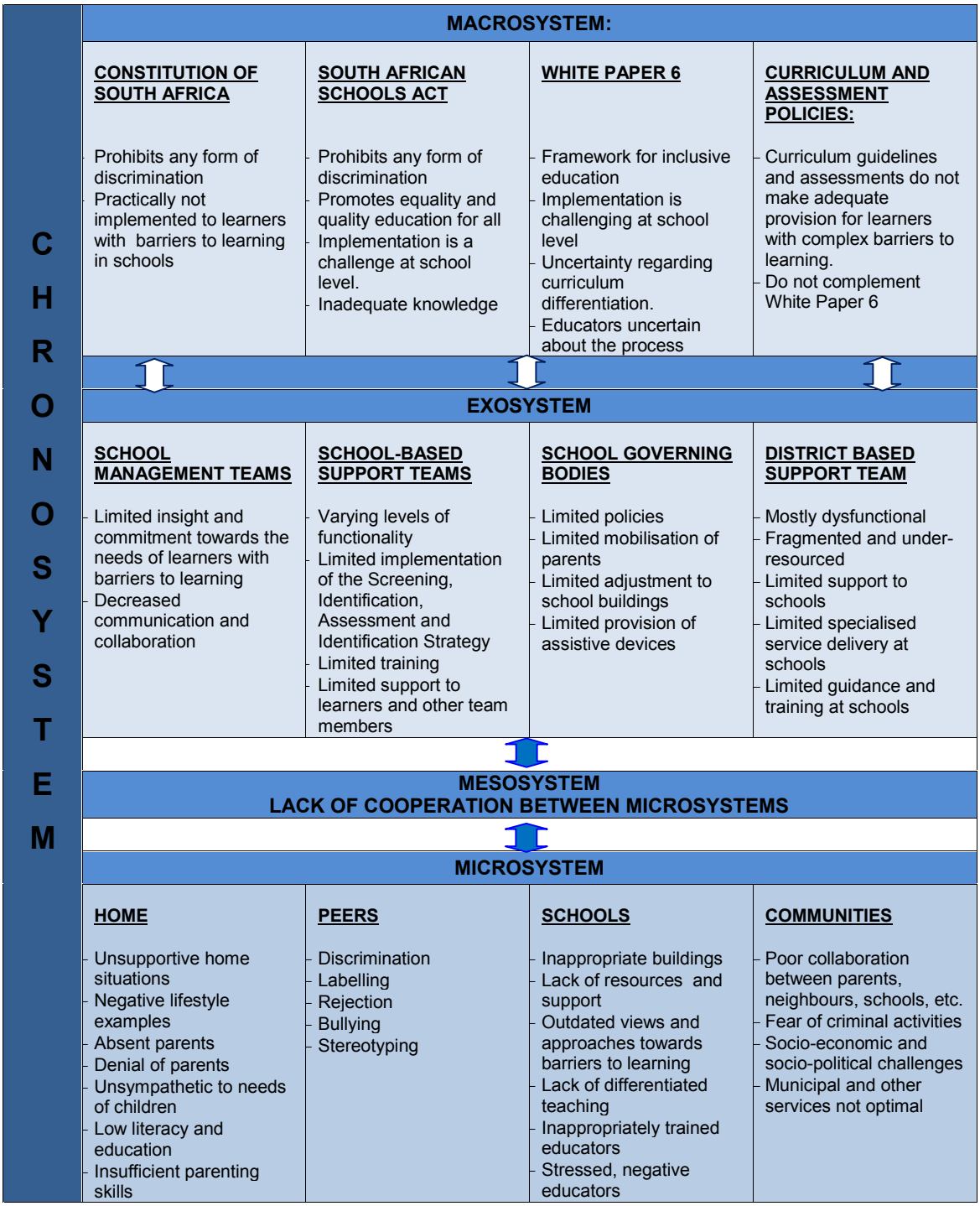

Figure 2.3 Ecological aspects that affect the implementation of inclusive policy in South African schools (Geldenhuys & Wevers 2013:7)

2.5 SUMMARY

The first phase of the literature review focused on the new diagnostic criteria for ASD; possible causes for the condition; the global increase in ASD prevalence; prognostic factors; and burden of care. Although these factors do not directly affect autism-specific education, it provides and understanding of the complexity of the disorder and the need for intensive healthcare, social and educational support. The second phase reviewed the diagnostic specific impairments of the condition, the unique manifestation of symptoms in individuals and the implications for education. Research-based educational strategies, critical success factors and challenges in the implementation of autism-specific education within inclusive settings were discussed. Globally, the increased prevalence of ASD has stimulated the development of various educational approaches and programmes with varying levels of scientific support and cost implications. The worldwide need for research-based practices and efficient outcomes measurement in educational settings were highlighted.

The third phase dealt with the unique challenges within the South African context, which affect the efficient implementation of global ASD educational trends and best practices. The constitutional right to education is recognised, but the South African education system currently fails to provide appropriate education and support to all learners with ASD. The implementation of inclusive education is significantly hampered by lack of infrastructure, non-functioning and limited availability of support structures at various levels, inadequate training, and poor infrastructure. Attention was also given to the complex dynamics that hamper the efficient implementation of inclusive principles in South African public schools. Urgent intervention, commitment and collaboration are required at all levels in the education system to enhance quality education and support for marginalised learners. The increasing demand for autism-specific education necessitates the development of an evidence-based, cost-efficient service model that is relevant to contextual challenges in South Africa.

Chapter 3 will discuss the research methodology regarding current practices and challenges in providing autism-specific education within the South African context.

CHAPTER 3
RESEARCH APPROACH AND METHODOLOGY

3.1. INTRODUCTION

The previous chapter discussed the literature in three phases, namely issues related to Autism Spectrum Disorders; autism-specific education in inclusive settings; and an overview on inclusive education within the South African context. The literature overview highlighted that learners with Autism Spectrum Disorders (ASD) have difficulty in accessing education in the South African public sector. Increased autism prevalence rates, the variability in diagnostic profiles, the complexity of autism-specific education and challenges within the South African educational context added to this dilemma. In order to develop high quality, context-based operational and training models, district-based occupational therapists require an understanding of current service models, training needs, availability of resources and challenges experienced by public schools that offer autism-specific education. Hence, the research study aimed to determine autism-specific education practices and challenges in South African public schools.

The current chapter focuses on the research approach and methodology. Solid fundamental research principles and a strong methodological approach are crucial to any study's value (Bhattacherjee 2012:5). The discussion on methodology includes the research approach, study design, population, sampling, pilot study, data collection, data analysis, error of measurement and ethical considerations.

3.2. RESEARCH APPROACH AND STUDY DESIGN

The researcher made use of a quantitative research approach and a descriptive study design.

3.2.1. Quantitative approach

A quantitative research approach is best to obtain quantitative information through using a formal, objective and systematic process (Cohen, Manion & Morrison 2007:14-15) to determine current practices and challenges in autism-specific education. The researcher required statistical evidence to determine the practices and challenges that commonly occur in South African schools providing autism-specific education within the South African public sector.

3.2.2. Descriptive design

Descriptive research describes characteristics about the research population or the phenomenon that the researcher is studying (Leedy & Ormrod 2010(1):182). Leedy and Ormrod (2013(2):189) describe survey research as a form of a descriptive, quantitative research where the researcher gains information from individuals or groups of people by the use of structured questions. The researcher used a descriptive approach since the study did not involve any modifying of the situation, but aimed to describe practices and challenges in autism-specific education in South African public schools.

Descriptive designs have certain limitations, but these did not have a significant effect on reaching the aims and objectives of this particular study:

- Descriptive study designs do not determine the effect of one variable on another. Although the data description of the educational context is factual, accurate and systematic, the researcher would not able to describe what caused the situation (Knobel & Lankshear 2006:164). The results only display current practices and challenges in autism-specific education in South Africa and do not describe any relationships between different variables in the study or the cause of the situation.
- The descriptive survey approach captures events within a specific time frame and it could not be accepted that the results of the study would still be representative of practices and challenges in autism-specific education in public schools in years to come (Leedy & Ormrod 2013(2):190).

3.3. RESEARCH POPULATION

The term research population refers to all the individuals or objects who possess certain attributes that are relevant to the purpose of the study. The population is therefore all the individuals or objects with common, defined characteristics that set boundaries on the study units (Walliman 2006:276). The research population in this study refers to educators of autism-specific classes in South African public schools and the aim was to determine the practices and challenges they experience. The researcher selected educators of autism-specific classes as the research population, since not all schools have access to multi-professional teams consisting of therapists, psychologists and other special needs experts. Educators are primarily responsible for the design and implementation of individual support programmes, curriculum differentiation and educational programmes to optimise the learning experience for each learner.

3.4. SAMPLING

Sampling is the selection of a subdivision of individuals from within a research population to estimate characteristics of the research population as a whole. In an ideal setting, samples are population microcosms. Sample designs needed to be precision-made and accurately grounded to obtain a sample that would be truly reflective of the entire population of concern. A priority in the research process was for the sample to have the attributes that ensured the accomplishment of the research purpose (Walliman 2006:277). The researcher therefore developed criteria to ensure that the study would be reflective and representative of the attributes of autism-specific educators intended by the purpose of the study. Section 3.4.1 (Inclusion criteria) and section 3.4.2 (Exclusion criteria) discuss the inclusion and exclusion criteria (Bhattacherjee 2012:65-66).

The researcher had to survey the total population that fitted the selection criteria (Leedy & Ormrod 2013(2):215). Section 3.4.3 (Determining sample size) describes the systematic process that guides the reasoning process behind surveying the population as a whole.

3.4.1. Inclusion criteria

Inclusion criteria refer to a set of characteristics, conditions or standards that determine whether a research study would allow an individual or subject to participate (Ballo, Cordaro &

Torsello 2013:online). The aim of the study was to determine the practices of and the challenges experienced by educators of autism-specific classes. The researcher therefore aimed to include the full spectrum of publicly employed educators of autism-specific classes to describe practices and experiences within the South African context. The study accommodated the diversity within the public autism-specific educator population. However, defining inclusion criteria increases the chances of generating reliable, reproducible results and decreases the probability of exploitation against vulnerable individuals. The main attribute that educators had to posses concerning the relevance of the study was that they had to be employed at a school that fitted the selection criteria (Ballo *et al.* 2013:online). Personal attributes (e.g. age, race, qualification, years of experience, etc.) did not determine the participation of educators but the school context established participation.

The researcher aimed to include educators from schools that fitted the following selection criteria:

3.4.1.1. The Department of Education should recognise the school as a public school: The study population targeted all autism-specific schools as well as special schools and full-service schools that offered autism-specific education within the public sector.

3.4.1.2. The school needed to offer autism-specific education: Admissions criteria had to make specific mention of ASD. The study included schools that offered autism-specific education irrespective of the severity of the disabilities. Since autism is a spectrum disorder, the researcher was interested in the different approaches offered for the full spectrum of ASD. The school therefore had to offer the following:

(i) An all-encompassing approach, which was not only focused on a specialised curriculum but had individual support programmes that focused on the learners' development as a whole.
(ii) An autism-specific programme that accommodated the specific and special needs of ASD learners.

3.4.1.3 The school had to have been practicing autism-specific education for a period of two years or longer: A period of two years was selected, since autism-specific education was introduced in the Free State only 2010 (approximately three years ago). The researcher wanted to reflect on the practices and challenges of South African public schools that had similar or more experience than schools in Motheo District.

3.4.1.4 The school had to fall within South African borders: The school had to fall within a South African province: Free State, KwaZulu Natal, Northwest, Mpumalanga, Northern Cape, Western Cape, Eastern Cape, Gauteng and Limpopo.

3.4.2. Exclusion criteria

Exclusion criteria are those characteristics that disqualify potential subjects or individuals from participation in the study (Ballo *et al.* 2013: online). The researcher did not exclude educators regarding their personal attributes (e.g. age, race, gender, culture, etc.) since the study wanted to describe the practices and challenges of all educators of autism classes within the public sector. Again, exclusion from participation would be determined by the educational setting the educators were employed at. The exclusion criteria excluded educators of autism-specific classes who were not employed within the South African public education sector.

The study excluded educators employed at any of the following educational settings:

3.4.2.1 Private schools and non-profit organisations: Private facilities utilise different educational models, resource structures and financial systems. The training, challenges and classroom practices of these educators may therefore vary from what was available in the public sector.

3.4.2.2 Mainstream schools, full service and special schools: The study excluded schools that excluded autism-specific programmes.

3.4.2.3 Adult centres that accommodated learners beyond the age of 18 years: The Department of Education focuses on school-aged youth and the study excluded adult centres.

3.4.3. Determining the size of the research sample

Determination of sample size is the process of selecting the number of participants to include in a statistical sample. The sample size used in a study is determined based on the cost of data collection, and the need to have sufficient statistical control. There are various formulas for calculating the required sample size based upon whether the data collected is to be of a categorical or quantitative nature (Bhattacherjee 2012:65-69). The steps used by the researcher in indentifying the research population are summarised in Figure 3.1.

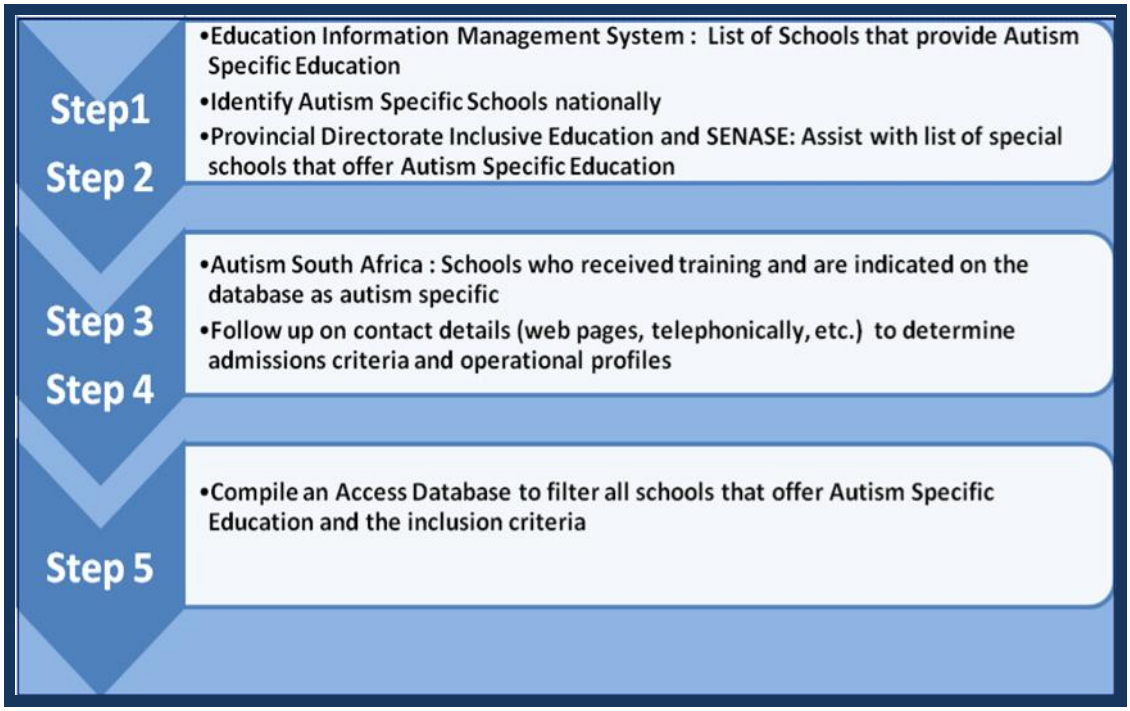

Figure 3.1: Steps in the process to determine sample size

The first step in the determination of the sample size was to identify the population of educators that provide autism-specific education. The Education Management Information System (EMIS) listed 378 ELSEN schools nationally that offered specialised support to learners within the public sector. The system indicated the focus of special schools (e.g. cerebral palsy, learning disability, severe mental disability, etc.) but did not specify diagnostic profiles, learner numbers, staffing allocations and the provision of autism-specific support. The system flagged five special schools as autism-specific special schools (Department of Basic Education Directorate Education Management Information System 2011:online). Although the EMIS information was helpful in the identification of public autism-specific schools, it did not supply adequate information regarding special schools and mainstream public schools that offer autism-specific education.

The second step in determining the sample size was to consult the Provincial Directorates on Inclusive Education to assist in the identification of schools that offer autism-specific education and to identify schools that fitted the inclusion criteria. Although this process was helpful in three provinces, the researcher required accurate profiles on schools in order to implement the selection inclusion efficiently. The researcher struggled to identify accurate resources regarding full-service schools that offered autism-specific education. The Southern African National Association for Special Education (SANASE) recommended the involvement of Autism South Africa since they manage a database on educational facilities (public and

private) that offered autism-specific education. Autism South Africa also offered training to parents, educators and support groups in the different regions and collaborated with education service providers on a regular basis.

The third step in determining the sample size was to consult with Autism South Africa to obtain lists of all the schools that either offered autism-specific education or participated in training. Again, the identification of full-service schools remained a challenge. The lists from Autism South Africa provided adequate information to filter public schools that offer autism education but did not provide any operational information.

The fourth step in the process was then to follow up on the contact details of these filtered schools (web pages, telephonically, etc.) to determine admissions criteria and the services offered at schools.

Lastly, the researcher designed a Microsoft Access database to facilitate the identification of schools that fitted the inclusion criteria. The design of the database included fields for the demographics of schools as well as tick-boxes for the inclusion criteria. The data query assisted in the final filtering of schools that were suitable for the purpose of the study (Motheo Inclusive 2013:2).

Leedy and Ormrod (2013(2):215) suggest that the larger the sample size, the better. Hence, for smaller populations (N=150 or fewer), it is suggested that the entire population be surveyed. In keeping with this directive, the entire population had to be surveyed and sampling was inappropriate in this particular study. The researcher had to survey the total population of educators employed at schools that fitted the inclusion criteria. There were no schools in Mpumalanga that fitted the inclusion criteria and Autism South Africa confirmed that they refer learners in this area to the autism-specific schools in Gauteng. A detailed list of schools and number of educators are available in Addendum A: List of Schools.

Table 3.1: Summary of number of schools and educators for the different ASD schools

Providers of autism-specific education in the public sector	Number of schools	Number of educators
Public: autism-specific schools	5	42
Public: special schools with autism-specific classes	26	81
Public: full-service schools	3	7
Total:	**34**	**130**

Table 3.1 reflects that the number of full-service schools that participated in the study was significantly less compared to autism-specific and special schools that participated. The following factors could have contributed to this tendency:

i) EMIS did not have accurate data available regarding the number of full-service schools and the type of services offered.

ii) Full-service schools focused on learners with moderate barriers to learning and who have the capacity to cope with a mainstream curriculum. It may therefore be possible that learners with higher functioning ASD may be in these schools, but were not specifically diagnosed as such.

iii) Full-service schools may not yet be adequately resourced to accommodate learners from diverse diagnostic categories.

3.5. THE COURSE OF STUDY

Figure 3.2 provides a schematic representation of the course of the study which include the activities prior to the study, the itself as well as analysis and production of the dissertation.

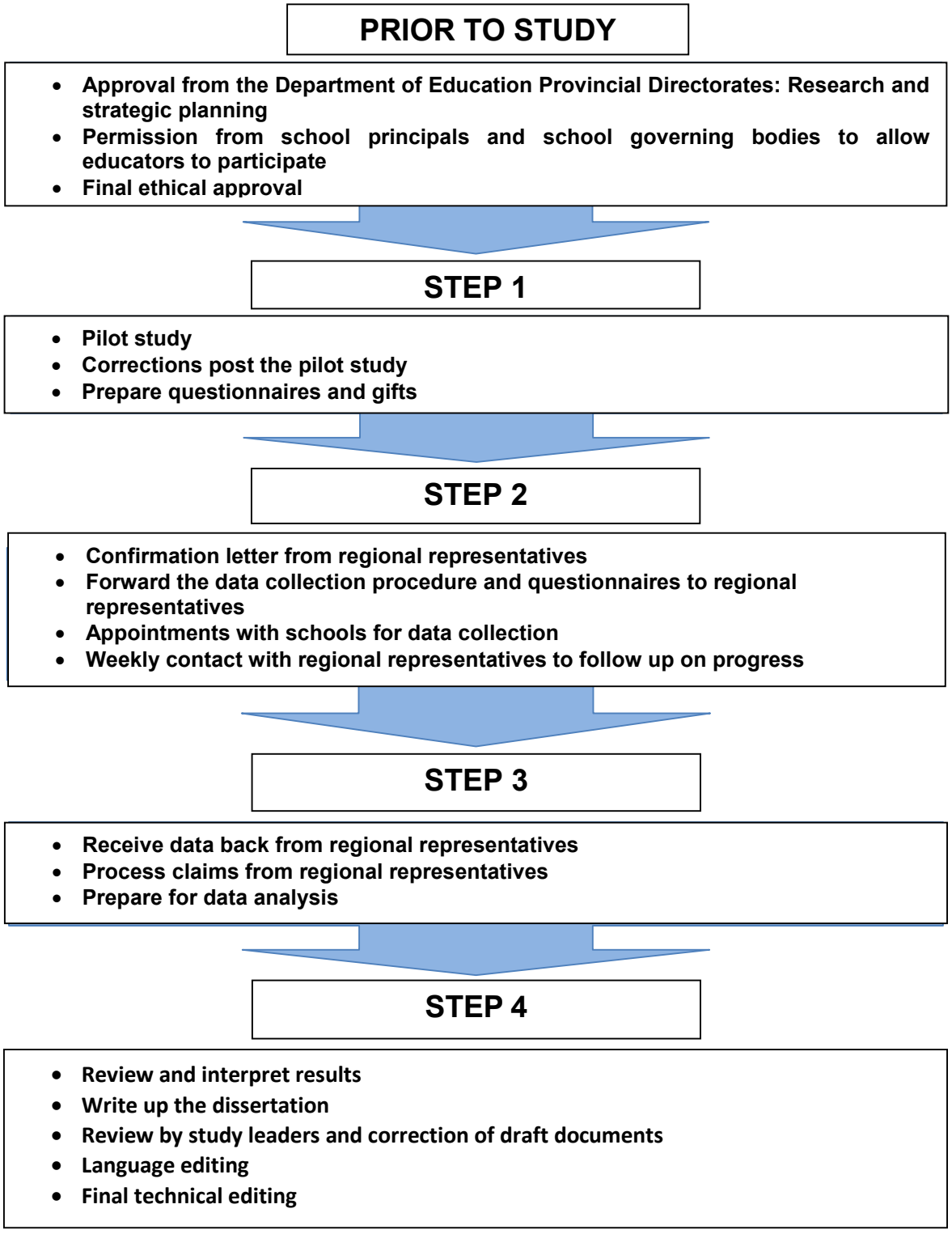

Figure 3.2. Schematic representation of the course of the study

3.6. THE PILOT STUDY

The researcher performed a pilot study after the approval of the Ethics Committee of the University of the Free State: Faculty of Health Sciences, and other relevant committees. Leedy and Ormrod (2013(2):112) refer to a pilot study as a short tentative research process to investigate certain procedures, measurement tools or the process of analyses. Hence, the researcher used a pilot study to determine the viability of the study, to ensure that all processes run efficiently and to achieve objectives. The pilot studied focused on two aspects: Firstly, the researcher had used a self-designed questionnaire as the tool for data collection regarding this study. The questionnaire was pre-tested on a small sample to determine whether all questions were accessible and comprehensible (Walliman 2006:282). The second aspect entailed the assessment of whether the suggested data collection process was workable, given the resources available and the operational processes at schools (Walliman 2006:282).

The researcher selected three schools to participate in the pilot study (an autism-specific school, a special school and a full-service school with autism-specific classes). Schools were selected to best represent diversity in terms of culture, educational backgrounds, geographical location and type of school. The study targeted one educator from each school for the pilot study.

The pilot study indicated the following:

Questionnaire: The three educators had no difficulty in completing the questionnaire. They indicated that the questionnaire was user-friendly and accessible. Since the educators did not propose any changes to the questionnaire, the data obtained during the pilot study were analysed and interpreted as part of the main study.

Data collection process: The data collection process required minor amendments that did not affect the aims or design of the study. These minor adjustments included:

One school indicated that it would be difficult for them to have all the educators together for a session to collect data all at once. It was therefore suggested that educators would have the opportunity to complete the questionnaires during the day and that the completed questionnaires should then be collected by the end of the day. However, the researcher asked educators not to discuss the questionnaire with one another to prevent the contamination of

data. The researcher did not want to exclude these schools from the study since the study population was small.

The proposed adjustments (as well as other minor amendments) were communicated to the Ethics Committee (Ecufs 09/2013) according to the required format for the submission of protocol amendments (Addendum B: Submission of Minor Protocol Amendments).

3.7. MEASUREMENT

Measurement refers to a process where data of any phenomenon are limited to interpret and compare to a particular standard. Research methodology provides a reflection on the planning, structuring and execution of research to comply with demands of truth, objectivity and validity (Leedy & Ormrod 2010(1):21,91-93). The researcher aimed to design methods of data collection that optimised response rates as well as the usability, reliability and validity of data obtained from the questionnaires.

The selection of a measurement tool and data collection methodology is dependent on the type of research design, the availability of resources, the population being studied, the type of data to be collected as well as logistical factors (Knobel & Lankshear 2006:160-1611). Given that the study ran nationally, the researcher had to consider limited resources (finances, time and human recourses) in the selection of a measurement tool and data collection process. The researcher consider personal interviews and class observations as a way of measurement, but these measurements would have posed significant challenges in terms of cost and time efficiency. In keeping with these constraints, survey research (through a self-designed questionnaire) remained the optimal choice pertaining to this particular study.

3.7.1. The measurement tool

Quantitative research usually involves the use of measurement tool drawn from pools of recognised data collection tools and methods, e.g. standardised tests, interviews and observation schedules, survey questionnaires and inventories. However, measurement tools may also include purposefully developed instruments that researchers create themselves in accordance to the needs and circumstances of their study (Knobel & Lankshear 2006:161).

In the absence of an appropriate standardised measurement tool, the researcher designed a questionnaire to determine current practices and challenges regarding autism-specific

education in South African public schools. The numbered questionnaire is available as Addendum C: Research Questionnaire. The questionnaire is available in English and Afrikaans; the official languages of teaching in the National Department of Education (2010:online). The researcher designed the questionnaire in English and then had it translated to Afrikaans. Back-translation is a strategy used to improve the validity and reliability of research questionnaires that are available in different languages (Hasanic 2004:online); as such, the study used back-translation where an independent translator, who translated the Afrikaans questionnaire back into English, verified the quality of the translation. The expert and evaluation committees also scrutinised the questionnaires to ensure that the English and Afrikaans questionnaire had the exact same meaning. Both the expert – and evulation committee consisted of relevant experts in ASD, education, biostatistics and occupational therapy.

The questions did not focus on in-depth evaluation of a certain topic, but rather on clustering related concepts. The study did not focus on specific practices and challenges in South African Schools that offer autism-specific education, but rather to determine a wide range of context-based practices and challenges. The researcher excluded details on school management and facilities in the questionnaire since another section within the Department of Education (Whole School Assessment) assesses these aspects. The questionnaire fit with the area of service delivery addressed by district-based occupational therapists that included training, assessment of learners, classroom adjustments, provision of individual support strategies, activity adjustment and provision of assistive technology.

Cohen *et al.* (2007:320) describes three important components in the design of a research questionnaire:

Decisions regarding question content: The researcher attempted to cover each of the five research objectives efficiently with the range of questions asked and provided a rationale for the relevance of each question (Addendum D: Rationale of Research Questionnaire). Since the educators were responsible for autism-specific education, the researcher included basic programmes, terminology and operational procedures that are described in special needs policies and autism-specific guidelines (Cohen *et al.* 2007:322). Both the English and Afrikaans questionnaires were piloted (see 3.1. pilot Study).

Decisions regarding question wording: The researcher, as well as the evaluation and expert committees, scrutinised the questionnaire for biased wording and misleading or unstated assumptions. The researcher used terminology from policy guidelines of the Department of

Education with special reference to the Inclusive Education and Training System (Cohen *et al.* 2007:322-324).

Decisions regarding form of response to the question: The researcher aimed to reduce the writing by limiting word-based question types (open-ended questions). The bulk of the questionnaire was designed by the use of dichotomous, multiple-choice questions and rating scales. Fortunately, the data levels (nominal and ordinal) fitted well within the quantitative approach and descriptive design of the study (Cohen *et al.* 2007:325-329). The researcher avoided or limited the use of constant sum questions and rank ordering since educators may have difficulty to differentiate and prioritise their responses. These types of questions may affect the flow of the questionnaire, the speed of completion and may lead to frustration (Cohen *et al.* 2007:325-329). Table 3.2 provides a summary regarding the types of questions used in the different categories.

Table 3.2: Categories of the structured questionnaire

Category:	Type	Data Level	Nr of questions
Demographical: Characteristics of educators teaching ASD classes e.g. gender, age, etc.	Dichotomous Multiple Choice Open-ended Rating scale	Nominal Nominal Word-based Ordinal	1 2 3 1 **7**
Autism-specific training: Training in research-based programmes, continued professional education and sources of training.	Dichotomous Multiple Choice Open-ended Rating scale	Nominal Nominal Word-based Ordinal	1 2 3 1 **7**
Admission criteria and extra-curricular support: Assessment tools, admissions criteria, extracurricular activities and hostel accommodation.	Dichotomous Multiple Choice Open-ended	Nominal Nominal Word-based	3 3 3 **9**
Therapeutic services and parent collaboration: Availability and type of therapy services, parent collaboration and support	Dichotomous Multiple Choice Open-ended	Nominal Nominal Word-based	6 3 3 **12**
Curriculum, additional support and classroom compilation: Grouping of learners, types of curriculums and access to diagnostic support.	Dichotomous Multiple Choice	Nominal Nominal	3 3 **6**
Work schedules and monitoring of progress: Accommodation of individualised needs and atypical learning style of learners in terms of the lesson plans, Individual Support Plans and monitoring of progress.	Dichotomous Open-ended	Nominal Word-based	4 2 **6**
Class- and playground environment: Structuring of the environment to accommodate the atypical learning style, enhance attention and opportunities for social interaction.	Multiple Choice Open-ended	Nominal Word-based	2 1 **3**
Research-based programmes and diagnostic specific support: The use of research-based programmes by educators employed at autism-specific classes in South African public schools.	Open-ended Rating scale	Word-based Nominal	1 2 **3**
Assistive technology and alternative methods: The utilisation of assistive devices and assistive technology to enhance functional outcomes	Dichotomous Open-ended Rating scale	Nominal Word-based Nominal	1 1 2 **4**
Challenges in and critical success factors of ASD education: Views regarding the challenges and critical success factors of autism-specific education.	Dichotomous Open-ended Rating scale	Nominal Word-based Nominal	1 2 1 **4**

Table 3.3 provides a summary regarding the types of questions used to cover the five research objectives.

Table 3.3: Questions structured in terms of the research objectives

Objective:	Type	Data Level	Nr of questions
Objective 1: To determine the level of training and experience of educators of autism-specific classes in public schools nationally.	Dichotomous Multiple Choice Open-ended Rating scale Ratio data	Nominal Nominal Word-based Ordinal Ratio	4 5 5 1 1 **16**
Objective 2: To determine school-based operations concerning admissions criteria and procedures of learners with ASD, extra-curricular services, therapeutic support and parent collaboration	Dichotomous Multiple Choice Open-ended	Nominal Nominal Word-based	9 7 6 **24**
Objective 3: To determine classroom management practices in terms of the curriculum, work schedules, monitoring of learner progress as well as activity and environmental adjustments.	Dichotomous Multiple Choice Open-ended Ratio data	Nominal Nominal Word-based Ratio	8 6 3 3 **20**
Objective 4: To determine the use of autism-specific support strategies with reference to research-based programmes, diagnostic specific support strategies as well as assistive technology and alternative methods.	Dichotomous Open-ended Rating scale	Nominal Word-based Ordinal	1 3 3 **7**
Objective 5: To determine the use of autism-specific support strategies with reference to research-based programmes, diagnostic specific support strategies as well as assistive technology and alternative methods.	Open-ended Rating scale	Word-based Ordinal	3 1 **4**
Other: Demographical and other relevant information	Dichotomous Multiple Choice Ratio data	Nominal Nominal Ratio	1 1 2 **4**

Decisions regarding the place of the question in the sequence: The researcher attempted to group items together in sections that would be user-friendly and structured from the educators' point of view. The rationale to the questionnaire (Addendum D) describes the analysis of different sections to embody the study objectives (Cohen *et al.* 2007:325-329).

3.7.2. The measurement process

Leedy and Ormrod (2013(2):88) indicate that the methodology used in a research study needs to consider the type of data required to be collected in the resolution of the problem. The researcher strived for objectivity and therefore needed to design a systematic process of

measuring the phenomena studied. A key objective in the design of the measurement process was to use methodology that optimised participation of a population that was scattered nationally, to maximize return rate on questionnaires and to ensure the collection of interpretable data.

The researcher investigated the possibility of using technology in the form a web-based survey since the project ran nationally. However, many educators did not have access to computers or were not skilled in computer technology, which might have hampered participation. Kruger, Mitchell and Welman (2005:152-153) as well as Leedy and Ormrod (2010(1):189) indicate that a postal survey has advantages in terms of expenditure and ease of application since respondents could be reached in different regions at relatively low cost. The anonymity of postal surveys is higher than other survey methods and consequently there is a chance that participants answer questionnaires with greater honesty. The fact that respondents in different areas of the country could have been reached at relatively low cost was an important consideration in this study.

Unfortunately, postal surveys have two major disadvantages. Firstly, Kruger, Mitchell and Welman (2005:153-154) point out that researchers have little control over the conditions in which questionnaires are completed and this may lead to variable quality of completion. Secondly, postal surveys tend to have low response rates. Since low response rates and poorly completed questionnaires were potential obstacles in this particular study, the researcher identified regional representatives (occupational therapists) who assisted in the data collection process. The occupational therapists, selected as regional representatives, chose to participate voluntarily. Should they have been unable to honour the commitment, it had been agreed that the regional representative could have been replaced with another therapist.

The researcher decided on a methodology that would best accommodate the nature of the data to be collected, the resources available and to deliver a methodology that could be replicable in a follow-up study. Figure 3.3 depicts a flow chart of the measurement process, while Table 3.4 displays the roles and responsibilities of all involved in the study. The data collection process started after review and approval of the research protocol by the expert, evaluation and ethics committees. A pilot study preceded the data collection process to ensure that all aspects of the data collection process were efficient.

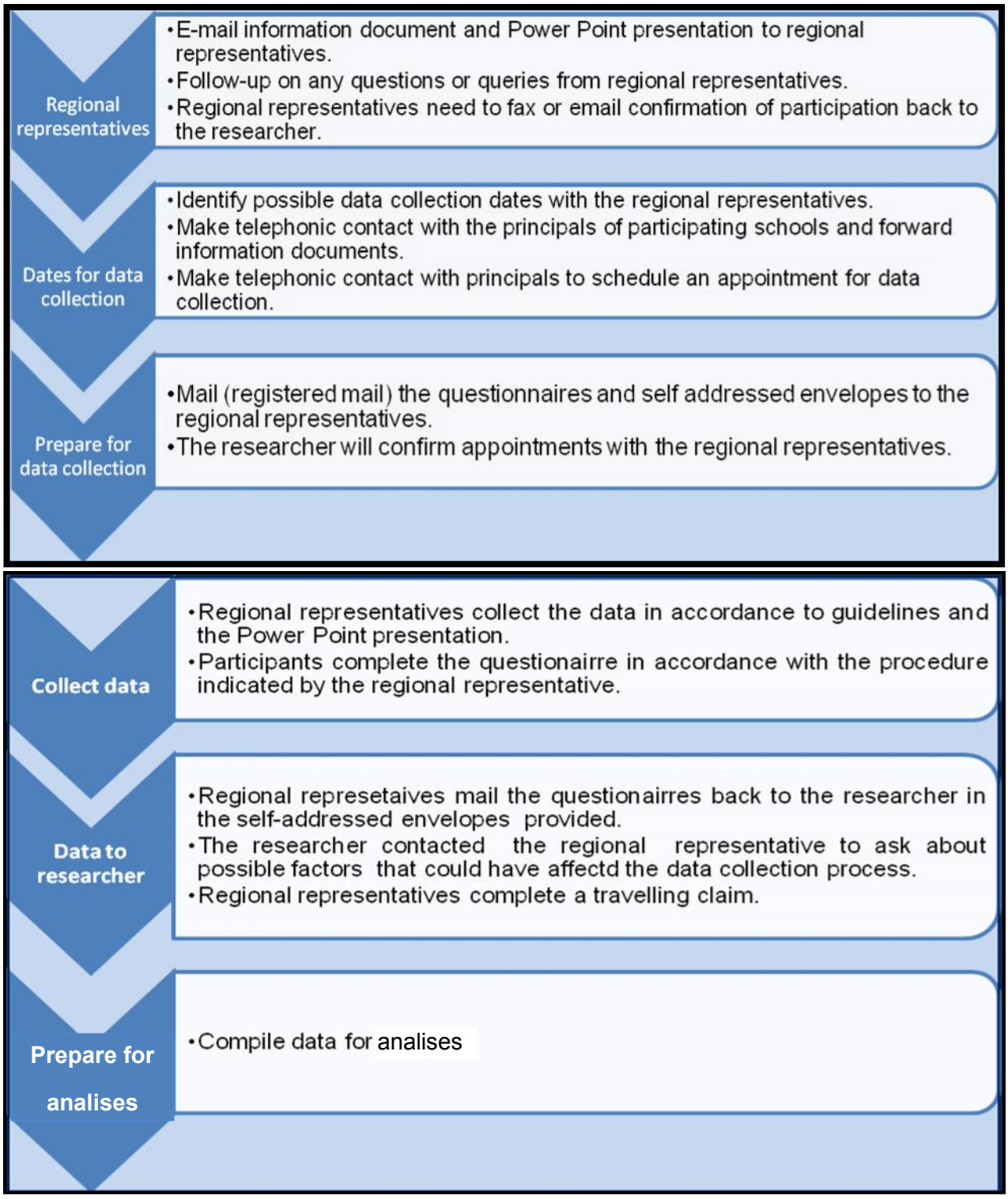

Figure 3.3 The measurement process

Table 3.4: Description of roles in the data collection process

	Description of roles	Responsible person
1.	The researcher e-mailed the data collection document (Addendum E) and PowerPoint presentation (Addendum F) to the regional representatives, who described their role in the data collection process. The researcher compiled the PowerPoint presentation (with voice recording) to ensure that all the regional representatives received standard information regarding the research procedure. The PowerPoint presentation encouraged regional representatives to participate, thanked them for sacrifices and explained their key role in the research process.	Researcher
2.	The researcher followed up on any questions and queries posed by the regional representatives via e-mail or telephonic follow-up.	Researcher
3.	The researcher requested the regional representatives to e-mail/fax their confirmation forms to her in order to verify participation (Addendum G: Regional Representative Confirmation Letter).	Researcher Regional representatives
4.	The researcher identified possible dates for data collection with the regional representatives.	Researcher Regional representatives
5.	The information letters were forwarded (e-mailed / mailed / faxed / personally delivered) to all participating schools to encourage educators to participate and to provide opportunity for questions prior to participation in the project. Educators were provided with adequate time to make an informed decision regarding participation.	Researcher Principals of participating schools
6.	The researcher made telephonic contact with principals to schedule an appointment during which the regional representatives could collect data from the participating educators. The researcher requested principals to allocate a 60 minute timeslot and quiet venue for the data collection process. However, in schools where this could not be arranged, the researcher informed the regional representative to hand out and brief the participants regarding the questionnaire. The researcher and regional representative were telephonically available for questions. The regional representatives collected the completed questionnaires, sealed in envelopes, by the end of the day.	Researcher Principals of participating schools
7.	The researcher couriered the questionnaires and self addressed envelopes to the regional representatives (approximately two weeks before the date scheduled for data collection).	Researcher
8.	The researcher confirmed appointments with the regional representatives.	Researcher
9.	Representatives collected the data in accordance with the data	Regional

	collection procedure document and description on the PowerPoint presentation – for more details, refer to Addenda E and F.	representatives Participating educators
10.	Participants completed the questionnaires and the researcher considered the completion of the questionnaire as voluntary participation. After completion of the questionnaire, each participant sealed the completed questionnaire in the envelope provided with the questionnaire.	Participating educators
11.	The regional representatives collated the questionnaires (in the sealed envelopes) and couriered the package back to researcher in the self-addressed courier bag provided. The regional representatives were not allowed to remove the questionnaires from the individually sealed envelopes to optimise confidentiality.	Regional representatives
12.	The researcher phoned the regional representative to ask whether they had experienced difficulty during the data collection process. This allowed the researcher to gain insight into the possible variables that could have affected the data collection process.	Researcher Regional representative
13.	The regional representatives completed a travelling claim form and sent it to the researcher for processing.	Researcher Regional representative
14.	Data prepared for analysis.	Researcher in collaboration with the biostatistician
15.	Schools and regional participants were thanked in writing for their participation.	Researcher

3.8. ANALYSIS OF THE DATA

Statistical analysis was conducted to summarise and interpret the data that was collected. The choice of a particular statistical procedure depended on combinations of various factors, which included the study design, the type of variables and characteristics of the study (Knobel & Lankshear 2006:164).

The Department of Biostatistics, University of the Free State, conducted the analysis. Descriptive statistics, namely frequencies and percentages for categorical data and medians or percentiles for continuous data, were calculated. Medians and percentiles were calculated as the data had a skew distribution.

3.9. METHODOLOGICAL AND MEASUREMENT ERRORS

Survey results are subject to error, which could be divided into sampling and non-sampling errors.

3.9.1. Sampling errors

Leedy and Ormrod (2013(2):217) describe a bias as a condition or sets of conditions that influence or distort data and affect the integrity of facts. Sampling biases occur due to inefficient randomisation in the sampling process to select participants from a population to partake in a research study. A sample selection itself could be bias, since not all individuals in a population had an equal chance of being selected for the study. The researcher realises that there could have been room for error in identifying all the schools that offer education nationally due to the limitations in the Education Management Information System.

The inability of provincial databases to reflect the number and profiles of public schools that offer autism-specific education may have been a further influencing factor. Nevertheless, the researcher implemented means to gather detailed and accurate information on facilitities that offer autism-specific education in the public sector. The researcher visited Autism South Africa to obtain their comprehensive database on schools that offer autism-specific education. The researcher also made contact with an expert member of SANASE to assist in the identification of facilities that fit the study's inclusion criteria. The researcher made telephonic contact with schools and followed up on their websites to determine admissions criteria and operational profiles. Since autism-specific education is a niche component within special needs education, the population of educators that fitted the inclusion criteria of the study was approximately 130 educators and therefore sampling was inappropriate.

3.9.2 Non-response errors

Non-response errors refer to failure to obtain complete data from all the participants selected for the study. Lankshear and Knobel (2006:167) indicate that low response rates are a concern in survey studies, since the generalisation of findings is questioned. The respondents who participated in the study may have had different views from those who did not return their questionnaires. A low response rate increases the possibility of a biased, under-representative sample.

The possibility of a low response rate was a concern in this study due to the following reasons:

- The researcher is an occupational therapist and educators may be resistant to support a research project performed by a non-educator.

- School principals and school governing bodies might have refused participation if the project did not benefit the school directly, or when the purpose of their participation was unclear to them.

- Educators had high administrative loads and the completion of the research questionnaires might have been perceived as a burden.

- The researcher was not in close contact or had professional relationships with all the schools in the country. Kruger, Mitchell and Welman (2007:154) indicated that researchers obtain more pleasing response rates from special target populations when they have some loyalty towards the organisation or person undertaking the survey. Although all the participants are employed at the Department of Education, different provincial and district-based structures manage them.

The researcher implemented the following strategies to maximise response rates:

- *E-mail / telephonic contact with principals:* The researcher needed the consent of schools prior to involving educators in the study. The researcher tried to encourage schools to participate by recognising them as specialists in the niche field of autism-specific education whose expert opinion were vital to the success of the study.

- *Use of regional representatives:* Research representatives assisted in having face-to-face contact with schools, which might have assisted in motivating educators in participating. The researcher did not have links with all the schools and educators involved in the study, but hoped that the regional representatives would encourage educators to participate. The researcher would have better control over the tracking of the mailed questionnaires as well as the distribution of questionnaires.

- *Implement principles from literature that may facilitate response rates:* Leedy and Ormrod (2013(2):196-200) indicate that the design of the questionnaire should be user-friendly, quick to administer and professional to encourage potential participants to take part. Other guidelines include being gently persistent in motivating for participation, considering timing and recognising the sacrifice of participating by offering a small token of appreciation.

The researcher provided each participant with a pen, sweet and ASD ribbon to thank them for the time an effort in supporting research in autism-specific education. The results of the study would also be offered to schools, should they be interested.

- *Involving Autism South Africa*: Autism South Africa supported research due to the increased demand for autism-specific education.

3.9.3. Measurement errors

Validity and reliability reflect the degree to which errors may have occurred in the measurement process. Validity refers to the meaningfulness of the results and determines the extent to which a measurement instrument measures what it is intended to measure. Reliability refers to the consistency of a measurement tool to produce similar results in consistent conditions (Knobel & Lankshear 2006:161). Reliability errors are usually errors in the use of the instrument and include unpredictability in the use of the instrument. Validity errors reflect biases in the instruments itself and therefore cause constant errors (Leedy & Ormrod 2013(2):92-93). The researcher tried to increase the validity and reliability of the measurement by the following:

3.9.3.1. Validity

Validity is how well a measurement tool measures what it claims to measure (Leedy & Ormrod: 2013(2)89). Already developed measurement tools have the advantage of having the key properties of reliability and validity described in a manual (Knobel & Lankshear 2006:161-162). The researcher was unable to find an already developed tool that fitted the purpose of this specific research study, and therefore needed to custom design a measurement tool. Leedy and Ormrod (2013(2):89-90) indicate that the validity of measurement instruments may have a variety of forms, depending on the situation. Criterion validity refers to the degree to which the results of an instrument compare with a similar measurement (Leedy & Ormrod 2013(2):89). Unfortunately the researcher could not access another comparable questionnaire that was designed for the same purpose and that could have been used to establish criterion validity.

The construction of a quality self-developed measurement tool that results in reliable and valid measures is a carefully systematic development process (Leedy & Ormrod 2013(2):189). The researcher aimed to follow the steps in developing a reliable, valid custom-made measure as described by Knobel and Lankshear (2006:163) as well as Leedy and Ormrod (2013(2)197-200). These steps included the identification of the purpose and target population, relevant

aspects to be measured, indentifying the importance of these selected measures as well as to evaluate and revise individual items. The researcher also compiled a rationale to motivate the need for each item in terms of the purposes of the study (Addendum D). In accordance with face validity, the questionnaire appeared to measure the features described in the different categories and in relation to the study objectives.

Content validity refers to the level to which a measuring tool demonstrates a significant sample of the area being measured (Leedy & Ormrod 2013(2):89). An expert- and evaluation committee reviewed the questionnaire concerning the appropriateness of the items in terms of the literature available and alignment with the research objectives. The researcher made amendments to the questionnaire and submitted the final version to the ethics committee. The questionnaire was pre-tested in a pilot study to anticipate problems of comprehension, accessibility and appropriateness of the questionnaire (Walliman 2006:282). The pilot study did not reveal any changes that had to be made to the questionnaire.

3.9.3.2. Reliability

Since the study was performed nationally, the researcher implemented the following strategies to facilitate the correct and consistent use of the measurement tool during the data collection process:

The use of regional representatives

Regional representatives provided the researcher with better control over the data collection process. The researcher limited biases by the use a standard approach in data collection across regions and schools. The use of regional representatives had the following benefits:

- The researcher had better control over the tracking of the mailed questionnaires as well as the distribution of questionnaires.

- The researcher used a network of occupational therapists as regional representatives, since they share the same profession as the researcher. Participants were able to ask questions, which aided improved completion of questionnaires.

- A standard data collection process was followed in each area, which decreased possible errors in measurement.

Although regional representatives participated voluntarily (and they could be replaced with another regional representative) the researcher needed to build in measures to maintain their commitment to participate in the study. The regional representatives played a key role in the success of the research project, and the following measures motivated their participation:

a. *PowerPoint presentation (with voice recording):* The researcher forwarded the mentioned presentation to each representative and provided the background, purpose and value of the study. The key role of the regional representatives to the success of the study was recognised and they were commended for their valuable contribution. The researcher developed a guideline and PowerPoint presentation explaining the data collection process to ensure that regional representatives employed a similar approach in the distribution of the questionnaires.

b. *Regular feedback and involvement:* The researcher wanted regional representatives to feel part of the project and had weekly contact with the representatives, starting a month prior to the data collection process, to keep them interested and involved. The researcher selected therapists who she knew are passionate about autism-specific education and would have liked to contribute in this regard.

c. *Gift voucher:* The regional representatives received a gift voucher of R100 and payment for all travelling costs.

3.10. ETHICAL ASPECTS

Researchers have a moral commitment and right to search for the truth, but not to the expense of other individuals in society or the environment. Researchers are therefore obligated to professional ethics towards society, the subjects of science, and the environment. Research involves the acquisition of information based on mutual trust relationships, where the rights and best interest of those involved need to be protected (Morisson & Scott 2007:87-89).

In keeping with the obligation to professional ethics prescribed by the Health Professions Council of South Africa (Health Professions Council of South Africa 2008:online) and the University of the Free State: Faculty Health Sciences (2012:online) the researcher will now discuss the following relevant ethical obligations:

- Approval

- Responsibilities towards participants
- Commitment to professional ethics

3.10.1. Approval

3.10.1.1 The researcher submitted the protocol to the Ethics Committee of the Faculty of Health Sciences, University of the Free State, for consideration and approval (ethics number: ECUFS 09/2013). The approval letter is available as Addendum H: Ethics Approval UFS.

3.10.1.2 The Free State, Directorate: Strategic Planning, Policy and Research approved the study. Although the Ethics Committee did not expect the researcher to gain approval from all the provinces, the researcher nevertheless applied for approval at all the different offices. The following provinces provided approval for research: Free State, Western Cape, Eastern Cape, Gauteng and KwaZulu Natal. The researcher agreed in writing to all the conditions stipulated in the approval letters. The approval letters from the different provincial directorates are available as Addendum I.

3.10.1.3 The researcher requested permission from school management teams and school governing bodies of the participating schools to conduct research at their facilities. The school received an information document (Addendum J: Information Document) to orientate them towards the study, as well as a form to allow educators to participate (Addendum K: School Permission to Participate).

Table 3.5 indicates that the study targeted 34 schools for the study, of which 28 schools' (82.3%) management teams signed consent forms. The researcher has evidence regarding the various e-mails and telephone calls to the six non-responsive schools (17.6%) to encourage participation in the project.

Table 3.5 Permission of schools to participate in research

Type of school	Consent		No consent	
	No of schools	No of educators	No of schools	No of educators
Autism-specific schools	4	40	1	2
Special schools	21	73	5	8
Full service schools	3	7	0	0
	28	**120**	**6**	**10**

3.10.2. Responsibility towards participants

Participants

Social and medical research establishments created key principles to protect the rights of research participants (Mouton 2009:241-243).

These basic rights of research participants include the following:

- The right to privacy and voluntariness
- The right to full disclosure (informed consent)
- The right to anonymity and confidentiality
- The right not to be harmed

The educators had adequate time to consider participation (longer than a week) and received a comprehensive information document to explain the nature of the study and their expected role. The information document stated that approval for research was obtained from all relevant authorities. Guidelines provided by the Health Professions Council of South Africa: General Ethical Guidelines for Health Researchers (2008:5) stipulates that research participants should receive sufficient information about the nature and effect of the research. Potential participants should be encouraged to ask all the questions they need to enable them to make an informed choice about their participation.

The information document (Addendum I: Information Document) considered the right of participants to full disclosure of the research study including their rights as research participants. These include the following:

- *The right to privacy and voluntariness:* Research participants had the right to abstain from participating in the study, or to withdraw from participating in the study without suffering prejudice. Educators voluntarily agreed to participate in the research study by completion of the questionnaire (Cohen *et al.* 2007:57).

- *The right to confidentiality:* Educators completed questionnaires confidentially and the questionnaire had no potentially indentifying information. Participants sealed their questionnaires individually in envelopes to increase the confidentiality of responses. The researcher disclosed the results discreetly and would only publish the results after consultation

with the Department of Education. The names of schools would not be mentioned in any publications. The researcher guaranteed that the collection, storing, use or presentation of sensitive information considered the respect, the privacy and confidentiality of participants and schools. The Department of Education would assist in recommending journals for possible publication (Cohen *et al.* 2007:63).

- *The right not to be harmed in any manner:* The researcher reassured potential participants that they were protected against physical, psychological and emotional harm. There was no risk or disadvantage involved in participating. (Cohen *et al.* 2007:55).

- *Benefits of participation:* There were no incentives or rewards for participation. The researcher offered to provide participants with the results of the research study. Each participant received an Autism South Africa ribbon, a sweet and a pen for their time as a courtesy gesture after responding to the questionnaire. (Cohen *et al*. 2007:55).

Regional representatives

The regional representatives received an information letter and Power Point presentation with voice recording to describe the aim of the study, their role in the data collection process, and to indicate the advantages and possible risks in assisting with the study. They completed a confirmation letter (Addendum G: Regional Representative Confirmation Letter) to verify that they have been thoroughly informed and that they were willing to participate voluntarily.

3.10.3. Commitment to professional ethics

The researcher committed to maintain objectivity and integrity in the conduction of the research process (Mouton 2009:238-241) by adhering to:

i) Technical standards and conditions set by the Department of Education;
ii) Indicating limitations and methodological constraints that could have influenced the validity of findings and conclusions of the research study;
iii) Comprehensive reporting of findings without misinterpreting of results or fabrication of data; and
iv) Application of ethical publishing practices by rejecting any form of plagiarism and recognising all sources consulted.

3.11. SUMMARY

Chapter 3 provided a detailed discussion on the research methodology used for the study to determine the practices and challenges concerning autism-specific education in South African public schools. The researcher used a quantitative research approach and descriptive design. The study population consisted of educators that provide autism-specific education in South African public schools. The researcher designed inclusion and exclusion criteria to describe the population and to define the phenomena measured.

Since autism-specific education is a niche area within special needs education, the population of educators that matched the inclusion criteria of the study was small. Sampling was therefore not appropriate and the researcher involved all ASD educators from schools that fitted the inclusion criteria. Measurement was done through a self-designed questionnaire developed from literature, operational policies and the researcher's experience. The measurement process was designed to increase response rates, to avoid measurement errors, and to consider recourses and contextual barriers. Ethical considerations regarding approval, informed consent, responsibility towards the rights of prospective participants and the researcher's commitment to an ethical research process were discussed.

Chapter 4 presents the demographical profiles of educators, as well as the results of the study.

CHAPTER 4

RESULTS

4.1 INTRODUCTION

The previous chapter provided a discussion on the research methodology. Chapter 4 presents the research results of the study. Given the descriptive nature of the study, the researcher mainly used tables and discussions to reflect the results obtained from the questionnaire. The tables display the results in terms of descriptive statistics, namely frequencies and percentages for categorical data and medians or percentiles for continuous data. It is important to note that the number of responses on multiple-choice and open-ended questions could exceed the number of educators who responded, since educators had the opportunity to indicate more than one choice or opinion regarding a particular question. The researcher used an asterisk (*) to indicate data that had been analysed from word-based or open-ended questions. Some of the results were analysed in terms of the type of schools, namely autism-specific schools, special schools and full-service schools. The purpose of the analysis was not to compare but to describe the practices and challenges within the South African education context. The results in some of the tables were highlighted in shades of blue to assist readers in understanding the results. Again, the intention was not to compare variable with one another, but rather to highlight trends concerning practices and challenges.

The research objectives as described in the rationale of the research questionnaire (Addendum D: Rationale of the research questionnaire) guided the discussion of the results. The research results are presented in the following sequence:

4.2 Participation of schools;
4.3 Description of the study population;
4.4 The level of training and experience of educators;
4.5 School-based operations;
4.6 Classroom management practices;
4.7 The use of autism-specific support strategies;
4.8 The aspects educators regarded as challenges and critical success factors in managing learners with ASD in public schools; and
4.9 A summary.

The following section provides a brief overview on the participation of schools in the research project:

4.2 PARTICIPATION OF SCHOOLS

A total of 34 schools were identified for the study, of which 28 school management teams (82.3%) signed consent forms. Since six schools did not provide consent, the potential participants declined from 130 educators to 120 educators. Hence, the researcher distributed 120 questionnaires. Two autism-specific schools (representing 19 educators) and three special schools (representing five educators) gave consent for the educators to participate, but no data were retrieved from these schools. The mentioned schools indicated that they had been extremely busy and continually rescheduled data collection appointments. Only 24 of the 28 schools that provided consent participated, and 90 of the 120 educators responded. Hence, the study had a response rate of 75%. The results discussed in the tables will always refer to the responses of these 90 educators (n=90) who participated, unless otherwise indicated.

Table 4.1 Overview of schools targeted and participated

Type of school	Identified schools	Identified educators	Schools' consent	Educators: schools identified	Schools participated	Educators participated
Autism-specific school	5	42	4	40	3	19
Special school	26	81	21	73	18	64
Full-service school	3	7	3	7	3	7
Total	**34**	**130**	**28**	**120**	**24**	**90**

Table 4.1 provides an overview of the schools indentified for the study, those that provided consent, as well as those that participated. Generally, the participation from autism-specific schools was lower than expected, and only 19 educators from three schools participated. A total of 64 educators from 18 special schools participated. The three full-service schools (seven educators) identified for the study gave consent and all seven educators participated.

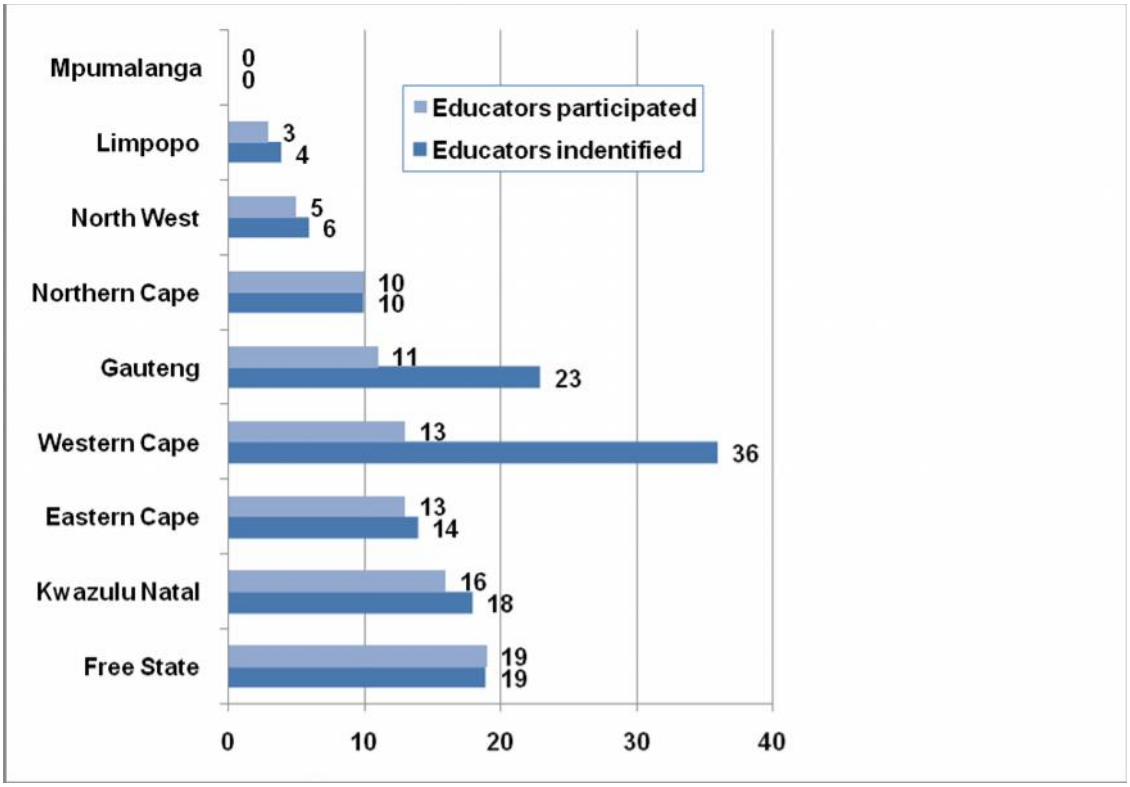

Figure 4.1: Educators identified versus the response rates in different provinces

Figure 4.1 indicates the response rates of educators from schools in the different provinces. The Free State and the Northern Cape had a 100% response rate, while the Western Cape had the lowest rate at 36%. No school from Mpumalanga fit the selection criteria and therefore no educators from this province participated (cf. 3.4.3) The low response rate from the autism-specific schools, who had the most educators, in the Western Cape and Gauteng appeared to have contributed to the lower response rates in these two provinces.

The following section provides a detailed description of the population.

4.3 DESCRIPTION OF THE STUDY POPULATION

In order to describe practices and experiences proficiently in the South African context, the researcher aimed to include the full spectrum of publically employed educators working with learners with ASD. The researcher did not include the personal attributes of educators (e.g. age, race, qualification, years of experience, etc.) in the design of inclusion criteria. Nevertheless, it is of value to describe the unique characteristics of ASD educators within South African public schools. This section would deal with the following:

4.3.1 Age of educators;

4.3.2 Gender of educators; and

4.3.3 Provinces and type of schools in which educators are working.

Section 4.4 deals with the training, experience and qualifications of educators.

4.3.1 Age of educators

A total of 89 educators (98.9%) responded to a ratio-data question to determine their age.

Table 4.2 Age analysis of educators (n=89)

Variable	Min	Lower quartile	Median	Upper quartile	Max
Age analysis of educators	25	38	46	53	63

Table 4.2 indicates the minimum age of educators as 25 years and the maximum age as 63 years. The median age was 46 years with a lower quartile of 38 years and an upper quartile of 53 years. The results suggest that the majority of educators were in middle adulthood.

Table 4.3 Age analysis of educators according to quartiles (n=89)

Variable	n	%
Lower quartile (25-37 years)	22	24.7
Middle quartile (38-53 years)	45	50.6
Upper quartile (54-63 years)	22	24.7
Total	**n=89**	**100%**

Table 4.3 shows the distribution of educators' ages within the three quartiles. The responses in the three quartiles were as follows: 24.7% (n=22) of educators in the lower quartile; 50.6% (n=45) of educators in the middle quartile; and 24.7% of educators in the upper quartile.

4.3.2 Gender of educators

A total of 89 educators (98.9%) responded to a dichotomous (yes/no) question concerning gender.

Table 4.4 Gender of educators (n=89)

Variable	n	%
Female	85	95.5
Male	4	4.5

Table 4.4 indicates that 85 educators (95.5%) responded to be female.

4.3.3 Provinces and type of schools in which educators were working

Table 4.5 provides a summary of the different provinces in which the 90 educators who participated in the study worked, as well as the type of school in which they worked.

Table 4.5 Provinces and type of schools in which educators were working

Variable	Total number of educators	Educators from autism-specific schools	Educators from special schools	Educator from full-service schools
	n %	n %	n %	n %
Free State	19 (21.1)	0 (0)	15 (78.9)	4 (21.1)
KwaZulu-Natal	16 (17.8)	0 (0)	16 (100)	0 (0)
Eastern Cape	13 (14.5)	10 (76.9)	3 (23.1)	0 (0)
Western Cape	13 (14.5)	1 (7.7)	12 (93.3)	0 (0)
Gauteng	11 (12.2)	8 (72.7)	3 (27.3)	0 (0)
Northern Cape	10 (11.1)	0 (0)	10 (100)	0 (0)
North West	5 (5.5)	0 (0)	5 (100)	0 (0)
Limpopo	3 (3.3)	0 (0)	0 (0)	3 (100)
Total	**90**	**19**	**64**	**7**

The majority of educators were from special schools (n=64), while 19 were from autism-specific schools and seven from full-service schools. In addition to information provided in the table, 59 of the 64 educators were employed at special schools that offered services to learners with severe intellectual impairment. Provinces without autism-specific schools (i.e. Free State, North West and KwaZulu-Natal) indicated that they accommodate learners with ASD in existing special schools. The possible reasons for the limited number of full-service schools identified for the study were discussed in Chapter 3 (cf. Table 3.1) and only the Free State and Limpopo indicated to have full-service schools that offer autism-specific education and that fit the inclusion criteria of the study.

The following section will provide more information regarding the qualifications, training and experience of educators.

4.4 THE LEVEL OF TRAINING AND EXPERIENCE OF EDUCATORS

This section deals with the first research objective, namely to determine the level of training and experience of educators of autism-specific classes in public schools nationally.

4.4.1 Work experience of educators – abroad and within the South African context

A total of 11 educators (12.2%) responded affirmatively when asked whether they have worked abroad with learners with ASD. The results suggest that the majority of educators (87.8%) gained their experience within the South African context.

Table 4.6 Age and work experience of educators

Variable	n	Min	Lower quartile	Median	Upper quartile	Max
Age in years	89	25	38	46	53	63
Years since qualified	87	1	6	17	27	40
Years experience in ASD teaching	85	0	3	5	8	27

Table 4.6 depicts the age, years since qualified and years in ASD teaching. Section 4.3.1 (Age of educators) displays the age range of educators. A total of 87 educators (96.7%) responded to a ratio data question asking educators about the year in which they completed their studies. Four educators (4.6%) indicated that they completed their qualification only in 2012. One educator reported that she had completed her studies in 1973, and her 40 years of experience represented the maximum number of years of experience. The median work experience was 17 years, which sets 1996 as the year in which these educators qualified. The lower quartile for years since qualified was six years (2007) and the upper quartile was 27 years (1986).

Some 87 educators responded (96.7%) when asked to indicate how many years experience they had of autism-specific teaching, and reported a median of five years (a lower quartile of three years and an upper quartile of eight years). One educator (1.1%) indicated that she had started in an autism-specific class during 2012, while the maximum years of teaching an autism-specific class was 27 years. The results of the study imply that educators started with autism-specific education after gaining experience in other fields of education.

4.4.2 Phase-specific training

A total of 90 educators responded to the multiple-choice question to determine the phase-specific training educators received.

Table 4.7 Phase-specific training (n=90*)

Variable	Responded	
	n	%
Foundation phase	53	58.9
Intermediate phase	24	26.7
Senior phase	19	21.1
For all phases	7	7.8

Table 4.7 indicates that the majority of educators (n=53, 58.9%) were trained for foundation phase education. Intermediate phase training consisted of 24 responses (26%); the senior phase of 19 responses (21.1%); and seven educators (7.8%) indicated that they had been trained for all phases. The results suggest that the number of educators trained for foundation phase is more than double that of the intermediate and senior phases.

4.4.3 Educators' basic training

A total of 87 educators (96.7%) responded to the multiple-choice question concerning their basic training.

Table 4.8 Educators' basic training (n= 87*)

Variable	n	%
Grade 10: Certificate in Education		
Grade 10 + 2 years training	2	2.3
Grade 10 + 3 years training	1	1.2
Grade 12: Diploma or Degree in Education	**n**	**%**
Grade 12 + 3 years training	31	35.6
Grade 12+ 4 years training	28	32.2
Grade 12 + B. Ed degree	18	20.7
Grade 12 + B. Ed. Psychology degree	6	6.9
Other	**n**	**%**
Grade 12 +Speech Therapy qualification	1	1.1

The results were clustered into three groups, namely: Grade 10 and a certificate in education; Grade 12 and a diploma or degree in education; and other qualifications.

The results suggest that the majority of educators had Grade 12 with a diploma or degree in education.

One educator had training in another profession, namely speech therapy (n=1; 1.1%).

4.4.4 Educators' formal post-basic training

Some 86 educators (95.6%) responded to the dichotomous question (yes/no) concerning their completion of a post-basic qualification, to which 43 educators (50%) responded affirmatively.

Table 4.9 Educators' formal post-basic training (n=43*)

Variable	Responded	
	n	%
Support and special education	35	40.7%
Other specialties	8	9.3%

Table 4.9 indicates the responses of these 43 educators to the multiple-choice question concerning the type of formal post-basic training they had completed. The responses represent two clusters, namely support and special education, and other specialities.

A total of 35 educators (38.9%) completed formal post-basic education in support and special education, and the cluster included the following:

(i) Honours in Support and Remedial Education (n=12; 27.9%);
(ii) Advanced Certificate in Education (n=8; 18.6%);
(iii) Diploma in Support and Remedial Education (n=5; 11.6%);
(iv) Master's in Education (n=4; 9.3%);
(v) PhD in Education (n=2; 4.7%);
(vi) B. Ed. Honours in Inclusive Education (n=2; 4.7%); and
(vii) Advanced Certificate in Education: Foundation Phase (n=1; 2.3%).

Eight educators (8.9%) indicated that they had completed post-basic training in the following other specialties:

(i) BA Honours in Drama (n=1; 2.3%);
(ii) Alternative Augmentative Communication (n=3; 7.0%);
(iii) General Nursing Diploma (n=1; 2.3%);
(iv) Honours in Communication (n=1; 2.3%); and
(v) Spiritual Counselling (n=1; 2.3%).

One educator (n=1; 2.3%) completed a B. Ed. Honours in curriculum, a BA Honours in Psychology and a Diploma in Education Management.

The majority of educators appeared to have been trained in support and special education, with Honours in Support and Remedial Education as the most frequently supported post-basic training.

4.4.5 Educators' formal post-basic training currently underway

A total of 89 educators responded to a dichotomous question (yes/no), asking whether they were currently undertaking postgraduate training, to which 15 educators indicated involvement in further studies. However, only 12 of these 15 educators specified the type of training they were doing.

Table 4.10 Educators' formal post-basic training currently underway (n=12*)

Variable	Responded	
	n	%
Support and special education	4	26.7
Education management	4	26.7
Other specialities	4	26.7

A multiple-choice question was used to ask educators about the postgraduate training they were involved in. Table 4.10 clustered the responses of these 12 educators into three groups, namely support and special education (n=4; 26.7%); other specialities (n=4; 26.7%); and education management (n=4; 26.7%).

The cluster of Support and Special Education included the following:

(i) Advanced Certificate in Education (n=2; 13.3%);
(ii) B. Ed. Honours in Inclusive Education (n=1; 6.7%); and
(iii) PhD in Education (n=1; 6.7%).

The cluster on other specialties included the following:

(i) B. Ed. Alternative Augmentative Communication (n=2; 13.3%);
(ii) M. Ed. Alternative Augmentative Communication (n=1; 6.7%); and
(iii) M. Ed. in Psychology (n=1; 6.7%).

Education Management Studies included:

(i) Diploma in Whole School Development (n=1; 6.7%); and

(ii) B. Ed. Honours in Law and Policy (n=3; 20.0%).

A total of 12 educators (13.3%) indicated that they were involved in post-basic training, and only four of these were busy with training in support and education. The other eight educators were involved in studies not specifically related to autism-specific education.

4.4.6 Educators' training in autism-specific programmes

Educators responded to a multiple-choice question to determine the autism-specific programmes in which they had received or completed training.

Table 4.11 Educators' training in autism-specific programmes (n=90*)

Variable	Responded	
	n	%
Children Picture Exchange Communication System (PECS)	55	61.1
Treatment and Education of Autistic and related Communication Handicapped Children (TEACCH)	51	56.7
Tiny Handz (Sign Language)	42	46.7
Makaton Language Programme	41	45.6
Fishbowl (Autism South Africa Training Programme)	33	36.7
Other programmes	31	34.4
Special Needs Adapted Programme (SNAP)	25	27.8
Applied Behaviour Analysis (ABA)	17	18.9
Developmental, Individual Difference, Relationship-Based Model (DIR® / Floortime™)	4	4.4

Table 4.11 indicates that more than 55% of educators were trained in the Children Picture Exchange Communication System (n=55; 61.1%) and Treatment and Education of Autistic and Related Communication Handicapped Children (n=51; 56.7%). Between 27% and 37% of educators indicated that they were trained in South African developed programmes: Tiny Handz (n=42; 36.7%), Fishbowl (n=33; 36.7% and the Special Needs Adapted Programme (n=25; 27.8%).Less educators appeared to be trained in Applied Behaviour Analysis (n=17; 18.9%) and Developmental, Individual Difference, Relationship-Based (n=4; 4.4.%).

In an open-ended question, 31 educators (34.4%) named these other programmes in which they had received training: Non-Punitive Restraint (n=2; 2.2%); ASD certificate of competence (n=1; 1.1%); Studio 2 (n=1; 1.1%); Studio 3 (n=6; 6.7%); Alternative Augmentative Communication (n=7; 7.8%); Social Stories™ (n=1; 1.1%); Apple software (n=2; 2.2%); and informal ASD courses (n=11; 12.2%).

4.4.7 Service providers responsible for educator training

A total of 49 educators (54.4%) responded to the multiple-choice question to determine the service providers responsible for the training of the educators in autism-specific classes.

Table 4.12 Service providers responsible for educator training (n= 49*)

Variable	n	%
Another school	12	24.5
Accredited external trainers	11	22.4
Internal training	10	20.4
Autism South Africa	9	18.4
District-based support team	4	8.2
Universities	2	4.1
Other	1	2.0

The results in Table 4.12 display that between 18% and 25% of educators had been trained by another school, accredited external trainers, school-based internal training programmes or by Autism South Africa. Less than 10% of educators indicated district-based support teams (n=4; 8.2%) and universities (n=2; 4.1%) as training service providers. One educator (2.0%) indicated another source of training, but did not specify the source.

4.4.8 Schools providing training

Some 86 educators (95.6%) responded to a dichotomous (yes/no) question asking whether their school provided autism-specific training to other schools, to which 36 educators (41.9%) answered affirmatively.

Table 4.13 Type of support offered by schools providing training (n=36*)

Variable	Responded	
	n	%
Informal	23	63.9
Formal	10	27.8
Outreach	1	2.8

Table 4.13 displays the responses of 36 educators who responded to an open-ended question concerning the type of training their school offered. The results were clustered into three groups: informal training, formal training and outreach. Again it should be noted that the numbers of the breakdown and cluster do not correlate since educators could indicate more than choice.

Informal training consisted of the following responses:

(i) Lectures and training for individuals and groups of educators on managing learners with ASD in the classroom (n=21; 58.3%); and

(ii) Study groups and professional working groups with the aim of training on best practices (n=9; 25.0%).

The cluster on formal training consisted of the following responses:

(i) Intensive two-week training programme (n=2; 5.6%);

(ii) TEACCH training to parents, tutors, educators and therapists (n=5; 13.9%);

(iii) PECS training to parents, tutors, educators and therapists (n=2; 5.6%);

(iv) Studio 3 (n=1; 2.8%) training; and

(v) Vera training (n=4; 11.1%).

The third cluster referred to outreach programmes and programmes provided to educators from disadvantaged schools (n=1; 2.8%). Informal training to individuals and groups of educators on managing ASD in the classroom appeared to be the primary source of training provided by schools that offered training.

4.4.9 Updates regarding the latest developments in autism-specific education

A total of 76 educators (84.4%) responded to an open-ended (word-based) question concerning their strategies to keep updated with the latest developments in autism-specific education.

Table 4.14 Updates regarding the latest developments in autism-specific education (n=76*)

Variable	Responded	
	n	%
Formal training and workshops	49	54.4
Journals, newsletters and books	28	31.1
Internet and social media	26	28.9
In-service training and professional working groups	22	24.4
ASD associations	15	16.7
Individual research and reviews	8	8.9
Parent meetings and support groups	4	4.4
Do not keep up with trends	1	1.1

Table 4.14 displays the eight clusters concerning strategies to keep updated regarding the latest developments in autism-specific education. A total of 49 educators (54.4%) indicated that they kept updated by attending formal training and workshops, which included workshops and seminars (n=48; 53.3%), and the SNAP training course (n=1; 1.1%).

Some 28 educators (31.1%) indicated that they used mainly journals, newsletters and books to keep updated, while 26 educators (28.9%) responded that they remained updated by the use of the Internet (n=25; 27.8%), blogs and international chat rooms (n=1; 1.1 %), and radio broadcasts (n=1; 1.1%). A total of 22 educators (24.4%) reported being updated by the use of in-service training and professional working groups, which included:

(i) Professional working and study groups (n=5; 5.6%);
(ii) In-service training and school-based support (n=14; 15.6%);
(iii) Visits to autism-specific schools (n=3; 3.3%);

(iv) Learning through practical experience (n=3; 3.3%); and
(v) Strategies provided by district-based support teams (n=1; 1.1%).

Fifteen educators (16.7%) replied that ASD associations assisted in keeping them updated. These ASD associations were ASD regional support group meetings (n=5; 5.6%) and Autism South Africa (n=12; 13.3%). Eight educators (8.9%) replied that they kept updated by performing research (n=3; 3.3%) and reviews of current research in the field of ASD (n=5; 5.6%). Parental meetings (n=3; 3.3%) and support by district-based support teams (n=1; 1.1%) assisted four educators (4.4%) to develop professionally. Only one educator (n=1; 1.1%) reported not keeping up with the latest trends in ASD education.

The results suggested that the majority of educators remained updated by attending formal training and workshops; through journals, newsletters and books; by means of the Internet and social media, as well as with in-service training and professional working groups.

4.5 SCHOOL-BASED OPERATIONS

This section deals with the second research objective, namely to determine school-based operations concerning admissions criteria and procedures of learners with ASD, extra-curricular services, therapeutic support and parent collaboration. The following results are discussed:

4.5.1 Assessment tools;
4.5.2 Screening identification and support;
4.5.3 Age groups accommodated at school;
4.5.4 Admissions criteria;
4.5.5 Accommodation of special needs in hostels;
4.5.6 Extra-curricular services offered;
4.5.7 Reasons for the necessity of therapists;
4.5.8 Therapeutic services offered;
4.5.9 Transfer of skills to the home environment; and
4.5.10 Autism support groups.

4.5.1 Type of school

A total of 89 educators (98.9%) responded to a multiple-choice question concerning the type of school where they worked.

Table 4.15 Type of school (n=89)

Variable	n	%
Special school	59	66.3
Autism-specific school	23	25.8
Full-service school	7	7.9

The results in Table 4.15 seemed to indicate that the majority of educators (n=59, 66.3%) who participated were employed at special schools; only 23 educators (25.8%) from autism-specific schools participated. Although educators from full-service schools had a 100% response rate (cf. Figure 4.1 discussion) they only represent 7.9% of the educators who participated.

4.5.2 Assessment tools

Table 4.16 indicates the response rates of educators to a multiple-choice question regarding the use of screening and diagnostic tools. Generally, the question regarding the use of assessment tools had a low response rate for both screening tools (<30.5%) and diagnostic tools (<43%). Three educators from special schools commented that educators from autism-specific classes were not involved in the initial screening and assessment of potential candidates for the school.

Table 4.16 Assessment tools (n=90*)

Variable	Responded	
Screening Tools	**n**	**%**
Autism Behaviour Checklist (ABC)	27	30.0
Autism Spectrum Screening Questionnaire (ASSQ)	7	7.8
Autism Screening Instrument for Educational Planning (ASIEP)	6	6.7
Pervasive Developmental Disorder Screening Test – Second Edition (PDDST)	6	6.7
Autism Spectrum Quotient – child version (ASQ)	2	2.2
CHAT	2	2.2
Variable	**Responded**	
Diagnostic Tools	**n**	**%**
Childhood Autism Rating Scale (CARS)	38	42.2
Autism Diagnostic Observation Schedule (ADOS)	16	17.8
Asperger Syndrome Diagnostic Scale (ASDS)	3	3.3
Gilliam Autism Rating Scale – Second Edition (GARS)	2	2.2
School has a self-developed assessment tool	1	1.1

Table 4.16 depicts that the Autism Behaviour Checklist (n=27, 30%) appeared to be the screening tool that was used most frequently. The Childhood Autism Rating Scale (n=38, 42.2%) appeared to be the most used diagnostic tool. Sixteen educators (17.8%) reported to use the Autism Diagnostic Observation Schedule, and less than eight percent of the educators who responded indicated that they used the other screening and diagnostic tools.

4.5.3 Use of Screening Identification and Support (SIAS)

A total of 74 educators (82.2%) responded to a dichotomous (yes/no) question concerning the use of the Screening Identification and Support Guidelines (SIAS) at their school.

Table 4.17: Use of Screening Identification and Support (SIAS) (n=74)

Variable	Yes Responses		No Responses		Total
	n	%	n	%	n
Autism Specific Schools	14	93.3	1	6.7	**15**
Special Schools	40	75.5	13	24.5	**53**
Full Service School	4	66.7	2	33.3	**6**
	58	-	**16**	-	**74**

Table 4.17 displays that 58 educators indicated the use of the Screening Identification and Support Guidelines at their school. Nevertheless, 16 educators indicated that they did not use SIAS at their school. A breakdown of these results in terms of the type of schools suggests that educators used the SIAS guidelines in autism-specific (n=14), special (n=40) and full-service schools (n=4).

4.5.4 Age groups accommodated at school

A ratio data question enquired about the age groups for which the school provided autism-specific education.

Table 4.18 Age groups accommodated at schools

Variable	n	Min	Median	Max
Lower limit – age range in years	78	2	5	11
Upper limit – age range in years	79	10	18	25

Table 4.18 indicates five years as the median of the lower age range with the minimum age at two years and the maximum age as 11 years. The upper age range had a median age of 18 years with a minimum age of 10 years and a maximum age of 25 years.

In addition to the results in Table 4.18, further analyses indicated that 13.0% of learners admitted to autism-specific schools were younger than five years, of which 12.5% were in special schools and 3.5% in full-service schools. Analysis of the upper limit indicated that only

5.4% of learners were older than 18 years and that they were all from special schools. The results tended to indicate that schools accommodate learners mainly between the ages of 5 and 18 years.

4.5.5 Admissions criteria

A multiple-choice question was used to determine the pre-requisites for admission to schools, and the response rate was generally low (<60%).

Table 4.19 Admissions criteria (n=90*)

Variable	Responded	
	n	%
Continence training complete	51	56.7
Formal diagnosis of ASD by medical specialist	50	55.6
Screening by school panel	45	50.0
Recommendation by district	43	47.8
Age restrictions	38	42.2
Functional language and communication skills	9	10.0
Language policy	8	8.9
Other	2	2.2

Table 4.19 depicts that 50% and more of educators indicated continence (n=51; 56.7%), formal diagnosis (n=50; 55.6%) and screening by a school panel (n=45, 50.0%) as prerequisites for admission. Recommendation by the district-based support team (n=43; 47.2%) and the age of the learner (n=38; 42.2%) were reported as admissions criteria. Functional language skills (n=9; 10%) and a language policy (n=8; 8.9%) did not appear to be vital prerequisites for admission. Two educators indicated other criteria as an option, but they did not specify the criteria.

4.5.6 Accommodation of special needs in hostel

Some 87 educators (96.7%) responded to a dichotomous question (yes/no) concerning hostel accommodation offered at their school, and 53 educators replied that their school had hostel facilities.

Table 4.20 Hostel accommodation in different school types (n=87)

Variable	Yes Responses	No Responses		Total	
	n	%	n	%	n
Autism-specific schools	17	77.3	5	22.7	**22**
Special schools	34	58.6	24	41.4	**58**
Full-service schools	2	28.6	5	71.4	**7**
	53	-	**34**	-	**87**

Table 4.20 indicates that hostel accommodation was offered in autism-specific- (n=17; 77.3%), special (n=34; 58.6%) and full-service schools (n=2; 28.6%).

Table 4.21 summarises the responses of educators to an open-ended (word-based) question regarding the different strategies used to accommodate the individual needs of learners concerning the hostel routine. The results were grouped into five clusters as displayed in Table 4.21.

Table 4.21 Accommodation of special needs in hostel (n=90*)

Variable	Responded	
	n	%
Individual support plans and strategies	28	31.1
Staff training and support	15	16.7
Grouping and team work	12	13.3
Structured routine and schedule	11	12.2
No accommodation for ASD	3	3.3

A total of 28 educators (31.1%) replied that they used individual support plans and strategies in the following ways:

(i) The housemother accommodated the sensory needs (e.g. sensitivity to noise) of learners within limits (n=24; 26.7%);
(ii) The use of visual schedules to guide and orientate learners (n=7; 7.8%);
(iii) Learners received training regarding personal management skills, which increased their independence (n=3; 3.3%);
(iv) Learners wore communication boards (necklaces) to facilitate communication with hostel staff (n=1; 1.1%); and
(v) Hostel staff participated in the compilation of individual support plans (n=3; 3.3%).

Fifteen educators (16.7%) indicated the use of staff training and support. Hostel staff received training regarding ASD (n=9; 10%) and educators assisted hostel staff with support strategies for individual learners (n=7; 7.8%).

Results indicated that hostel staff grouped learners according to age and developmental needs, with assistants allocated to each group (n=6; 6.7%). Only one educator indicated that learners needed to share rooms due to financial constraints, and five educators indicated that the learners participated in domestic activities e.g. cleaning their rooms, cooking, etc. Thus two educators (2.2%) were of opinion that the hostel programme played a positive role in improving social and life skills in learners with ASD due to the teamwork and exposure to domestic chores.

Eleven educators (12.2%) indicated that the learners followed structured routines and schedules e.g. set bedtimes, menus, etc. Results indicated that 13.3% of hostel staff used efficient grouping of learners and teamwork (n=12) as a strategy to accommodate the needs of learners.

Three educators (3.3%) reported that their school offered hostel facilities, but that they did not accommodate learners with ASD.

4.5.7 Extra-curricular services offered

Table 4.22 summarises the responses of educators on a multiple-choice question that determined the extra-curricular activities offered for learners with ASD.

Table 4.22 Extra-curricular services offered (n=90*)

Variable	Responded	
	n	%
Swimming	48	53.3
Art	41	45.6
Social skills	40	44.4
Horseback-riding	33	36.7
*External therapy	30	33.3
Music therapy	28	31.1
Pottery	19	21.1
Drama	18	20.0
Ball skills (soft- and play-ball)	5	5.6

**Therapy not provided by school-based therapists.*

Table 4.22 displays that swimming (n=48; 53.3%), art (n=41; 45.6%) and social skills (n=40; 44.4%) appeared to be three activities that were offered the most at schools. Horseback-riding (n=33; 36.7%), therapy by external therapists (n=30; 33.3%) and music therapy (n=28, 31.1%) seemed to be offered by one-third of schools that offered ASD education. Some 20% of educators indicated that pottery (n=19) and drama (n=18) were offered at their schools, while only 5.6% of educators (n=5) reported the use of ball skills.

4.5.7.1 Extra-curricular services offered at different schools

Table 4.23 provides a summary of the extra-curricular services offered in the different types of schools, namely autism-specific, special- and full-service schools.

Table 4.23 Extra-curricular services offered at different schools (n=90*)

Variable	Autism-specific schools	Special schools	Full-service schools
	n %	n %	n %
Swimming	7 (30.4)	36 (61.0)	4 (57.1)
Art	12 (52.2)	23 (39.0)	5 (71.4)
Social skills	8 (34.8)	29 (49.2)	2 (28.6)
Horseback-riding	8 (34.8)	21 (35.6)	3 (42.9)
*External therapy	8 (34.8)	18 (30.5)	4 (57.1)
Music therapy	11 (47.8)	14 (23.7)	3 (42.9)
Pottery	7 (30.4)	12 (20.3)	0 (0)
Drama	4 (17.4)	14 (23.7)	0 (0)
Ball skills (soft- and play-ball)	2 (8.7)	3 (5.1)	0 (0)

**Therapy not provided by school-based therapists.*

Table 4.23 suggests art (n=12, 52.2%), music therapy (n=11; 47.8%), social skills (n=8; 34.8%), horseback-riding (n=8; 34.8%) and therapy by external therapists (n=8; 34.8%) to be offered by the most at autism-specific schools. Swimming (n=36; 61.0%), social skills (n=29; 49.2%) and art (n=23; 39.0%) were reported by educators of specials schools as extra-curricular services offered, while drama (n=14; 23.7%) and ball skills (n=3; 5.1%) had less responses. Educators from full-service schools reported the use of art (n=5; 71.4%), therapy by external therapists (n=4; 57.1%), swimming (n=4; 57.1%), and music therapy (n=3; 42.9%) as extra-curricular activities. Pottery, drama and ball skills appeared to be offered autism-specific and special schools, but not by full-service schools.

4.5.7.2 Most beneficial extra-curricular services offered

A total of 75 educators (83.3%) responded to an open-ended (word-based) question concerning the extra-curricular activities that they perceived as most beneficial to learners with ASD.

Table 4.24 Most beneficial extra-curricular services offered (n=75*)

Variable	n	%
Social skills	32	42.7
Horseback-riding	26	34.7
Music therapy	26	34.7
Swimming	23	30.7
Art	20	26.7
*External therapy	12	16.0
Drama	4	5.3
Pottery	4	5.3
Ball skills (soft- and play-ball)	2	2.7

**Therapy not provided by school-based therapists.*

Table 4.24 displays social skills (n=32, 42.7%), horseback-riding (n=26, 34.7%), music therapy (n=26, 34.7%), swimming (n=23, 30.7%), art (n=20, 26.7%) and external therapy (n=12, 16%) as the activities that educators perceived to be most beneficial. Drama (n=4, 5.3%), pottery (n=4, 5.3%) and ball skills (n=2, 2.7%) received less responses.

4.5.7.3 Funding of extra-curricular services offered

Some 75 educators responded to a multiple-choice question to determine whether schools or parents funded extra- curricular activities.

Table 4.25 Funding of extra-curricular services offered (n=75*)

Variable	School Funded		Private Funded	
	n	%	n	%
Horseback-riding	16	21.3	17	22.7
*External therapy	17	22.7	12	16.0
Music therapy	19	25.3	11	14.7
Art	35	46.7	8	10.6
Pottery	1	1.3	4	5.4
Social skills	40	53.3	3	4.0
Swimming	43	57.3	2	2.7
Drama	15	20.0	1	1.3

**Therapy not provided by school-based therapists.*

Table 4.25 indicates that swimming (n=43; 57.3%), social skills (n=40; 53.3%), art (n=35, 46.7%) and drama (n=15, 20.0%) were mostly funded by the school. Four educators responded that pottery (5.4%) was funded privately, while only one educator (1.3%) reported that the school funded pottery. Seventeen educators (22%) indicated horseback-riding to be funded privately, but 16 educators (21.3%) reported that the school funded the activity. Music therapy (n=19, 25.3%) and external therapy (n=17, 22.7%) appeared to be funded the most by schools. However, 16.0% of educators (n=12) reported that external therapy was privately funded and 14.7% (n=11) indicated that private funding covered the costs of music therapy.

4.5.8 Reasons for necessity of therapists

A total of 87 educators (96.7%) responded to a dichotomous (yes/no) question regarding the necessity of therapists (as indicated in Table 4.27.) at schools that offered autism-specific education; 85 (97.7%) of these responded positively, while only 2.3% (n=2) did not feel that it was necessary to provide therapeutic services.

Table 4.26 Reasons for necessity of therapists (n=87*)

Variable	Responded	
	n	%
Specialised support	38	44.7
Integrated, multi-professional approach	29	34.2
Training and support of educators	25	29.4
Optimising education outcomes	13	15.3

An open-ended (word-based) question was used, where educators had to motivate their responses regarding the need for therapists at their school. The researcher grouped the results into four clusters, and Table 4.26 displays these clusters.

A total of 38 educators (44.7%) indicated that learners with ASD required specialised support offered by therapists. The cluster for specialised support consisted of three primary views:

(i) Therapists have specialised skills and focus on specific developmental aspects of individualised learners (n=38; 38.0%);

(ii) Gross motor intervention as addressed by physiotherapists has benefits in classroom performance (n=6; 7.1%); and

(iii) Learners with ASD often require specialised assistive devices or specialised compensatory strategies (n=1; 1.2%).

Overall, the results suggested that the specialised skills of therapists and the individualised focus on specific developmental aspects of learners made them essential at schools that offer ASD education.

A total of 29 educators (34.0%) indicated that learners with ASD required integrated, multi-professional approaches and this cluster consisted of two primary views:

(i) Learners with ASD have intensive support needs and require specialised intervention in various developmental domains (n=24; 28.0%); and

(ii) Learners with ASD benefit the most from an integrated, multi-professional intervention (n=7; 8.2%).

The intensive support and specialised intervention required by learners with ASD appeared to be a key factor that necessitates therapists as part of integrated, multi-professional teams in schools that offer autism-specific education.

A total of 25 educators (29.4%) indicated that therapists needed to assist with the training and support of educators. This cluster consisted of four primary views:

(i) Educators did not have specialised skills to manage all the impairments and deficits associated with the condition (n=12; 14.1%);
(ii) Therapists assisted with classroom and individualised strategies, which added value to teaching (n=17; 20.0%)
(iii) Therapists were actively involved in compiling individual support plans (n=2; 2.4%); and
(iv) Therapists assisted with parent feedback, training and support strategies (n=1; 1.2%).

The results suggested that assistance provided by therapists in the classroom and the strategies to support individualised learners appeared to be key contributors in having therapists at schools that offer ASD education.

Thirteen educators (15.3%) were of the opinion that therapeutic intervention optimised education outcomes and they indicated three primary reasons:

(i) Therapeutic intervention made a difference in the functional skills of learners (n=3; 3.5%);
(ii) Learners who receive speech and occupational therapy showed improvement in communication and personal independence, which aided academic progress (n=8; 9.4%);
(iii) Therapy added value, but only a number of learners benefited due to limited resources (n=2; 2.4%).

4.5.9 Therapeutic services offered

Table 4.27 displays the responses of educators when asked in a multiple-choice question to report on the different therapeutic services offered and funded by the school.

Table 4.27 Therapeutic services offered (n=90*)

Variable	Autism-specific schools	Special schools	Full-service schools
	n %	n %	n %
*Occupational therapy	19 (82.6)	43 (72.9)	1 (14.3)
*School nursing	15 (65.2)	42 (71.2)	1 (14.3)
Physiotherapy	4 (17.4)	30 (50.9)	0 (0)
Speech therapy	17 (73.9)	16 (27.1)	1 (14.3)
Psychology	10 (43.5)	21 (35.6)	1 (14.3)
Social work	2 (8.7)	11 (18.6)	1 (14.3)
Dietetic service	0 (0)	0 (0)	0 (0)

**Total of occupational therapists in all schools (n=63; 70%) and school nursing (n=58, 64.4%)*

Some 63 educators reported that their school offered occupational therapy (70%), and 58 indicated school nursing services (64.4%). None of the educators indicated that their school offered dietetic support. Educators from autism-specific schools reported to offer occupational therapy (n=19, 82.6%), school nursing (n=15, 65.2%) and speech therapy (n=17; 73.9%), while physiotherapy (n=4; 17.4%) and psychology (n=10, 43.5%) appeared to be less offered. Educators from special schools reported to have occupational therapy (n=43, 72.9%), school nursing (n=42, 71.2%), physiotherapy (n=30, 50.9%), psychology (n=21, 35.6%), speech therapy (n=16, 27.1%) and social work (n=11, 18.6%). Only one educator from a full-service school reported to have occupational therapy, nursing, speech therapy, psychology and social work services at their school. No educators from full-service schools reported physiotherapy services.

4.5.10 Therapeutic support to educators

A total of 88 educators (97.8%) responded to a dichotomous (yes/no) question concerning the support they received from therapists – 80 of the educators (90.9%) indicated that they did receive such support. Eight educators (9.1%) replied that they did not receive any support from therapists, since their school did not have school-based therapists. Six of these educators were from full-service schools and two from special schools.

Table 4.28 Therapeutic support to educators (n=80*)

Variable	Responded	
	n	%
Therapy with individual learners	63	78.7
Groups sessions	50	62.5
Support in class	43	53.7
Workshops	31	38.7
Parent feedback	4	5.0

Table 4.28 summarises the responses of these 80 educators when asked in a multiple-choice question to indicate the type of support they received from therapists. The responses were clustered into five groups concerning the following types of support:

(i) Therapy with individual learners (n=63, 78.7%);
(ii) Group sessions (n=50, 62.0%);
(iii) Support in class (n=43, 53.7%);
(iv) Workshops (n=31, 38.8%); and
(v) Assistance with parent feedback (n=4, 5.0%).

The results suggest that therapists mostly provided therapeutic support through individual therapeutic sessions, therapeutic groups, and the provision of support strategies to educators on how to handle individual learners in the class. Therapists also appeared to play a role in the structured training of educators by presenting workshops. Therapists seemed to have a limited role concerning parent feedback.

4.5.11 Transfer of skills to the home environment

A total of 86 educators (95.6%) responded to the dichotomous (yes/no) question concerning the participation of parents in the educational programme at the school; for which 55 educators (64.0%) indicated parent involvement.

Table 4.29 Transfer of skills to the home environment (n=76*)

Variable	Responded	
	n	%
Individual counselling and feedback	47	52.2
Homework, letters and communication book	16	17.8
Formal structured training in groups	12	13.3
Parent meetings and support groups	9	10.0
Limited parent involvement and training	9	10.0

A total of 76 educators (84.4%) responded when asked how they transferred skills to the home environment. Table 4.29 indicates that 47 educators (52.2%) supported the first cluster concerning individual counselling and feedback to parents. This cluster included the following responses:

(i) Parent counselling regarding individual support plans, school goals and daily schedules (n=45; 50.0%);

(ii) Home visits (n=4; 4.4%); and

(iii) Drama and role-play (n=1; 1.1%).

The second cluster included the use of homework, letters and communication books, and 16 educators (17.8%) supported this cluster. The third cluster dealt with formal, structured training of parents in groups, and 12 educators (13.3%) responded that they used this strategy.

The fourth cluster included parents meetings and support groups. Nine educators (10.0%) indicated that they used these methods to transfer skills to the home environment. The fifth cluster dealt with the responses of educators who indicated that parent training and involvement were a limitation in their programme and nine educators supported (10.0%) this cluster.

Individual counselling and feedback appeared to be used by the majority of educators.

4.5.12 Frequency of parent feedback and specialised training for parents

A total of 83 educators (92.2%) responded when asked whether the school offered specialised training to parents, to which 49 educators (59.0%) indicated that their school did not offer such training.

Table 4.30 Parent feedback and specialised training in schools (n=83)

Variable	Yes Responses		No Responses		Total
	n	%	n	%	n
Autism-specific schools	9	45.0	11	55.0	**20**
Special schools	20	35.7	36	64.3	**56**
Full-service schools	5	71.4	2	28.6	**7**
	34	-	**49**	-	**83**

Table 4.30 provides a breakdown of the responses received from educators in autism-specific, special and full-service schools. The results concerning parent feedback and training in schools were as follows: autism-specific (n=9, 45.0%), full-service (n=5, 71.4%) and special schools (n=20, 35.7%).

Table 4.31 Frequency of parent feedback and specialised training for parents (n=89)

Variable	n	%
Quarterly	52	58.4
Annually	16	18.0
More frequently than monthly	15	16.9
Monthly	3	3.4
Never	1	1.1
Biannually	1	1.1
If required to contact parents	1	1.1

A total of 89 educators (98.9%) responded to a multiple-choice question concerning the frequency of parent feedback and specialised training for parents. Table 4.31 displays the frequency of parent feedback and information sessions. The results indicated that 58.4% of educators (n=52) provided quarterly feedback; 18% of educators (n=16) reported annual feedback; and 16.9% of educators (n=15) specified feedback more frequently than monthly. Three educators (n=3.4%) reported monthly feedback, while few educators indicated that they never provided feedback (n=1; 1.1%), gave biannual feedback (n=1; 1.1%) or feedback if required (n=1; 1.1%).

4.5.13 Financial burden for parents regarding specialised services delivered

Some 84 educators (93.3%) responded when asked in a dichotomous (yes/no) question whether parents paid extra for specialised services delivered at schools.

Table 4.32 Financial burden for parents regarding specialised services delivered (n=84)

Variable	n	%
Parents do not pay for specialised services	69	82.1
Parents pay for specialised services	15	17.9

Table 4.32 displays that the majority of educators (n=69; 82.1%) replied that parents do not have to cover the costs of specialised services.

4.4.14 Autism support groups

A total of 76 educators (84.4%) responded to a dichotomous (yes/no) question concerning the affiliation of their school with Autism South Africa, to which 68 educators (89.5%) confirmed affiliation. Eight educators (10.5%) replied that their school had no affiliation with Autism South Africa.

Table 4.33 Autism support groups (n=38*)

Variable	Responded	
	n	%
Autism South Africa regional support groups	21	23.3
Other autism associations	10	11.1
Support and study groups	7	7.8

Table 4.33 displays the three groups of responses of educators when asked in an open-ended question to indicate their membership at autism support groups.

Firstly, 21 educators (23.3%) responded to supporting Autism South Africa regional supports groups. This cluster consisted of the following responses:

(i) Autism South Africa (n=12; 13.3%);
(ii) Free State Autism South Africa parent support group (n=5; 5.6%);
(iii) Eastern Cape Autism South Africa: parent support group (n=2; 2.2%);
(iv) Pretoria Cape Autism South Africa: parent support group (n=1; 1.1%); and
(v) Northern Cape Autism South Africa: parent support group (n=1; 1.1%).

The second cluster included all other ASD-related support groups, and ten educators (11.1%) responded in this regard. ASD related support groups consisted of the following:

(i) Association for Autism (n=2; 2.2%);
(ii) South African Association for Learning and Educational Difficulties (n=2; 2.2%);
(iii) Moonlight Foundation for Autism (n=1; 1.1%);
(iv) Interface (n=4; 4.4%);
(v) Inclusive Solutions (n=1; 1.1%);
(vi) Alternative Augmentative Communication Support (n=1; 1.1%); and
(vii) Autism Assist (n=1; 1.1%).

Thirdly, seven educators (n=7; 7.8%) responded positively to the cluster on support and study groups. This cluster consisted of two main groups, namely the ASD study group at the University of KZN, Department of Psychology (n=2; 2.2%), and internal training programmes at schools (n=5; 5.6%).

4.6 CLASSROOM MANAGEMENT PRACTICES

This section deals with the third research objective, namely to determine classroom management practices in terms of the curriculum, work schedules, monitoring of learner progress as well as activity and environmental adjustments. The following results are presented in this section:

4.6.1 Languages of teaching;
4.6.2 Age range of learners;
4.6.3 Number and gender of learners in class;
4.6.4 Severity of ASD;
4.6.5 Vocational training as part of the curriculum;
4.6.6 Curriculums used in autism classes;
4.6.7 Critical aspects included in curriculum;
4.6.8 Lesson plans and learning pace;
4.6.9 Individual support plans and schedules;
4.6.10 Assessment and monitoring of progress; and
4.6.11 The safety of learners during break time.

4.6.1 Languages of teaching

A total of 90 educators (100%) responded to a multiple-choice question concerning their language of teaching.

Table 4.34 Educators' languages of teaching (n=90*)

Variable	n	%
English	29	32.2
Afrikaans and English	24	26.7
Afrikaans	17	18.9
Sesotho	5	5.6
Afrikaans, English and Setswana	5	5.6
IsiZulu	4	4.4
IsiXhosa	3	3.3
Setswana	1	1.1
Sesotho and Setswana	1	1.1
English and IsiXhosa	1	1.1

Table 4.34 indicates English (n=29, 32.2%), Afrikaans (n=17, 18.9%) and combinations thereof (n=24, 26.7%) as the main languages of teaching in ASD classes. The results concerning African languages were as follows: Sesotho (n=5, 5.6%), IsiZulu (n=4, 4.4%), IsiXhosa (n=3, 3.3%) and Setswana (n=1, 1.1%). Combinations of African and other languages included Afrikaans, English and Setswana (n=5, 5.6%); Sesotho and Setswana (n=1, 1.1%); and English and IsiXhosa (n=1, 1.1%).

4.6.2 Age range of learners

When asked to respond on the age range (e.g. 6-9 years) of the learners in an educator's class, 87 educators (96.7%) responded to the lower age range and 86 educators (95.6%) to the upper age range.

Table 4.35 Age range of learners

Variable	n	Min	Lower quartile	Median	Upper quartile	Max
Lower age range	87	2	6	8	11	16
Upper age range	86	4	10	13	15	21

Table 4.35 displays that the youngest learner within the lower age range was 2 years of age, and the oldest 16 years. The lower age range had a median age of 8 years. The youngest learner in the upper age range was 4 years and the oldest 21 years, with a median age of 13 years. Hence, it appeared as if the majority of learners in ASD classes were between 8 and 13 years.

4.6.3 Number and gender of learners in class

Table 4.36 displays the responses of educators concerning the number and gender of learners in their class.

Table 4.36 Number and gender of learners in class

Variable	n	Lower quartile	Median	Upper quartile
Number in class	88	7	8	10
Male	87	5	7	8
Female	87	2	1	2

The lower quartile indicated seven learners, a median of eight learners and an upper quartile of ten learners in a class. Hence, the majority of classes had between seven to ten learners with ASD. A total of 87 educators reported on the gender ratios of learners in their class. Given the median of eight learners per class, of which seven were male, the gender ratio suggests one female for every seven males.

4.6.4 Severity of ASD

Educators responded to a multiple-choice question to determine the options, or combinations thereof, that best described the learners with ASD in their class.

Table 4.37 Severity of ASD (n=90*)

Variable	Responded	
	n	%
Severe	52	57.8
Moderate	52	57.8
Mild	32	35.6

Table 4.37 displays that 57.8% of educators (n=52) reported that they had learners with severe ASD, while 57.8% of educators (n=52) reported moderate ASD, and 32 educators (35.6%) reported that they have learners with mild symptoms. In addition to the information supplied in Table 4.37, all educators from full-service schools (n=7) indicated they had learners who were mildly or moderately autistic.

4.6.5 Autism-specific classes versus inclusivity

A dichotomous (yes/no) question was used to determine whether learners with autism spectrum disorders were included with others who did not have the condition. A separate dichotomous (yes/no) question asked educators to indicate whether their school had classes that exclusively accommodate learners with autism.

Table 4.38 Autism-specific classes versus inclusivity in different schools

Including learners with ASD with others not having the condition					
Variable	**Yes responses**		**No responses**		**Total**
	n	**%**	**n**	**%**	**n**
Autism-specific school	9	40.9	13	59.1	**22**
Special school	42	73.7	15	26.3	**57**
Full-service schools	6	85.7	1	14.3	**7**
	57	**-**	**29**	**-**	**86**
Exclusively accommodating learners with ASD					
Variable	**Yes responses**		**No responses**		**Total**
	n	**%**	**n**	**%**	**n**
Autism-specific school	15	75.0	5	25.0	**20**
Special school	44	74.6	15	25.4	**59**
Full-service schools	3	42.9	4	57.1	**7**
	62	**-**	**24**	**-**	**86**

Table 4.38 indicates that 57 educators (65.5%) responded affirmatively when asked whether learners with ASD were included with other learners who did not have the condition. The results from special schools (n=42; 73.3%) and full-service schools (n=6, 85.7%) suggested that >70% of educators who responded reported that learners with ASD were included with other learners. Nine educators from autism-specific schools (40.9%) indicated that learners with ASD were included with those who do not have the condition.

Some 62 educators (71.4%) responded positively when asked whether they had classes that exclusively accommodated learners with ASD. The results from autism-specific schools (n=15; 75.0%) and special schools (n=44; 74.6%) indicated that >70% of learners were exclusively accommodated in classes. Three educators from full-service schools (42.9%) reported that their classes accommodated exclusively learners with ASD.

4.6.6 Use of a class assistant

A total of 87 educators (96.7%) responded to a dichotomous question asking whether they had a class assistant.

Table 4.39 Use of class assistants in schools (n=87)

Variable	Yes responses		No responses		Total
	n	%	n	%	n
Autism-specific school	22	95.6	1	4.4	**23**
Special school	45	79.0	12	21.0	**57**
Full-service schools	3	42.9	4	57.1	**7**
	70	**-**	**17**	**-**	**87**

Table 4.39 indicates that the majority of educators (n=70; 80.5%) had class assistants, while 17 educators (19.5%) indicated that they did not have assistants. A total of 95% of educators in autism-specific- (n=22) and 79% of educators in special schools (n=45) indicated that they had class assistants, while fewer educators (n=3; 42.9%) from full-service schools reported resources in this regard.

4.6.7 Vocational training as part of the curriculum

Some 86 educators (95.6%) responded when asked to indicate with a dichotomous (yes/no) if their school offered vocational training programmes.

Table 4.40 Vocational training as part of the curriculum (n=86)

Variable	Yes responses		No responses		Total
	n	%	n	%	n
Autism-specific schools	16	69.6	7	30.4	**23**
Special schools	35	61.4	22	38.6	**57**
Full-service schools	4	66.7	2	33.3	**6**
	55	-	**31**	-	**86**

Table 4.40 displays that 55 educators (64.0%) indicated that vocational training was included in their curriculum. Autism-specific schools (n=16; 69.6%), special schools (n=35; 61.4%) and full-service schools (n=4; 66.7%) reported positively to the offering of vocational training programmes.

4.6.8 Curriculums used in autism classes

Table 4.41 displays the responses of educators to a multiple-choice question concerning the curriculums they used in autism classes.

Table 4.41 Curriculums used in autism classes

Variable	Responded	
	n	%
Self-developed curriculum	41	45.6
ELSEN curriculum developed by SANASE	39	43.3
CAPS with differentiation	24	26.7
No curriculum	16	17.8

Self-developed curriculums were reported to be used by 45.6% of educators (n=41), and 43.3% of educators (n=39) indicated the use of the ELSEN curriculum. The Curriculum Assessment Policy Statement (CAPS) was used by 24 educators (26.7%), while 16 educators (17.8%) indicated no curriculum being used.

Table 4.42 Curriculums used by educators

Variable	Autism-specific schools	Special schools	Full-service schools	Total
	n %	n %	n %	n
Self-developed curriculum	13 (56.5)	24 (40.7)	3 (42.9)	**40**
ELSEN curriculum developed by SANASE	12 (52.2)	25 (42.4)	2 (28.6)	**39**
CAPS with differentiation	5 (21.7)	15 (25.4)	4 (57.1)	**24**
No curriculum	5 (21.7)	8 (13.6)	3 (42.9)	**16**

Table 4.42 displays a breakdown of the different curriculums used in autism-specific, special and full-service schools. The results suggested that autism-specific schools used mostly self-developed curriculums (n=13, 56.5%) or the ELSEN curriculum (n=12, 52.2%) developed by SANASE. Educators from special schools reported the use of ELSEN curriculum (n=25; 42.4%), a self-developed curriculum (n=24; 40.7%), CAPS with differentiation (n=15; 25.4%), or no curriculum (n=8; 13.6%). The results from full-service schools were CAPS with differentiation (n=4; 57.1%), self-developed curriculum (n=3; 42.9%), no curriculum (n=3; 42.9%) and the ELSEN curriculum (n=2; 28.6%).

4.6.9 Critical aspects included in curriculum

Table 4.43 displays the responses of educators when asked in a multiple-choice question to report on what they perceived to be key aspects in the curriculum.

Table 4.43 Critical aspects included in curriculum (n=90*)

Variable	Responded	
	n	%
Social interaction	89	98.9
Emotional management	86	95.6
Communication skills	83	92.2
Functional independence	83	92.2
Use of tools and daily objects	81	90.0
Sensory processing	76	84.4
Academic skills	73	81.1
Working skills (task completion, listening to instructions, etc.)	71	78.9
Vocational and self-help skills	11	12.2

Except for vocational and self-help skills (n=11; 12.2%), the majority (>n=71) of educators perceived all the aspects provided as essential components of an ASD curriculum.

4.6.10 Lesson plans and learning pace

Table 4.44 summarises the responses to an open-ended question concerning the adjustments to lesson plans to accommodate the learning pace of all learners.

Table 4.44 Lesson plans and learning pace (n=90*)

Variable	Responded	
	n	%
Individual support plans and strategies	55	61.1
Curriculum differentiation and structured programmers	32	35.6
Support in groups	10	11.1
Daily and weekly schedules	4	4.4
Secondary teacher and class assistants	2	2.2

The responses of educators were grouped into five clusters, which are displayed in Table 4.44.

A total of 55 educators (61.1%) responded that they had developed individual support plans and strategies in accordance to individual needs, while 32 educators (35.6%) reported that they used curriculum differentiation and structured programmes. This cluster consisted of the following strategies:

(i) Continuous repetition of concepts (n=6; 6.8%);
(ii) TEACCH (n=1, 11%);
(iii) Curriculum differentiation (n=24; 26.7%); and
(iv) Error analysis as a guideline of concepts to support learners who fall behind (n=2; 2.2%).

The other three clusters included support in groups (n=10; 11.1%); daily and weekly schedules (n=4; 4.4%); and a secondary teacher or class assistant to guide learners who require more assistance (n=2; 2.2%).

4.6.11 Individual support plans and schedules

Table 4.45 displays the responses of educators concerning the use of individual support plans and schedules.

Table 4.45 Individual support plans and schedules

Variable	Response Rate		Yes Responses	
	n	%	n	%
Individual support plans (ISP)	84	93.3	80	95.2
Stakeholders involved in design of ISP	81	90.0	71	87.6
Daily schedules	83	92.2	75	90.4
Weekly schedules	83	92.2	69	83.1

A total of 84 educators (93.3%) reported that they used individual support plans, and 90% of educators indicated that other stakeholders were involved in the design of their individual support plans. Daily and weekly schedules were reported to be used by 92.2% of educators (n=83).

4.6.12 Assessment and monitoring of progress

An open-ended question was used to determine the strategies educators use for the assessment and monitoring of progress of learners. The results were clustered into two main groups, namely non-standardised and standardised assessments.

Table 4.46 Assessment and monitoring of progress (n=90*)

Variable	Responded	
Non-standardised assessments	**n**	**%**
Continuous, individualised assessment and monitoring	38	42.2
Observation checklists and behavioural schedules	20	22.2
Control lists in accordance with ISP and curriculum	45	50.0
Variable	**Responded**	
Standardised assessments	**n**	**%**
Formal school-based assessments with differentiated assessment	9	10.0

Table 4.46 displays that the cluster of non-standardised assessments represented three groups, namely control lists; continuous, individualised assessments; and observation checklists and behavioural schedules.

A total of 45 educators (50.0%) replied that they develop control lists in accordance to individual support plans and the curriculum. The cluster consisted of the following:

(i) Individualised assessment according to individual learning styles (n=17; 18.9%);
(ii) The use of concrete objects and materials (n=3; 3.3%);
(iii) Checklists for individual learners, developed from individual support plans and the curriculum (n=31; 34.4%);
(iv) The head of department monitored individual control lists and individual support plans (n=2; 2.2%); and
(v) Quarterly assessment of learners regarding specific aspects of the individual support plan (n=2; 2.2%).

A total of 38 educators (42.2%) indicated that they used continuous, individualised assessments, which included the following:

(i) Continuous assessment of daily work and monitoring at the end of the week (n=29; 32.2%);
(ii) Adjusted work sheets (n=5; 5.6.%);
(iii) Practical work with hand-over-hand contact (n=1; 1.1%);
(iv) Recording of daily progress and compilation of progress reports (n=6; 6.7%); and
(v) Case conference and team meeting discussions concerning learner progress in academic, social, sport and cultural activities (n=2; 2.2%).

Twenty educators (22.2%) reported that they used observation checklists and behavioural schedules to assess and monitor the progress of learners.

Only nine educators (10.0%) indicated that they used standardised, formal school-based assessments, which included formal tests and examinations (n=3; 3.3%); continuous assessment; and formal standardised assessments twice a year (n=6; 6.8%). Nevertheless, the responses concerning the use of standardised assessments came mainly from full-service schools.

4.6.13 Classroom arrangement to optimise the performance of learners

A multiple-choice question was used to determine the classroom arrangement in ASD classes.

4.47 Classroom arrangement to optimise the performance of learners (n=90*)

Variable	n	%
Learners sit round a table	57	63.7
Learners sit in stimulus-free workstations	53	58.9
Learners sit on a mat	51	56.7
Learners sit in an ordinary classroom structure with their desks in rows	13	14.4
Combinations of above	11	12.2

Table 4.47 displays that educators mostly positioned learners around a table (n=57; 63.7%), in stimulus-free workstations (n=53, 58.9%) and on a mat to optimise learning (n=51; 56.7%). Thirteen educators (14.4%) reported to use ordinary classroom settings and 11 educators (12.2%) indicated combinations of different arrangements.

4.6.14 Visual stimuli in the classroom environment

Table 4.48 displays the responses of educators when asked to describe the visual stimuli used in the classroom. A total of 84 educators (93.3%) responded to this multiple-choice question.

Table 4.48 Visual stimuli in the classroom environment (n=84*)

Variable	n	%
Stimulus-rich (e.g. colourful pictures)	55	65.5
Stimulus-free	19	22.6
Displays only vital information, e.g. daily schedules	10	11.9

The results appeared to indicate that the majority of the 84 educators who responded (n=55; 65.5%) reported stimulus-rich classrooms. Nineteen educators (22.6%) responded the use of stimulus-free classrooms, while 10 educators (11.9%) indicated that they displayed only vital information, e.g. daily schedules.

4.6.15 Safety of learners during break time

An open-ended (word-based) question requested educators to indicate the strategies they used to ensure the safety of learners during break times.

Table 4.49 Safety of learners during break time (n=90*)

Variable	Structured: Responded		Non-Structured: Responded	
	n	%	n	%
Supervision	28	31.1	61	67.8
Environment	20	22.2	5	5.6

Table 4.49 displays the two clusters of responses, namely structured and non-structured strategies concerning supervision and environmental adaptations.

A total of 28 educators (31.1%) indicated structured supervision as a strategy to ensure the safety of learners during break times. The latter included the following:

(i) Constant, intensive supervision with a 1:3 adult-learner ratio (n=21; 23.3%);
(ii) A buddy system where school prefects took responsibility for learners (n=5; 5.6%);
(iii) Supervision at bathrooms (n=1; 1.1%);
(iv) Grouping of learners to ease efficient supervision (n=2; 2.2%);
(v) Structured games (n=3; 3.3%).

Twenty educators (22.2%) indicated that they used structured environmental adaptations, which included quarterly checks and repairs of playground equipment, as well as secure, fenced play areas with constant supervision.

Non-structured supervision included a schedule for break time duty, where educators supervised learners in general (n=60; 66.7%) and where learners received training regarding safety issues and restricted play areas (n=3; 3.3%). Five educators (5.6%) reported that they used non-structured environmental adjustments, and strategies included the removal of potentially harmful objects from the playground, e.g. electrical plugs, sharp sticks, etc. The majority of educators (n=61; 67.8%) reported that they used non-structured supervision to ensure the safety of learners during break time.

4.7 THE USE OF AUTISM-SPECIFIC SUPPORT STRATEGIES

This section deals with the fourth research objective, namely to determine the use of autism-specific support strategies with reference to research-based programmes, diagnostic-specific support strategies as well as assistive technology and alternative methods. This section includes a discussion on the following aspects:

4.7.1 The utilisation of research-based programmes;
4.7.2 Educators' rating of their skills level in diagnostic-specific impairments;
4.7.3 Educators' rating of their skills level in diagnostic-specific impairments;
4.7.4 The use of assistive technology and alternative methods; and
4.7.5 The use of class assistants.

4.7.1 Utilisation of research-based programmes

Table 4.50 indicates the responses of educators concerning the frequency of use of research-based programmes.

Table 4.50 Utilisation of research-based programmes (n=90*)

	Response rate	Daily	Weekly	Monthly	Never
Variable	**n %**	**n %**	**n %**	**n %**	**n %**
Treatment and Education of Autistic and related Communication Handicapped Children (TEACCH)	58 (64.4)	48 (82.7%)	3 (5.2)	3 (5.2)	4 (6.9)
Children Picture Exchange Communication System (PECS)	66 (73.3)	45 (68.2)	14 (21.2)	4 (6.1)	3 (4.6)
Makaton Language Programme	54 (60.0)	37 (68.5)	9 (16.7)	0 (0)	8 (14.8)
Tiny Handz (Sign Language)	47 (52.2)	34 (72.3)	4 (8.5)	1 (2.1)	8 (17.0)
Developmental, Individual Difference, Relationship-Based Model	64 (71.1)	33 (51.6)	10 (15.6)	5 (7.8)	16 (25.0)
Fishbowl (Autism South Africa Training Programme)	42 (46.7)	24 (57.1)	6 (14.3)	5 (11.9)	7 (16.7)
Social Stories™	59 (65.5)	20 (33.9)	29 (49.2)	9 (15.3)	1 (1.7)
Special Needs Adapted Programme (SNAP)	39 (43.3)	16 (41.0)	7 (17.9)	6 (15.4)	10 (25.6)
Applied Behaviour Analysis (ABA)	34 (37.8)	15 (44.1)	5 (14.7)	5 (14.7)	9 (26.5)

The percentages referred to in Table 4.50 were not calculated in terms of the 90 educators who participated in the study, but in terms of the response rate for each individual variable. These percentages indicated may therefore appear to be high, and must be interpreted with care. Table 4.50 depicts the daily use of programmes as follows: TEACCH (n=48; 82.7%); PECS (n=45; 68.2%); the Makaton Language Programme (n=37; 68.5%); Tiny Handz (n=34; 72.3%); DIR® / Floortime™ (n=33; 51.6%); Fishbowl (n=24; 57.1%); SNAP (n=16; 41.0%); and ABA (n=15; 44.1%).

A total of 29 educators (49.2%) reported the weekly use of Social Stories™, while only 20 educators (33.9%) reported daily use. The results suggested that programmes were used mostly on a daily basis, and that fewer educators reported weekly or monthly use. Educators also reported that they never used the following programmes: DIR® / Floortime™ (n=16; 25.0%); SNAP (n=10; 25.6%); ABA (n=9; 26.5%); Makaton Language Programme (n=8; 14.8%); Tiny Handz (n=8; 17.0%); TEACCH (n=4; 6.9%); PECS (n=3; 4.6%); and Social Stories™ (n=1; 1.7%).

Educators responded to an open-ended question to determine the four programmes they found most beneficial in the management of learners with ASD.

Table 4.51 Most popular research-based programmes (n=90*)

Variable	n	%
Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH)	41	45.6
Children Picture Exchange Communication System (PECS)	40	44.4
Makaton Language Programme	27	30.0
Social Stories™	19	21.1
Tiny Handz	19	21.1
Fishbowl	18	20.0
Applied Behaviour Analyses (ABA)	9	10.0
Developmental, Individual Difference, Relationship-Based Model (DIR® / Floortime™)	5	5.6
Special Needs Adapted Programme (SNAP)	3	3.3
Other strategies	**n**	**%**
Communication boards and cards	5	5.6
SIGN	2	2.2
Personal experience – do not use specific programmes	2	2.2
Board Maker	1	1.1
Eclectic approach	1	1.1

Table 4.51 suggested TEACCH (n=41; 45.6%) and PECS (n=40; 44.4%) to be the highest rated research-based programmes. Some 30% of educators recommended the Makaton Language Programme (n=27), 21.1% supported Social Stories™(n=19) and Tiny Handz (n=19), while Fishbowl was supported by 20% of educators (n=18). The following programmes were rated by fewer educators: Applied Behaviour Analysis (n=9; 10%); Developmental, Individual Difference, Relationship-Based Model (n=5; 5.6%); and Special Needs Adapted Programme (n=3; 3.3%). Educators also mentioned other programmes that they found

beneficial: Board Maker (n=1;1.1%); communication boards (n=5; 5.6%); SIGN (n=2; 2.2%); no programmes but only personal experience (n=1; 2.2%); and an eclectic approach (n=1; 1.1%).

4.7.2 Educators' rating of their skills level in diagnostic-specific impairments

When asked to rate their skills level concerning diagnostic-specific impairments, educators replied well with a response rate beyond 90% on all aspects.

Table 4.52 Educators' rating of their skills level in diagnostic-specific impairments (n=90)

AUTISM TRAITS	Responses	Uncertain	Developing	Confident
Variable	**n %**	**n %**	**n %**	**n %**
Sensory processing				
Destructive behaviours	83 (92.2)	7 (8.3)	49 (59.0)	26 (31.3)
Preoccupation with smelling, tasting or feeling objects	84 (93.3)	4 (4.8)	47 (55.9)	31 (36.9)
Self-stimulatory behaviours	83 (92.2	6 (7.2)	45 (54.2)	30 (36.1)
Defensiveness (overreaction to sensory stimuli, e.g. touch)	83 (92.2)	6 (7.2)	40 (48.2)	35 (42.2)
Passive learners who do not participate in activities	83 (92.2)	4 (4.8)	40 (48.2)	37 (44.6)
Planning, body and object use				
Inability to relate parts of a task to the end product	81 (90.0)	3 (3.7)	46 (56.8)	31 (38.3)
Clumsiness in the use of tools	84 (93.3)	3 (3.57)	44 (52.4)	36 (42.9)
Clumsy learners with poor control of movements	84 (93.3)	6 (7.14)	35 (41.7)	42 (50.0)
Poor planning and organisation of tasks	82 (91.1)	3 (3.7)	32 (39.0)	45 (54.9)
Social interaction and communication				
Decreased social sensitivity	82 (91.1)	8 (9.8)	38 (46.3)	35 (42.7)

AUTISM TRAITS	Responses	Uncertain	Developing	Confident
Variable	**n %**	**n %**	**n %**	**n %**
Limited language skills	84 (93.3)	5 (5.9)	36 (42.9)	41 (48.8)
Inappropriate eye contact	83 (92.2)	2 (2.4)	31 (37.4)	47 (56.6)
Poor social interaction with friends and adults	84 (93.3)	6 (7.1)	29 (34.5)	46 (54.8)
Rigidity				
Decreased adjustment to change in class routines	84 (93.3)	4 (4.8)	35 (41.7)	44 (52.4)
Preoccupation with certain toys, characters, etc	84 (93.3)	8 (9.5)	34 (40.5)	41 (48.8)
Emotion and behaviour				
Inappropriate fear and anxiety	81 (90.0)	5 (6.2)	42 (51.9)	33 (40.7)
Challenging behaviour, including tantrums, aggression, severe crying	84 (93.3)	5 (5.9)	41 (48.8)	38 (45.2)
Withdrawal from classroom activities	83 (92.2)	8 (9.6)	31 (37.4)	43 (51.8)
Activity level and focus				
Hyperfocus on tasks with difficulty to move to the next task	83 (92.2)	3 (3.6)	45 (54.2)	34 (41.0)
Hyperactivity where the learner moves excessively	83 (92.2)	6 (7.2)	39 (47.0)	37 (44.6)

Table 4.52 indicates that educators (n=40-49; 48.2-59.0%) rated their skills regarding sensory processing aspects as still developing. Between 31-44.6% of educators (n=26-37) indicated that they were confident concerning their skills in sensory processing. In addition to the information in Table 4.52, 17 educators indicated uncertainty regarding their skills in the management of sensory processing difficulties (two educators from autism-specific schools, 15 educators from special schools and no responses from full-service schools). Fifteen of these educators reported that they had an occupational therapist at their school (two educators from autism-specific schools and 13 educators from special schools) who could assist with skills development concerning sensory processing.

The results regarding planning, body and object use indicated that educators rated themselves skilled regarding assisting learners with planning and structuring tasks (n=42; 50%) as well as to assist clumsy learners with poor body control (n=45; 54.9%). However, educators also responded that they required skills regarding the assistance of learners who are clumsy in the use of objects (n=46; 56.8%) and those who struggle with relating parts of a task to the end product (n=44; 52.4%).

Educators (48%-56%) appeared confident in handling social interaction and communication difficulties. However, 46.3% of educators indicated that they require more skills in handling the social sensitivity of learners. Between 48-52 % of educators reported that they handled the rigidity of learners with ASD with confidence. Nevertheless, just over 40% indicated that they require more training in this regard.

Inappropriate fear and anxiety (n=33; 40.7%), challenging behaviour (n=41; 48.8%), and withdrawal from classroom activities (n=31; 37.4%) were indicated as emotional and behavioural aspects in which educators required development. Nevertheless, educators also reported that they were confident in handling the following: inappropriate fear and anxiety (n=42; 51.9%); challenging behaviour (n=38; 45.2%); and withdrawal from classroom activities (n=43; 51.8%).

Some 47-54.2% of educators reported that their skills regarding managing activity level and focus were still developing, while 41.0% to 44.6% indicated that they were confident in this regard.

4.7.3 Use of assistive technology and alternative methods

Educators rated the frequency of use (daily, weekly, monthly or never) of assistive devices and alternative methods in a multiple-choice question.

Table 4.53 Use of assistive technology and alternative methods

Variable	Total responses		Daily		Weekly		Monthly		Never	
	n	%	n	%	n	%	n	%	n	%
Visual structure										
Velcro worksheets	69	76.7	39	56.0	12	17.4	5	7.3	13	18.8
Velcro sequence cards to indicate steps in activities	73	81.1	50	68.5	6	8.2	6	8.2	11	15.1
Visual schedules in files	70	77.8	46	65.7	13	18.6	2	2.9	9	12.9
Visual schedules displayed against the wall	74	82.2	65	87.8	8	10.8	1	1.4	0	0
Line drawings, pictures and photos	78	86.7	51	65.4	17	21.8	8	10.3	2	2.6
Data projector	59	65.6	3	5.1	12	20.3	0	0	44	74.6
Interactive whiteboard	66	73.3	10	15.2	14	21.2	3	4.6	39	59.1

Technology and physical structure										
Computer workstations	70	77.8	15	21.4	29	41.4	7	10.0	19	27.1
Chairs to restrain learners with heightened activity levels	63	70.0	7	11.1	12	19.1	3	4.8	41	65.1
Sensory strategies										
Weighted vests	63	70.0	6	9.5	9	14.3	4	6.4	44	69.8
Sensory room	66	73.3	16	24.2	17	25.8	7	10.6	26	39.4
Trampolines in class	80	88.9	24	34.3	18	25.7	4	5.7	24	34.3
Time-out tent	62	68.9	19	30.7	8	12.9	6	9.7	29	46.8
“Chew toys” for learners who need oral stimulation	64	71.1	18	28.1	7	10.9	4	6.3	35	54.7
Communication										
Picture files	74	82.2	40	54.1	22	29.7	2	2.7	10	13.5
Communication boards	70	77.8	44	62.9	14	20.0	1	1.4	11	15.7
Safety										
Protective clothing for learners with self injurious behaviour	57	63.3	2	3.5	2	3.5	1	1.8	52	91.2
Other										
Other	4	4.4	2	50.0	0	0	0	0	2	50.0

The percentages referred to in Table 4.53 were not calculated in terms of the 90 educators who participated in the study, but in terms of the response rate for each individual variable. These percentages indicated may therefore appear to be high, and must be interpreted with care. Table 4.53 displays that educators reported that they mostly used Velcro sequence cards (n=50; 68.5%); Velcro worksheets (n=39; 56.0%); visual schedules in files (n=46; 65.7%); visual schedules displayed against the wall (n=65; 87.8%); and line drawings, pictures and photos (n=51; 65.4%) on a daily and weekly basis to assist learners with visual structure. However, educators (n=11-13; 15.1-18.8%) indicated that they never used Velcro in their classrooms. The majority of educators reported that they never used interactive whiteboards (n=39; 59.1%) and data projectors (n=44; 74.6%).

A total of 44% of educators (n=29) responded that they used computer workstations, at least on a weekly basis, and 65% of educators who responded (n=41) indicated that they never used restrain chairs. Nevertheless, restrain chairs seemed to be used by some educators on a daily- (n=7; 11.1%) or weekly basis (n=12; 19.1%) to assist with the management of hyperactive learners.

When asked about the use of sensory strategies, 69.8% of educators (n=44) reported that they never used weighted vests, and 24 educators (34.3%) reported that they never used trampolines. However, there were educators who indicated the use of trampolines on either a daily (n=24; 34.3%), weekly-(n=18; 25.7%) or monthly basis (n=4; 5.7%). A total of 35-59% of educators indicated that they never used sensory rooms (n=26; 39.4%), time-out-tents (n=29; 46.6%) and “chew toys” (n=35; 54.7%).

Educators reported the use of picture files (n=40; 54.1%) and communication boards (n=44; 62.9%) on a daily basis to enhance communication in learners with ASD. Some 52 of 57 educators (91.2%) responded that they never used protective clothing to ensure the safety of learners with self-injurious behaviour.

Table 4.54 Most popular assistive technology and assistive devices (n=90*)

Variable	n	%
Visual schedules in files	54	60.0
Velcro worksheets	26	28.9
Trampolines in class	22	24.4
Sensory room	18	20.0
Communication boards	16	17.8
Picture files	15	16.7
Velcro sequence cards to indicate steps in activities	14	15.6
Time-out tent	14	15.6
Computer workstations and iPads	13	14.4
Line drawings, pictures and photos	8	8.9
Interactive whiteboard	5	5.6
Weighted vests	5	5.6
Visual schedules displayed against the wall	2	2.2
Chairs to restrain learners with heightened activity levels	2	2.2
“Chew toys” for learners who need oral stimulation	2	2.2
Data projector	1	1.1
Protective clothing for learners with self injurious behaviour	0	0
Other	**n**	**%**
Workstations	5	5.6
Whiteboards and notice boards with pictures and drawings	4	4.4
Adjusted worksheets	1	1.1
Structure and individualised guidance	1	1.1

Table 4.54 displays the results of educators when asked in an open-ended question to indicate which of the previously mentioned assistive technologies and assistive devices they perceived as most beneficial. Visual schedules (n=54; 60.0%) had the highest response rate, while protective clothing (n=0, 0%) did not appear to be a popular strategy. Velcro worksheets (n=26; 28.9%), trampolines in class (n=22, 24.4%) and sensory rooms (n=18, 20%) were supported by more than 20% of educators.

4.7.4 Useful class strategies

Table 4.55 summarises the responses of educators when asked to name other useful strategies that they used in class. The question had a low response rate (<20%).

Table 4.55 Useful class strategies (n=90*)

Variable	Responded	
	n	%
Play (structured and unstructured)	17	19.0
Individual structure and support	13	14.4
Discipline and behaviour	12	13.3
Music and singing	11	12.2
Socio-communication	7	7.8
Visual structure and construction	7	7.8
Sensory-motor activities and support	7	7.8
Flop-proof activities	6	6.7
Visual over verbal	3	3.3

The responses were clustered into nine groups. Structured and unstructured play (n=17, 19%); individualised structure and support (n=13, 14.4%); discipline and behavioural strategies (n=12, 13.3%); as well as music and singing (n=11, 12.2%) were recommended as useful strategies by more than 12% of the educators who responded.

4.7.5 Use of caregivers in class

The researcher used a dichotomous (yes/no) to question to educators on whether their school allowed learners to bring their own caregivers to class.

Table 4.56 Use of care givers in class (n=77)

Variable	n	%
Not allowed	51	66.2
Allowed	26	33.8

Table 4.56 displays that 26 educators (33.8%) indicated that caregivers were allowed in classes. The majority of educators (n=51, 66.2%) indicated that the school did not allow learners to bring their own caregivers to school.

4.8 CHALLENGES AND CRITICAL SUCCESS FACTORS

This section deals with the fifth research objective, namely to determine the aspects educators regard as challenges, and critical success factors in managing learners with ASD in public schools. This section displays the results on the following aspects:

4.8.1 Reasons for working with ASD;
4.8.2 Educators' rating of potential challenges;
4.8.3 Educators' experiences of accomplishment; and
4.8.4 Opinions on critical success factors.

4.8.1 Reasons for deciding to work with learners with ASD

A total of 90 educators (100%) responded to an open-ended question concerning their decision to work with learners with ASD.

Table 4.57 Reasons for deciding to work with learners with ASD (n=90*)

Variable	Responded	
	n	%
Attitude, personal attributes and choice	47	52.2
Personal and professional development	25	27.8
Operational requirements	17	18.9
Awareness of and exposure to disability and special needs	11	12.2
Independence, quality of life and community integration	7	7.8

Table 4.57 displays the five clusters of responses concerning the reasons of educators for deciding to work with learners with ASD.

The first cluster on attitude, personal attributes and choice summarised the responses of 47 educators (52.2%). The cluster consisted of the following:

(i) Interested in working with learners with special needs (n=26; 28.9%);
(ii) Passionate about learners with ASD and prefer to work with them (n=20; 22.2%);
(iii) Personal qualities, e.g. patience, flexibility, creativity, etc., to efficiently manage learners with ASD (n=5; 5.6%); and
(iv) Previous experience with learners with high level support needs (n=6; 6.7%).

The second cluster referred to personal and professional development; 25 educators (27.8%) supported this cluster, which consisted of the following responses:

(i) Enjoyed the daily challenge of managing the diverse behaviours and deficits of learners with ASD (n=17; 18.9%);
(ii) Learners with ASD had unique characteristics which provided diversity in the job (n=9; 10%);
(iii) Teaching an ASD class provided opportunities to practically implement specialised qualifications (n=3; 3.3%);
(iv) Working with learners with ASD stimulated professional development and personal improvement (n=5; 5.6%);
(v) Challenged reasoning skills and perspectives about education and life in general (n=1; 1.1%); and
(vi) The progress of learners provided job satisfaction (n=1; 1.1%).

The third cluster dealt with operational requirements, which motivated educators to work with learners with ASD. Seventeen educators (18.9%) supported this cluster, which consisted of the following responses:

(i) The school accommodated learners with a variety of diagnostic profiles (n=3; 3.3%);
(ii) There is a great demand for autism-specific education (n=15; 16.7%); and
(iii) It was requested by the school to attend training and to start a class (n=3; 3.3%).

The fourth cluster summarised responses, which dealt with the awareness of and exposure to disability and special needs. Eleven educators (12.2%) supported this cluster, consisting of the following responses:

(i) Personal experience in raising a child with ASD (n=3; 3.3%);
(ii) Personal experiences with disability, which increased compassion for the needs of learners with high level support needs (n=2; 2.2%);
(iii) Creation of awareness and an understanding of ASD (n=1; 1.1%);
(iv) Tutored learners with ASD, which provided confidence for teaching (n=4; 4.4%); and
(v) Worked abroad and the experienced gained equipped them for autism-specific education (n=3; 3.4%).

The fifth cluster included the responses of seven educators (7.8%) who indicated that the improved independence, quality of life and community integration of learners with ASD inspired them. This cluster consisted of the following responses:

(i) To make a difference and positive impact in the lives of learners with ASD (n=4; 4.4%);
(ii) To not only stimulate academic skills but to improve life skills, independence and community integration (n=1; 1.1%); and
(iii) Learners with ASD needed to be connected with their physical- and social contexts (n=3; 3.3%).

The results suggested that educators perceived attitudes, personal choice as well as the personal and professional development they gain as the most important reasons for deciding to work in ASD education.

4.8.2 Educators' rating of potential challenge

When asked to rate potential challenges they experienced, educators responded with a response rate of over 85%.

Table 4.58 Educators' rating of potential challenges

	Responses		Severe		Moderate		Minor	
Variable	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Traits and behaviours related to the condition								
The severity and complexity of autism symptoms	79	87.8	38	48.1	32	40.5	9	11.4
Slow progress of learners	83	92.2	34	41.0	30	36.1	19	22.9
Training and specialised skills								
Limited training in autism-specific education	82	91.1	44	53.7	27	32.9	11	13.4
Limited skills in designing individual support plans	80	88.9	25	31.3	33	41.3	22	27.5
Limited skills in handling challenging behaviours in class	82	91.1	27	32.9	34	41.3	21	25.6
Operational challenges and resources								
Inappropriate curriculums	82	91.1	44	53.7	18	22.0	20	24.4
Limited access to research-based programmes	79	87.8	39	49.4	30	38.0	10	12.7
Too many learners in a class	79		31	41.8	17	21.5	29	36.7
Limited access to resources e.g. Velcro, paper, etc.	80	88.9	17	21.3	18	22.5	45	56.3
Integrated teams								
Limited chance to work with a multi-professional team	80		23	28.8	27	33.8	30	37.55

	Responses		Severe		Moderate		Minor	
Variable	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Limited support from therapists and professionals	81		25	30.9	20	24.7	36	44.4
Inefficient discussion of cases	81	90.0	20	24.7	23	28.4	38	47.0
Limited insight and cooperation from parents	81	88.9	28	34.6	38	46.9	15	18.53
Support from management								
Limited support from school management teams	80	88.9	12	15.0	28	35.0	40	50.0
Limited support from the Department of Education	81	90.0	39	48.2	23	28.4	19	23.4
Limited opportunity for debriefing	79	87.8	26	32.9	19	24.1	34	43.0

Table 4.58 displays the responses of educators when asked to rate the severity of potential challenges they experience. The results suggested that educators rated limited training in autism-specific education (n=44; 53.7%); inappropriate curriculums (n=44; 53.7%); limited access to research-based programmes (n=39; 49.4%); limited support from the Department of Education (n=39; 48.2%); and the complexity of autism symptoms (n=38; 48.1%) as the most severe challenges. The slow progress of learners (n=34; 41.0%), too many learners in a class (n=31, 41.8%) and limited support from therapists (n=25, 30.9%) were also reported to be severe challenges. However, 18 educators (22.2%) replied that access to multi-professional teams were not a challenge at their school.

Educators rated traits and behaviours related to the condition; training and specialised skills; limited access to integrated teams, including therapists and parents; and limited support by school management teams as moderate challenges. Nevertheless, 20 educators (25.0%) rated support by school management teams as no challenge.

Educators (n=21; 26.3%) rated limited access to resources not being a significant challenge. All of these educators worked at autism-specific and special schools. Other minor challenges included the following: limited access to resources (n=24; 30.0%); limited access to consumable resources (n=24; 30.0%); inefficient case discussion (n=22; 27.2%); and limited opportunity for debriefing (n=23; 29.1%).

When reviewing the clusters of challenges, it appeared that traits and behaviours related to the condition, training and specialised skills, some operational aspects and limited support from district-based management were the most severe challenges.

Table 4.59 Severe challenges – breakdown of responses in different schools

Variable	Autism-specific schools		Special schools		Full-service schools		Total
	n	%	n	%	n	%	n
Traits and behaviours related to the condition							
The severity and complexity of autism symptoms	10	47.6	27	52.9	1	16.7	**38**
Slow progress of learners	12	54.6	21	38.9	1	16.7	**34**
Training and specialised skills							
Limited training in autism-specific education	9	40.9	34	64.2	1	16.7	**44**
Limited skills to design individual support plans	6	27.3	19	37.3	0	0	**25**
Limited skills to handle challenging behaviours in class	7	31.8	20	37.7	0	0	**27**
Operational challenges and resources							
Inappropriate curriculums	13	59.1	30	50.6	1	16.7	**44**
Limited access to research-based programmes	12	54.6	26	51.0	1	20	**39**
Too many learners in a class	8	40.0	25	48.0	0	0	**33**
Limited access to resources, e.g. Velcro, paper, etc.	6	28.6	11	21.2	0	0	**17**
Integrated teams							
Limited chance to work with a multi-professional team	6	28.6	16	30.8	1	16.7	**23**
Limited support from therapists and other professionals	5	23.8	19	35.9	1	16.7	**25**
Inefficient discussion of cases	4	19.1	16	30.2	0	0	**20**
Limited insight and cooperation from parents	8	38.1	18	34.0	2	33.3	**28**

Variable	Autism-specific schools		Special schools		Full-service schools		Total
	n	%	n	%	n	%	n
Support from management							
Limited support from school management teams	4	18.2	8	15.7	0	0	**12**
Limited support from the Department of Education	12	15.2	24	45.3	3	50.0	**39**
Limited opportunity for debriefing	6	27.3	20	40.0	0	0	**26**

Table 4.59 provides a breakdown of what educators in different schools perceived as severe challenges. Thus the second column of Table 4.58 was further analysed in order to reflect challenges in different schools. The percentages referred to in Table 4.59 were not calculated in terms of the 90 educators who participated in the study, but in terms of the response rate for each individual variable. These percentages indicated may therefore appear to be high, and must be interpreted with care.

Educators from autism-specific schools indicated the following as their most severe challenges:

(i) The traits and behaviours related to the condition (n=10-12; 47.6-54.6%);
(ii) Limited training and specialised skills (n=7-9; 31.8%-40.9%); and
(iii) Limited support from the Department of Education (n=12; 15.2%).

Fewer educators from autism-specific schools indicated access to integrated teams (n=6-8; 28.6%-38.1%) as a severe challenge. The responses concerning operational challenges and resources were as follows: inappropriate curriculums (n=13; 59.1%); limited access to research-based programmes (n=12; 54.6%); too many learners in a class (n=8; 40.0%); and limited access to resources (n=6; 28.6%).

Educators from special schools indicated the following as their most severe challenges:

(i) The traits and behaviours related to the condition (n=21-27; 38.9%-52.9%);
(ii) Limited training and specialised skills (n=19-34; 37.3-64.2%); and
(iii) Access to integrated teams (n=16-18; 30.2-34.0%).

The responses concerning operational challenges and resources were as follows: inappropriate curriculums (n=30; 50.6%); limited access to the curriculum (n=26; 51.0%); too many learners in a class (n=25; 48.0%); and limited access to resources (n=11; 21.2%). Some 24 educators (45.3%) reported limited support from the Department of Education and limited opportunity for debriefing (n=20; 40.0%) as severe challenges concerning support from management.

Educators from full-service schools reported limited insight from parents (n=2; 33.3%) and poor support from the Department of Education (n=3; 50.0%) as severe challenges. The following aspects were also rated as severe challenges:

(i) Traits and behaviours related to the condition (n=1; 16.7%);
(ii) Limited training in autism-specific education (n=1; 16.7%);
(iii) Limited access to research-based programmes (n=1; 16.7%);

(iv) Limited chance to work in a multi-professional team (n=1; 16.7%); and
(v) Limited support from therapists and other professionals (n=1; 16.7%).

4.8.3 Educator experiences of accomplishment

A total of 86 educators (96%) responded to a dichotomous (yes/no) question enquiring whether they experienced accomplishment when working with learners with ASD, to which 82 educators (95.4%) indicated positive experiences while three educators (3.5%) indicated negative experiences. One educator (1.2%) indicated a mixed experience.

Table 4.60 Educator experiences of accomplishment (n=82*)

Variable	Responded	
	n	%
Learner progress – sense of achievement	43	52.4
Positive impact on the lives of learners and carers	30	36.6
Unique manifestation of ASD – element of surprise	20	24.4
Passion, purpose and calling	8	9.8
Member in a team of experts	8	9.8
Professional and personal development	5	6.1
Support and acknowledgement from senior management team	4	4.9
Burnout and frustration – resources and burden of care	2	2.4

A total of 82 educators responded when asked in an open-ended question to motivate their responses regarding their experiences of accomplishment. Table 4.60 displays the eight clusters of responses.

A total of 43 educators (52.4%) responded to the first cluster, which indicated that the progress of learners provided a sense of achievement. This cluster consisted of the following responses:

(i) The progress of learners (both academically and developmentally) provided a sense of achievement and success (n=36; 43.9%);
(ii) Learners often surprised with unexpected achievements in spite of severe impairments (n=4; 4.9%);

(iii) Efficient teamwork and integrated planning provided a feeling of success (n=3; 3.7%); and
(iv) It was rewarding to make social contact with a learner (n=5; 6.1%).

The second cluster summarised the responses of 30 educators (36.6%), where accomplishment was experienced when the positive impact of autism-specific education was noted in the lives of learners and their caregivers. This cluster included the following responses:

(i) Knowing that the progress of the child also benefited all those living and working with the child (n=1; 1.2%);
(ii) The positive attitudes and feedback of parents regarding their child's progress served as motivation (n=2; 2.4%);
(iii) Making a difference in the current and future situation of learners with ASD provided purpose in the work place (n=11; 13.4%);
(iv) Although progress was often slow, small improvements made a significant impact in the lives of learners and their families (n=18; 21.9%); and
(v) It was rewarding to reassure parents that their child was in a school where they could improve their functional independence and optimise their potential (n=1; 1.2%).

The third cluster dealt with the unique manifestation of ASD in different individuals, which created an element of surprise. This cluster included the following responses:

(i) The uniqueness of learners with ASD was inspiring (n=11; 13.4%);
(ii) It was rewarding when the child responded positively to individualised support strategies (n=8; 13.5%); and
(iii) The excitement of consistently exploring the possibilities on a daily basis (n=4; 4.9%).

The fourth cluster included the responses of eight educators (9.8%) who indicated that working with ASD provided experiences of accomplishment since it was their passion, calling and purpose.

The fifth cluster included eight educators (9.8%) who responded that they experienced accomplishment in working with ASD when they worked as members in a team of experts. The responses in this cluster included the following:

(i) Training and team support created a sense of belonging to a greater group of specialists (n=5; 6.1%); and
(ii) Efficient teamwork and integrated planning contributed to a sense of accomplishment (n=3; 3.7%).

The sixth cluster dealt with the responses of five educators (6.1%) who indicated that they experienced a feeling of accomplishment since they developed professionally and personally by learning new skills and aspects about ASD on a daily basis.

Four educators (4.9%) responded in the seventh cluster, which indicated that the support and acknowledgement from senior management provided them with experiences of accomplishment. This cluster consisted of the following responses:

(i) Senior management acknowledged the need for autism-specific education and recruited staff to run these classes (n=1; 1.2%); and

(ii) Support and recognition from the school management team provided encouragement (n=3; 3.7%).

The eighth cluster included the responses of two educators (2.4%) who indicated burnout and frustration as a result of the diversity and high level of support required by each learner (n=1; 1.2%), and limited resources, such as class equipment, human resources, training, etc., which added additional stress (n=1; 1.2%).

4.8.4 Opinions on critical success factors

Table 4.61 provides a summary on what educators perceived as critical success factors for autism-specific education.

Table 4.61 Opinions on critical success factors (n=90*)

Variable	Responded	
	n	%
Personal attributes of educator	24	26.7
Attitude, expectations and commitment from educator	22	24.4
Knowledge, skills and practical experience	21	23.3
Insight, integration and reasoning of educator	17	18.9
Autism-specific curriculum and teaching framework	15	16.7
Diagnostic-specific support within an all encompassing programme	13	14.4
Adequate resources	13	14.4
Individual support plan and tailor-made education	9	10.0
Cooperation of all stakeholders	8	8.9
Discipline, routine, structure and consistency	8	8.9
Parent involvement and transfers of skills to the home environment	7	7.8
Inclusive education and diversity management	7	7.8
Small classes (educator-learner ratio of 1:6)	6	6.7
Specialised training and support	6	6.7
Support from school- and district-based management team	5	5.6
Sense of humour and a relaxed class atmosphere	2	2.2
Integrated, multi-professional approach	1	1.1
Medication	1	1.1

The researcher divided the responses into eighteen clusters. The first cluster included the responses of 24 educators (n=24; 26.7%) which dealt with the personal attributes of educators as critical success factors in autism-specific education. The responses included personal attributes of the educator, e.g. patience, flexibility, creativity, empathy, etc. (n=23; 25.6%); and that the educator must accept learners unconditionally (n=1; 1.1%).

The second cluster dealt the attitude, expectations and commitment from educators as critical success factors of autism-specific education. Some 22 educators (24.4%) supported the cluster, which consisted of the following:

(i) Positive attitude and commitment from the educator (n=18; 20%);
(ii) Educators needed to embrace diversity and appreciate the uniqueness in which the condition manifested in each child (n=2; 2.2%); and
(iii) To have high expectations regarding progress (n=3; 3.3%).

The third cluster summarised the responses of 21 educators (23.3%) regarding the knowledge, skills and practical experience of educators as critical success factors in autism-specific education. This cluster consisted of the following responses:

(i) The knowledge, skills and practical experience regarding the use of different support strategies for different learners (n=19; 21.1%); and
(ii) Educators needed to be knowledgeable and skilled in the use of different programmes and other classroom challenges (n=6; 6.7%).

The fourth cluster dealt with the insight, integration and reasoning skills of educators as critical success factors in autism-specific education. Seventeen educators (18.9%) supported the cluster, which consisted of the following responses:

(i) Understanding the individualised needs of each learner by obtaining background information, identifying barriers to learning, strengths, current intervention, etc. (n=13; 14.4%); and
(ii) To place yourself in the learner's shoes and try to teach in a way and at a pace they can manage (n=2; 2.2%).

The fifth cluster summarised the responses of 15 educators (n=15; 16.7%) who referred to the necessity of an autism-specific curriculum and teaching framework. This cluster consisted of the following responses:

(i) Autism-specific classes, since the needs of learners with autism were unique (n=1; 1.1%);
(ii) Integrated programmes that focused on skills that promote independence and social integration (n=12; 13.3%); and
(iii) To have a programme that gives structure and routine, but also has variety to challenge learners (n=3; 3.3%).

The sixth cluster dealt with diagnostic support within an all-encompassing programme, and thirteen educators (14.4%) supported this cluster, which included the following responses:

(i) Opportunities for social interaction with peers (n=5; 5.6%);
(ii) Focus on the improvement of functional skills, e.g. toilet training, communication and language development (n=6; 6.7%);
(iii) Behavioural analysis and strategies to reinforce constructive behaviours (n=2; 2.2%);
(iv) Visual structure: schedules, pictures, photos, drawings, picture books, etc. (n=2; 2.2%);
(v) Improvement of socio-emotional skills in a safe environment (n=2; 2.2%) and sensory strategies to ensure optimal arousal (n=1; 1.1%).

The seventh cluster outlined the responses of 13 educators (n=13; 14.4%) who supported adequate resources such as human resources, equipment, programmes, etc. as a critical success factor in providing autism-specific education. This cluster consisted of the following responses:

(i) Access to researched support strategies (n=6; 6.7%);
(ii) Resourced with computers and skilled to use the programmes efficiently (n=4; 4.4%);
(iii) Resourcing of classes with autism-specific programmes and equipment (n=5; 5.6%); and
(iv) Provision of music resources (n=1; 1.1%).

The eighth cluster dealt with the importance of individual support plan and tailor-made education strategies as a critical success factor in autism-specific education. Nine educators (10%) supported this cluster that consisted of the following responses

(i) Integrated support plan that focuses on individualised needs and developmental goals (n=7; 7.8%);
(ii) Understanding that there was no standard approach or quick fix, and that creativity was required to individualise support strategies (n=1; 1.1%); and
(iii) Constantly adjusting strategies in search for the most efficient support strategy for each learner (n=1; 1.1%).

The ninth cluster dealt with views that all stakeholders involved with autism-specific education needed to cooperate, and eight educators (8.9%) supported this view. The tenth cluster indicated discipline, routine, structure and consistency as critical to the success of autism-specific education, and eight educators (8.9%) supported this view.

The eleventh cluster included active parent involvement and transfer of skills to the home environment. Seven educators (7.8%) supported this cluster. The twelfth cluster dealt the

importance of inclusive education and diversity management as critical in autism-specific education. Seven educators (7.8%) supported this cluster, which consisted of the following:

(i) The educator needed to embrace diversity and appreciate the uniqueness with which the condition manifested in each child (n=2; 2.2%); and
(ii) An inclusive approach where learners also got exposure to typically developing learners (n=5; 5.6%).

The thirteenth cluster summarised the responses of six educators (6.7%), who indicated that small classes with an educator-learner ratio of 1:6 was a critical success factor of autism-specific education. The responses included the following:

(i) Smaller groups of children (one educator to six learners) in order to address individualised needs (n=4; 4.4%);
(ii) Class assistants to help with individual learners (n=2; 2.2%).

Six educators (6.7%) supported the fourteenth cluster concerning specialised training and support as critical success factor for autism-specific education. This cluster consisted of the following responses:

(i) Educators needed to be empowered with assessment tools and strategies to monitor progress efficiently (n=2; 2.2%);
(ii) Specialised training was essential, but not always accessible in the South African context;
(iii) Educators needed to use electronic media to review global trends (n=4; 4.4%).

The fifteenth cluster included views that support and involvement from school- and district-based management were vital in having successful autism-specific education. Five educators (5.6%) supported this cluster which consisted of the following responses:

(i) Support from Inclusive Education regarding curriculum adaptation and implementation (n=2; 2.2%); and
(ii) Support and insight from the senior management team and other educators regarding the challenges of autism-specific education (n=4; 4.4%).

Two educators (2.2%) contributed to the sixteenth cluster, which included a sense of humour and a relaxed class atmosphere as critical to the success of autism-specific education. The seventeenth cluster dealt with an integrated, multiple professional approaches as a critical success factor for autism-specific education. Only one educator supported this cluster. Lastly, one educator (1.1%) responded that learners with ASD required medication to have success in autism-specific education.

The majority of educators appeared to view the personal attributes, attitude, expectations and commitment from educator as well as knowledge, skills and practical experience as critical to the success of autism-specific education.

4.9 SUMMARY

Chapter 4 presented the results in terms of the five research objectives as described in the rationale of the research questionnaire. Given the quantitative approach and the descriptive study design of the study, the researcher presented the results through brief discussions, a graph and primarily tables. Chapter 5 will include the interpretation and comparison of results with relevant literature.

CHAPTER 5

DISCUSSION

5.1. INTRODUCTION

Chapter 4 presented the research results of the data collected using graphs, tables and short discussions. Chapter 5 focuses on the interpretation and discussion of the study results. Results are discussed and compared with relevant literature in order to make appropriate conclusions concerning the practices and challenges of autism-specific education in South African public schools. In keeping with the structure in Chapter 4, the research objectives were used as a guide for the discussion of the results. The conclusions follow at the end of each section, and integrated discussions, practices and challenges are not presented separately.

The results are presented in the following sequence:

5.2 Description of the study population;

5.3 The level of training and experience of educators;

5.4 School-based operations;

5.5 Classroom management practices;

5.6 The use of autism-specific support strategies;

5.7 The aspects educators regarded as challenges and critical success factors in managing learners with ASD in public schools; and

5.8 A summary.

The following section provides a detailed description of the population that participated in the study.

5.2. DESCRIPTION OF THE STUDY POPULATION

The researcher did not include the personal attributes of educators (age, race, qualification, etc.) in the design of inclusion criteria. However, limited demographical aspects concerning ASD educators within South African public schools are discussed to provide insight in contextual factors. This section deals with the following:

5.2.1 Age of educators;

5.2.2 Gender of educators;
5.2.3 Response rates, provinces and type of schools in which educators were working; and
5.2.4 Conclusions on practices and challenges: study population.

5.2.1. Age of educators

Table 4.2 suggests that the majority of educators that participated in the study were between the ages of 40-60 years and Table 4.3 indicates the middle age quartile as 38-53 years/. The median age of 46 years for educators teaching learners with ASD was slightly higher than the median age of 41 years for other South African educators (Burger & Van den Berg 2010:17). Although there appeared to be a trend for a decrease in the average age of South African educators, due to more favourable earnings at the beginning of their careers (cf. 2.3.5.2) this did not seem to be the case for educators of ASD classes at present. Personal factors, professional skills and opportunities for self-development (cf. Table 4.57) appeared to have guided the career choices of educators in ASD classes and that financial benefits (Burger & Van den Berg 2010:17) were possibly not the deciding factor for teaching in autism-specific education (cf. 5.7.1).

5.2.2. Gender of educators

A total of 85 of the 89 educators who responded (95.5%) reported to be female. Hence, the majority of educators who participated in the study reported to be female (cf. Table 4.4). These findings compare with the results of Nigerian (Adeniyi *et al.* 2009:online), Norwegian (Skaalvik & Skaalvik 2009:1068-1069) and Iranian (Ahmadi *et al.* 2013:20-27) studies, who found that it is mostly female educators who teach in autism-specific education. The percentage of females (95.5%) educating learners with ASD was 24.5% higher than the 71% of female educators employed in mainstream South African schools (cf. 2.3.5.2).

5.2.3. Provinces and type of schools in which educators were working

The majority of educators who participated (cf. Figure 4.1) were from the Free State, KwaZulu-Natal and the Eastern Cape. Although there appeared to be less autism-specific services offered in the Northern Cape, Northwest and Limpopo, these provinces had response rates beyond 75%. No school from Mpumalanga fitted the selection criteria and no educators from this province participated (cf. 3.4.3). Gauteng and the Western Cape appeared to be the best resourced in terms of special schools (cf. Addendum A, Table 2.4) and four of the five autism-specific schools nationally are located within these regions. Currently, these autism-specific schools appeared to be in a transitional phase of becoming resource centres and seemed to play a key role in the development of educators who started ASD services at their school (cf. 2.4.3.1). Although, the majority of educators employed at autism-specific schools were from the Western Cape and Gauteng, the response rates (Addendum A, Figure 4.1) from these schools were lower than expected. School principals indicated that staff members were under pressure due to high operational demands (cf. 4.2). Some 19 educators from autism-specific schools participated, from the following provinces: Eastern Cape (n=10), Gauteng (n=8) and Western Cape (n=1).

The philosophy and financial models of White Paper 6 (cf. 2.4.3.1) do not seem to be supportive of building new special schools (including autism-specific schools). However, the Screening, Identification, Assessment and Support (SIAS) guidelines (cf. 2.4.5.2) recognise that learners with intensive support needs would continue to be accommodated in special schools (cf. 2.3.4). The majority of learners currently in ASD education presented with moderate (n=52) and severe (n=52) ASD and required high-level support (cf. Table 4.37). A total of 64 (71.0%) educators who participated were from special schools and provinces without autism-specific schools (Free State, Northwest, Northern Cape and KwaZulu-Natal). Schools in these provinces mainly accommodate learners in ASD classes at existing special schools (cf. Table 4.5). Hence, the growth concerning autism-specific education appeared to be most prevalent within special schools where ASD classes were linked to existing service structures. Some 24 of the 26 special schools identified for the study accommodated learners with severe intellectual disability (cf. Addendum A). This finding seemed to correlate with the reports from educators (cf. Table 4.37) that the majority of learners presented with moderate and severe ASD traits (which include severe deficits in most developmental domains).

Only seven educators from full-service schools in Limpopo and the Free State participated in the study. The challenges in identifying full-service schools that offer autism-specific education have been discussed in Chapter 3 (cf. 3.4.3). Full-service schools are intended to

accommodate learners with mild to moderate support needs, but the successful implementation of full-service schools in the South African context appear to be a challenge (cf. 2.4.3.2).

Full-service schools are mainstream schools that are resourced and supported in order to accommodate learners with mild to moderate support needs. The successful transformation of mainstream schools into full-service schools is a challenging process and strategic areas of transformation have not yet been efficiently implemented (SA 2011:10-16). The successful inclusion of learners with high level support needs into existing full-service schools and mainstream schools is challenging, since conventional special needs programmes and teaching methods are not appropriate and accessible concerning their unique needs (Wagner 2011:27-28). Although mainstream schools may provide opportunities for increased social interaction, there is often lack of individualised support programmes that could assist learners to adjust and integrate efficiently in the school system. Current research regarding inclusion of learners in mainstream schools focuses more on negative experiences such as peer isolation, increased anxiety, bullying as well as limited academic support (Moreno *et al.* 2010:1094). Hence, full-service schools are currently not resourced to accommodate autism-specific education and only a few schools countrywide offer the service.

5.2.4. Conclusions on practices and challenges: demographics of educators of ASD classes according to the results of the study

Conclusions regarding the demographics of educators who participated in the study would be integrated with the discussion in section 5.7.4 (conclusions concerning challenges and critical success factors).

5.2.4.1. Special schools (especially those for the intellectually challenges) play a key role in the provision of autism-specific education by linking ASD classes to existing service structures:

The increased prevalence of ASD has put the five autism-specific schools in the country under significant pressure and consequently the system responded by linking ASD classes to existing service structures (cf. 5.2.3). The majority of educators (n=64) who participated in the study were from special schools, of which 90% were from schools that accommodate learners with severe intellectual disability. The majority of educators indicated to have learners with moderate to severe ASD in their classes. However, educators reported to have learners across the spectrum (cf. 5.5.1).

5.2.4.2. Full-service schools play a minor role in the provision of autism-specific education to learners with mild to moderate autistic traits:

The limited number of full-service schools identified for the study, implementation challenges concerning full schools and in the inclusion of learners with ASD in mainstream setting limit the provision of autism-specific education in these settings (cf. 5.2.3).

5.2.4.3. Access to autism-specific education varies across provinces:

Autism-specific schools are mainly in the Western Cape, Eastern Cape and Gauteng. Mpumalanga, Limpopo and Northwest have limited educators and resources concerning ASD education (cf. 5.2.3).

5.3. THE LEVEL OF TRAINING AND EXPERIENCE OF EDUCATORS

This section deals with the first research objective to determine the level of training and experience of educators of autism-specific classes in public schools. Appropriate training, an understanding of the condition and continued professional development are critical to the success of autism education (Koegel *et al.* 2011:online), as well as the job satisfaction of educators (Moreno *et al.* 2011:online). Under- and unqualified educators with limited commitment to self-development have been mentioned as a challenge in some South African schools (Hawker 2013:online). The researcher therefore aimed to determine whether South African educators were adequately qualified, experienced, trained in autism-specific programmes and committed to self-development in order to deliver quality autism-specific education.

The following aspects are discussed in this section: qualifications, formal training (cf. 5.3.1); work experience (cf. 5.3.2); training and professional development (cf. 5.3.3); training in research-based programmes (cf. 5.3.3); service providers (cf. 5.3.4); updates and self-development (cf. 5.3.5); and conclusions on practices and challenges concerning training development (cf. 5.3.6).

5.3.1. Qualifications and formal training

The majority of educators (cf. Table 4.8) had completed grade 12 and a three-year diploma or degree in education, including: Diploma in Education (35.6%); Higher Education degrees (32.2%); B.Ed. degrees (20.7%); and B.Ed. Psychology qualifications (n=6, 8.0%). These

findings were aligned with the recommendation of South African Council of Educators (South African Council of Educators 2013:online) that advocates that all educators should at least have a three-year education qualification post grade 12. Although these qualifications may be adequate in the South African context, first-world countries such as Finland, require a master's degree and majoring in special education as the entry level to teaching in specialised education (cf. 2.3.5.3). In addition, educators also need to qualify in a professional competence programme to ensure that they are equipped in the management of diverse support needs (The Trade Union of Education in Finland 2008:online). Hence, the South African education system does not have the same standards for teaching in special education compared to first world countries with best practices.

Three educators (3.5%) reported that they had completed grade 10 and a basic certificate in education (cf. Table 4.8). Given the complex nature of ASD education and the level of specialist knowledge required to optimally educate learners with ASD (Hanbury 2005:17), these educators would possibly require additional support to deliver high quality ASD education. One educator had trained as a speech therapist (cf. Table 4.8). Although, the qualification may be a benefit in terms of the management of speech, language and communication deficits, the researcher is of opinion that this professional may require support concerning educational frameworks of practice. Although the developmental support of learners is important, the implementation of the curriculum, curriculum differentiation and subject specific knowledge are also critical success factors of autism-specific education (cf. 2.3.5.6).

Educators mainly reported to be trained for foundation (n=53) and intermediate phase (n=24) education (cf. Table 4.7). This finding could possibly be explained by the fact that the majority of educators (n=64; 71.1%) were from special schools that accommodate learners with severe intellectual disabilities (cf. Table 4.4). These schools mostly use differentiated curriculums that focus on foundation phase skills (cf. 2.3.5.6). Learners in ASD classes were mainly between the ages of 8 and 13 years (cf. Table 4.35) and qualifications in foundation and intermediate phase education would be appropriate for these age groups.

A total of 35 educators (38.9%) reported to have completed a postgraduate qualification in support and special education (cf. Table 4.9). Considering that ASD is a specialised field within support and special education, the results suggest that more than 60% of educators did not have any postgraduate training that would have contributed to their knowledge and skills regarding the education of learners with ASD. One educator had training in Alternative Augmentative Education, which is related to ASD education (cf. 2.3.5.6). However, seven

educators had postgraduate training not related to ASD education. Only 16 educators indicated that they were busy with postgraduate training (cf. Table 4.10), of which only four were busy with studies in support and special education. Given the complex nature of autism-specific education and the need for professional development expressed by educators, one would argue that more educators would be involved in postgraduate studies. The reasons why educators were not engaged in postgraduate studies require further investigation.

5.3.2. Work experience

A total of 11 educators (12.2%) reported to have worked abroad with learners with ASD and had exposure to ASD education practices in other countries. The majority of educators (78.8%) gained their experience in the South African context (cf. 4.4.1). The median years qualified as an educator was 17 years, while the median for teaching in an ASD class was five years (cf. Table 4.6). The results suggested that the majority of educators gained experience in other fields of education prior to working in ASD education. Although there were educators with as much as 27 years' experience in ASD education, the majority of educators had between three and eight years of experience (cf. Table 4.6). Traditionally educators had to work at autism-specific schools in order to work with learners with ASD. The significant increase in the prevalence of ASD (Centres for Disease Control and Prevention 2013(3):online) since 2008, possibly created new opportunities for ASD education at special and full-service schools.

Since many educators were pioneering autism-specific education at their schools, they would require mentorship and support from senior management teams and the Department of Education. However, support from senior management was indicated as a moderate challenge and support from the Department of Education as a severe challenge (cf. 2.4.4, cf. Table 4.59). Hence, the results of the study indicates that there was an increase in the number of educators who are gaining experience in ASD education, but mentorship and support appear to be a challenge due to limited support from senior management teams and the Department of Education (cf. Table 4.60, cf. 2.4.4).

5.3.3. Training in research-based ASD programmes

Training in ASD research-based programmes is integrated with the discussion on utilisation of research-based programmes (cf. 5.6.1).

5.3.4. Training service providers

Only 49 educators (54.4%) responded to the multiple choice question to determine the service providers responsible for the training of the educators in autism-specific classes. Educators (cf. Table 4.12) reported to be trained by another school (n=12), accredited external trainers (n=11), internal programmes (n=10) at their school or by Autism South Africa (n=9). District–based support teams (n=4) and universities (n=2) did not seem to contribute significantly to the training of educators (cf. Table 4.12). Educators experienced limited training in autism-specific education as well as the limited support by the Department of Education as a severe challenge (cf. Table 4.59). Other South African researchers (Geldenhuys & Wevers 2013:12-13 and Ladbrook 2009:90-92) support this finding. Hence, schools appeared to take the lead in autism-specific training due to limited support at district, provincial and national level. The content, format and quality of training offered by schools require more investigation since a standard approach is not guided by the Department of Education.

In contrast with findings that educators in special schools indicate a lower demand for training since they are in well-resourced units (Adeniyi *et al.* 2009:online and Moreno *et al.* 2011:online), educators in special schools – including autism-specific schools – reported a high demand for training (cf. Table 4.60.). Autism-specific and special schools appeared to take on responsibility to support one another, but it may be argued that educators in these settings do not get optimal exposure to new information and research-based approaches.

A total of 23 educators (cf. Table 4.13) reported that their school offered informal training, which consisted mainly of individual and group support on managing ASD in the classroom (n=21), as well as professional working groups that train on best practices (n=9). Only one educator indicated that their school was involved with outreach programmes to full-service schools. In accordance to White Paper 6, special schools should act as resource centres to support schools in the area (SA 2001:3(1),21-22), however few schools appear to run outreach programmes to mainstream and full-service schools.

5.3.5. Updates and self-development

Globally, there appears to be a decline in educator training and monitoring of effectiveness of these training programmes in practice (cf. 2.3.5.2), possibly due to financial and operational constraints. Globally, schools employ distance training and other cost-efficient strategies such

as video conferencing, intensive one-week training courses, in-service training and peer socialisation (cf. 2.3.5.2). A total of 49 educators indicated that they kept updated with the latest developments in ASD education by attending formal training and workshops. Some 28 educators indicated that they used journals, newsletters and books to keep updated, while 26 educators made use of the internet and social media. Video conferencing did not appear to be a training strategy used within the South African context. Forty-four educators (cf. Table 4.59) reported limited ASD training as a severe challenge. Hence, educators appear to take responsibility for their self-development due to limited structured training opportunities.

Other schools appeared to be the main source of training to educators in ASD classes (cf. Table 4.12), but only 20 educators indicated in-service training and professional working groups as a source of professional development (cf. Table 4.12). Autism associations (n=15) appeared to play a role in the self-development of educators (cf. Table 4.12), especially through training in the Fishbowl course (cf. Table 4.11). The majority of educators (n=68) reported that their schools were members of Autism South Africa and the regional support groups (cf. Table 4.33). Parent meetings and support groups appeared to play a minor role in the self-development of educators (cf. Table 4.14). Hence, other schools and autism support groups play a key role in the continued professional development and support of educators teaching learners with ASD.

Simpson (2005:143) indicated that educators need to critically question the efficacy, anticipated outcomes, possible risks and outcomes measures when selecting intervention strategies for learners. Although one-third of educators reported self-development through journal articles, books and electronic literature, only eight educators indicated that they made use of research and scientific reviews concerning their professional development (cf. Table 4.14). Hence, educators appear to consider any possible resources for self-development in the absence of formal, structured trainings in evidenced-based practices.

5.3.6. Conclusions on practices and challenges concerning training development

5.3.6.1. Educators teaching learners with ASD within the South African context have variable standards of qualifications and levels of specialisation:

The majority of educators in ASD classes confirm to the recommendations of SACE to have grade 12 and a three-year qualification in education. Only 38.9% of educators had appropriate post-basic qualifications, while only four educators were engaged in further studies. Best practices in first-world countries prescribe a basic three-year qualification post grade 12,

majoring in special education, a master's degree and additional professional development programmes as a prerequisite for teaching in special education (cf. 5.3.1). Hence, educators teaching learners with ASD within the South African context have variable standards of qualifications and levels of specialisation.

5.3.6.2. School-based professional working groups, autism support groups and educators themselves take responsibility to create opportunities for professional development and training:

Professional working groups, school-based interest groups and autism support groups are currently providing training for educators (cf. 5.3.4). Educators reported to use professional journals, newsletters, working groups and electronic media as sources of self-development of educators due to limited structured training opportunities (cf. 5.3.5). The Department of Education as well as tertiary training institutions play a minor role in the support and professional development of educators teaching learners with ASD (cf. 5.3.4). Hence, schools and autism support groups take responsibility for creating opportunities for informal professional development in the absence of structured support from the Department of Education and accredited tertiary training institutions.

5.4 SCHOOL-BASED OPERATIONS

The literature overview indicated that socio-economic (poverty, child-headed households, foster children, teenage pregnancies, etc.) and healthcare dilemmas (HIV/Aids, substance abuse, etc.) contribute to challenges in education and increase the number of marginalised learners significantly. The National Department of Education faces serious challenges as prioritised in the Strategic Plan for 2011-2014 (SA 2011(1):9-16), and resources are allocated in accordance to these priorities (cf. 2.4). Literature on the South African education system indicated differences in the infrastructure, management, services and performance of schools. Special schools in deep rural areas often have insufficient infrastructure, limited access to specialists and few appropriately qualified staff (SA 2007(2):5-7). This study was of descriptive nature and did not aim to compare autism-specific education services and resources in urban and rural areas, but rather to describe service delivery concerning autism-specific education as a whole.

This section deals with the second research objective, to determine the services delivered by schools that offer autism-specific education in the South African context. This was done by determining how the resources and services offered by schools vary (SA 2007(2):9-16). The following results are discussed:

5.4.1 Admissions procedres;
5.4.2 Accommodation of special needs in hostel;
5.4.3 Extra-curricular services offered;
5.4.4. Therapeutic services offered;
5.4.5 Transfer of skills to the home environment; and
5.4.6 Conclusions concerning school-based operations.

5.4.1 Admissions procedures

Although district-based support teams are supposed to be primarily responsible for the placement of learners in special education (SA 2001(1):47), schools often have their own assessment teams who perform assessments to determine whether a learner would optimally benefit from the support services offered at the school. School-based multi-professional teams make use of standardised assessments, academic screenings and informal observations (cf. 2.2.2, 2.2.3, 2.4.2.1). The researcher was interested in determining the assessment tools used in schools, the usage of SIAS guidelines (SA 2008(3):1-2), age groups accommodated in schools, and pre-requisites for admissions.

5.4.1.1 Assessment tools

Educators reported the Autism Behaviour Checklist as the screening tool that was mostly used, and the Childhood Autism Rating Scale as the most used diagnostic tool (cf. Table 4.16). These mentioned tools are also used and recommended internationally (American Academy of Paediatrics 2006:410-413). Hence, it is positive that schools use tools that are aligned with recommended practices. Although the Autism Diagnostic Observation Schedule – Generic (ADOS-G) is indicated as a gold standard diagnostic procedure (cf. 2.2.3), educators (n=16, 17.8%) in the South African context did not appear to use the tool frequently. The researcher suspected the cost of training and the intensive administration procedure of the tool may be factors that influence the use of the ADOS-G as the preferred tool. The response rate to the question concerning the use of assessment tools was low (cf. 4.16). The following may be possible reasons for the low response rate:

(i) School-based psychologists and therapists may perform diagnostic specific assessments, while educators perform academic screenings

(ii) Educators of ASD may not be included in school-based assessment teams; or

(iii) Schools are not using diagnostic specific assessment tools.

Since there is uncertainty regarding the use of assessment tools in school-based settings, this aspect may require further investigation.

5.4.1.2 Use of Screening Identification Assessment and Support (SIAS)

The SIAS guidelines are intended to efficiently determine barriers to learning, the level of support required by learners and to design comprehensive support strategies (SA 2008(3):1-2). A total of 58 educators (64.4%) indicated that the Screening Identification and Support Guidelines were used at their school (cf. Table 4.17). Since SIAS is a national document that guides the implementation of inclusive principles in schools, it is a concern that not all schools have put the guidelines into practice yet. The results appeared to support the findings of Geldenhuys and Wevers (2013:12), who reported that the SIAS process is used with limited success since the efficiency of the support guidelines is dependent on the availability of resources and efficient training of educators. Limited leadership, support and training provided by the Department of Education were reported as challenges (cf. Table 4.59, cf. Table 4.60).

5.4.1.3 Age groups accommodated at school

Early identification and support are critical success factors for efficient autism-specific education and positive educational outcomes (Boyd *et al.* 2010:92). As mentioned, learners with ASD are often identified late (cf. 2.2.8), placed on waiting lists at schools or have limited or no access to formal education. Since ASD is a lifelong condition, learners require support throughout their school career to optimise social adjustment, community integration and vocational skills (Rapin & Tuchman 2008:1129-1146). The researcher was therefore interested in identifying the age groups accommodated at schools.

Educators reported that their schools mainly accommodated learners between the ages of 5 and 18 years (cf. Table 4.18). However, the mean age of learners currently in ASD classes was between 8-13 years (cf. Table 4.35). The results also suggested limited access for children of 5 years (and younger). Preschool learners require support to ensure compliance with admission criteria and the requirements of formal education (cf. 4.5.4). Limited opportunities for learners older than 14 years concerning vocational training (cf. 4.5.4) were also indentified in this study. However, literature supports the fact that limited vocational training and job opportunities are challenges for all South African learners (SA 2011(5):49-51).

5.4.1.4 Admissions criteria

Admissions criteria assist district- and school-based support teams with objective guidelines to ensure fair and equitable access to special schools. Only learners with high-level support needs would be considered for admissions to special schools. Special schools continue to design their own admissions guidelines to ensure that newly referred learners would optimally benefit from the programmes offered (SA 2007(2):7-8).

The results of this study suggest the following criteria as vital for admission to an ASD class:

i) *Continence and independence in toileting*: learners with ASD usually take much longer to master continence training and independence in toileting (Abbott *et al.* 2003:online). A total of 51 educators reported that continence was a prerequisite for admission at their school (cf. Table 4.19), and 51 educators (cf. Table 4.56) reported that their school did not allow learners to bring their own caregiver, who could potentially assist with continence management, to school. Hence, continence and independence are part of the admissions criteria, and schools generally do not allow personal caregivers to assist with toilet training at school.

ii) *Formal diagnosis of ASD by a medical specialist*: Inclusive policy tries to move away from a medical model where a diagnosis dictates access to specialised education (cf. 2.2) and is part of the admissions criteria to an ASD class. However, 50 educators reported that their school considered the clinical profile, medical history and diagnostic specific criteria in deciding whether a learner would benefit from their ASD programme (SA 2007(2):7-8).

iii) *Screening by a school panel and recommendation by the district based support team*: White Paper 6 (SA 2001(1):47) indicates that district-based support teams should be primarily responsible to oversee placements in special schools. Only 43 educators indicated that recommendation by the district-based support was part of their admissions criteria (cf. Table 4.19). District-based support teams appear not to be effective in the implementation of this function across all districts (cf. 2.4.4.1). Screening by a school-based panel was reported by 50% educators (n=45) to be part of the admissions criteria (cf. Table 4.19).

iv) *Age restrictions*: Some 38 educators reported age restrictions as part of their admissions criteria (cf. Table 4.19). Educators reported that their schools mainly accommodated learners between the ages of 5 and 18 years (cf. Table 4.18) but the majority of learners in ASD classes were between 8-13 years (cf. Table 4.35). These findings are similar to the researcher's experience where special schools in the Motheo District indicate 14 years as the cut-off age for new admissions to special schools. Unfortunately, this was not asked in the questionnaire.

v) *Functional communication skills*: Educators (n=8; 8.9%) from schools that offer mainstream curriculums indicated functional communication skills as admissions criteria (cf. 4.5.5).

5.4.2 Hostel accommodation

The researcher has not been able to find any scholarly articles regarding the hostel accommodation of learners with ASD. Since most special schools are in urban areas, learners from rural areas would require hostel accommodation to access specialised education (cf. 2.4.2.3, SA 2007(2):3). Given the complex symptoms of ASD – which include resistance to change, sensory processing difficulties and poor social interaction – it may be challenging to accommodate these learners in hostels (cf. 2.2.1). Hence, the strategies hostel staff used to accommodate these complex behaviours and functional profiles of learners with ASD were a point of interest for the researcher.

A total of 53 of 87 educators (62%) reported that their school had hostel facilities (cf. Table 4.20.) and this implied that there were schools that did not offer any hostel accommodation. The rapid increase in the prevalence of ASD and the increased demand for ASD education (cf. 2.2.6) consequently raised the need for more hostel facilities at schools that offer autism-specific education. Educators from autism-specific (n=17; 77.3%) and special schools (n=43; 58.6%) reported hostel accommodation, but full-service schools (n=2, 28.6%) seemed to offer limited facilities in this regard (cf. Table 4.20). The hostels at special schools in the Motheo District have waiting lists of five years (cf. 2.4.3.3), which seemed to be an additional factor that would limit access to autism-specific education. The researcher has not specifically asked to indicate whether schools have waiting lists for hostel accommodation and this aspect may thus require further investigation. However, it is assumed that learners with severe ASD traits and who are from rural areas may experience more difficulty in accessing specialised education. These learners would also struggle to access full-service schools in their community due to their high-level support needs.

Table 4.21 implied that hostels could accommodate learners with ASD if appropriate strategies are implemented. The strategies mentioned by educators did not seem to differ significantly from the critical success factors of autism-specific education (Boutot 2013:online and Dunlap *et al*. 2003:online) and these included:

(i) Individual support plans and individualised strategies;
(ii) Staff training and support;
(iii) Grouping of learners and teamwork; and
(iv) A structured routine and schedule (cf. Table 4.21).

Three schools indicated that they offer hostel accommodation, but that they did not accommodate learners with ASD. Unfortunately, they did not specify the reasons for not admitting learners with ASD in the hostel (cf. Table 4.21). Since there appears to be limited research concerning the accommodation of learners with ASD in hostels, it may be an interesting topic for further research.

5.4.3 Extra-curricular services offered and funded

Autism Spectrum Disorders do not only affect learning, but impact on the development of skills in all spheres of life (American Psychiatric Association 2013(2):69-70). Schools that offer autism-specific education often provide extra-curricular services to accommodate all areas of development. Nevertheless, these additional services require additional resources (cf. 2.4.2.3).

Since most public schools are under-resourced (Geldenhuys & Wevers 2013:11-12), schools possibly focus on extra-curricular activities that have maximum benefit for learners at the lowest possible cost. The researcher was therefore interested to determine the extra-curricular services schools offered, how these were funded and how educators perceived the impact of these services.

A total of 48 educators (53.3%) indicated that their schools offered swimming (cf. Table 4.22) and the majority of these educators (cf. Table 4.23) were from special (n=36, 61%) and full-service schools (n=5, 57.1%) who accommodated learners with lower burdens of care. Only seven educators (30.4%) from autism-specific schools reported swimming as an activity they presented. Although swimming was indicated as the activity that was mostly offered, only 23 educators (26.7%) rated swimming as a beneficial activity to learners with ASD (cf. Table 2.24). Pan (2010:9) described the benefits of swimming for learners with ASD, but no literature was accessed that compared the benefits of swimming to other activities.

More than 40% of educators indicated that they offered art and social skills at their school (cf. Table 4.22). In this study, full-service schools (n=5; 71.4%) appeared to present art as an extra-curricular activity. However, art seemed to be offered less in special (n=29, 49.2%) and autism-specific schools (n=12, 52.2%.), and only 30.7% of educators rated art as a beneficial activity (cf. Table 4.23, cf. Table 4.24). Social skills appeared to be used less in full-service schools (n=2, 28.6%) possibly since the majority of learners in these schools are typically developing (cf. Table 4.23). Nonetheless, the use of social skills was also low in autism-specific schools (cf. Table 4.23) and the reasons may require further investigation. The of majority of educators who responded (n=32; 42.7%) rated social skills as the activity that added most benefit (cf. Table 2.24). Since ASD is a condition that affects mostly social interaction, social skills training seems to add additional benefit as an extra-curricular activity (Bellini *et al.* 2007:153-154). However, the results of the study indicated that schools did not always present the activities that educators perceived as most beneficial.

Horseback-riding, therapy by external therapists and music therapy were reported as extra-curricular activities by more than 30% of educators (cf. Table 4.22). Full-service schools (n=4, 57.1%) appeared to offer more external therapy (cf. Table 4.23), possibly since they were not resourced with school-based therapists. Educators perceived horseback-riding (n=26; 34.7%) and music therapy (n=26; 34.7%) as beneficial to learners with ASD (cf. Table 2.24). However, therapy (n=12; 16%) was rated much lower (cf. Table 2.24). Pottery and drama were offered by 20% percent of schools, while ball skills were only reported to be presented by 5.6% of schools (cf. Table 4.22). Pottery, drama and ball skills were mainly presented in autism-

specific and special schools, but not in full-service schools (cf. Table 4.23). Educators did not perceive these three activities as particularly beneficial to learners with ASD (cf. Table 4.24). Literature (cf. 2.3.5.6) describe the use of all the mentioned activities, but no study could be located that compared the benefits and long-term effects of these activities with one another.

The financial burden (cf. 2.2.11) of having a child with ASD is high for parents as well as schools that offer specialised education. Swimming, social skills, art, music therapy, external therapy and drama were mostly funded by schools (cf. Table 4.25). Pottery appeared to be funded privately, and horseback-riding seemed to be covered by some schools while other schools made use of private funding (cf. Table 4.25). The majority of educators (n=69) replied that parents do not have to cover the costs of specialised services delivered at schools (cf. Table 4.32). Nevertheless, this possibly put more strain on schools concerning fundraising, since the Department of Education focuses resources in accordance to national priorities as indicated in National Department of Education: Strategic Plan for 2011-2014 (SA 2011(5):9-16, cf. 2.4)

The results of the study indicate that special, autism-specific and full-service schools focused on different extra-curricular activities. The type, frequency and intensity of these activities appeared to depend on the availability of funding, school infrastructure, school management, parental support and community involvement. Educators' perceived benefit of activities to learners with ASD did not seem to affect the activities presented at schools.

5.4.4 Therapeutic services offered

Learners with ASD require a differentiated curriculum and a collaborative, multi-professional approach to enhance outcomes in different developmental domains (Brown & Dunn 2010:475). The majority of educators (n=85; 94.4%) reported that it was necessary to provide therapeutic services at schools that offer ASD education. The intensive support and specialised intervention required by learners with ASD appeared to be a key factor that necessitates therapists as part of integrated, multi-professional teams in schools (cf. Table 4.26). Educators reported not to have the specialised skills to manage all the impairments and deficits associated with ASD (cf. 4.5.8). Therapists play a role in the training and support of educators by:

(i) Providing hands-on assistance and support strategies in the classroom;
(ii) Contributing to individual support plans; and
(iii) Assisting with parent feedback, training and support strategies (cf. 4.5.8).

A total of 13 educators were of opinion that the involvement of therapists optimised educational outcomes, since functional gains appeared to aid academic progress (cf. Table 4.26).

More than 60% of autism-specific and special schools (cf. Table 4.27) indicated that they are resourced with occupational therapy (>70%) and school nursing (>60%). The reasons for the higher representation of occupational therapy and nursing services require further investigation. Autism-specific schools (cf. Table 4.27) appeared to have speech therapists (74.9%) and psychologists (43.5%), while physiotherapy (17.4%) and social work resources (8.7%) appeared to be less. Educators in special schools reported to have physiotherapy (50.9%), psychology (35.6%), speech therapy (27.1%) and social work services (18.6%). Hence, it appeared as if special schools had a wider range of therapeutic services offered. Full-services schools seemed to have limited therapeutic resources since they possibly have to fund their services privately (cf. Table 4.25). Although learners with ASD often have specific food preferences and nutritional needs (Cutler *et al.* 2004:1611), none of the schools offered dietetic support. A possible reason may be that schools do not offer meals as a standard service and focus on education as a core function.

White Paper 6 introduced changes in the roles of therapists, which moved from removing the child from the classroom for one-on-one therapy to moving into the classroom and equipping educators with strategies to support learners (Anderson *et al.* 2012:5). The majority of educators (n=80, 88.9%) indicated that they received support from therapists (cf. Table 4.28). However, between 23% and 36% of educators in autism-specific and special schools indicated (cf. Table 4.59) that they had limited chance to work with therapists or that they received limited support from therapists. The reasons for this severe challenge may be related to:

(i) ineffective use of therapeutic resources at schools;
(ii) the perceptions of educators concerning the roles of school-based therapists; or
(iii) limited therapeutic resources at schools.

Therapists provide therapeutic support through individual therapeutic sessions, therapeutic groups and the provision of support strategies to educators on handling individual learners in the class (cf. Table 4.28). One-third of educators indicated that therapists equipped them via formal workshops, while only four educators indicated that therapists were involved in parent feedback (cf. Table 4.28). Although educators recognised the role of therapists in equipping educators, they still appeared to perceive the primary role of therapists as one-on-one therapeutic interaction. The role of therapists in empowering parents and communities also appeared underutilised.

5.4.5 Transfer of skills to the home environment

Parent involvement, integrated goal-setting and transfer of learning skills to the home environment are critical in providing an integrated educational approach (Wagner 2011:29 and Bellini & Pratt 2010:online). Parents of learners with ASD face significant challenges and require intensive support (cf. 2.2.11, 2.3.5.4, 2.4.1). Some 55 educators (64.0%) indicated that they offered parent feedback and training at their school (cf. Table 4.30). Given the importance of parent involvement as a critical success factor of ASD (cf. 2.3.5.5), one would have expected more schools to offer the service. However, these results may also reflect the findings of other researchers (Geldenhuys & Wevers 2013:8-9 and Ladbrook 2009:119) concerning unsupportive home environments, insufficient parenting skills and poor parental involvement in the South African context.

Individual counselling and feedback appeared to be the primary method of transferring skills to the home environment (cf. Table 4.29). Homework, letters and a communication book, formal training and parent meetings were also indicated as strategies that were less used (cf. Table 4.29). Literature indicates that frequent, direct communication with parents regarding the individual support plan of their child should take place at least once a quarter (Sapona & Winterman 2002:34). A total of 52 educators (57.8%) reported that they provide quarterly feedback, while 18 educators (20.3%) indicated monthly or more frequent feedback sessions (cf. Table 4.31). Hence, more than 40% of educators did not appear to meet best practices concerning parent feedback.

5.4.6 Conclusions on practices and challenges concerning extra-curricular services offered according to the results of this study

Literature mentioned differences in the infrastructure, access to specialised resources, service delivery and performance of supposed functional and dysfunctional schools. Differences between schools in urban and rural areas have also been pointed out (c.f. 2.4). The researcher has not distinguished between schools in terms of their location and functionality, but aimed to describe extra-curricular services for learners with ASD at public schools within the South African context as a whole. Recommendations regarding comparative studies concerning service delivery rural versus urban or functional versus dysfunctional schools will be addressed in Chapter 6. Nevertheless, the researcher acknowledges that complex socio-political, socio-economical, healthcare and other systemic barriers affect the services delivery of schools.

5.4.6.1 *Barriers in the South African education system and implementation of inclusive education affect operational systems, resources and services at schools*:

Literature made mention of barriers in the provisioning of basic education and the implementation of inclusive education at all levels that affect the service delivery of schools (cf. 2.4). The results of the study support the findings of other researchers that the SIAS guidelines are used with limited success in the South African context (cf. 5.4.1.2). The functions of district-based support teams, as well as national and provincial teams, are variably implemented and affect service standards in terms of admission procedures, the provision of resources and support services (Geldenhuys & Wevers 2013:1213).

5.4.6.2 *Schools have similar admissions criteria and admissions procedures concerning autism-specific education*:

The mentioned admissions criteria appear to create challenges in its own and rigid implementation of these criteria could contribute to the marginalisation of out-of-school learners with ASD.

The majority of educators indicated the following as admissions criteria:

i) *Continence training and independence in toileting*: Children with ASD usually take longer to master continence and independence in toileting. A total of 57% of schools reported that learners are not allowed to bring caregivers to school to assist with toileting and continence management (cf. 5.4.1.4).

ii) *Formal diagnosis of ASD by a medical specialist*: White Paper 6 tries to move away from the medical model, but diagnostic criteria continue to play a role (cf. 5.4.1.4). Learners with limited resources struggle to access specialised medical services. The effect of the new DSM-5 criteria may affect admissions criteria (cf. 2.2).

iii) *Screening by a school panel*: Schools continue to perform their own assessment to determine whether a learner is a candidate for their school (cf. 5.4.1.4). However, district-based support teams are responsible for the placement of learners in special schools. This finding is supportive of the inefficient implementation of inclusive policy and procedures.

iv) *Age restrictions*: Schools indicate that they accommodate learners between the ages of 5-18 years (cf. 5.4.1.4) but the mean age of learners in the ASD classes was between 8-13 years. Hence, learners younger than five years and older than 13 years appeared to have less ASD-specific support.

v) *Functional communication and language skills*: Full-service schools reported functional communication and language skills as a pre-requisite for admissions (cf. 5.4.1.4).

5.4.6.3 *The extra-curricular services offered depend on the type of school, availability of funding, school infrastructure and parent involvement*:

A total of 54 educators reported that their school offered hostel accommodation. These educators were mainly in autism-specific and special schools (cf. 5.4.2).

5.4.6.4 *Learners with ASD can be accommodated in hostels using specific strategies but access to hostel facilities are limited*:

Hostel accommodation appeared to be limited (especially in full-service schools) and waiting lists at hostels require further investigation. Not all school hostels appear to be willing to implement these strategies, possible since it requires additional effort and operational models (cf. 5.4.2).

5.4.6.5 *The efficiency and value of extra-curricular services offered at schools require further research:*

The type, frequency and intensity of extra-curricular activities seemed to depend on the availability of funding, infrastructure, school management, parent support and community involvement. The extra-curricular services offered by schools differed from the services educators perceived to be most as most beneficial to learners with ASD. No study could be located that compared the benefits and long-term effects of these activities (cf. 5.4.3).

5.4.6.6 *Educators are in need of therapeutic services at schools that offer autism-specific education*:

The majority of educators reported that it was necessary to provide therapeutic services at schools that offer ASD education, and that they received support from therapists. Support strategies included individual therapeutic sessions, therapeutic groups, the provision of classroom strategies, formal workshops and involved in parent feedback (cf. 5.4.4).

5.4.6.7 *There is variability in the availability and utilisation of therapeutic resources*:

Although, the necessity of therapists was recognised, not all schools have access to adequate therapeutic resources. Schools seemed to be better resourced with occupational therapy and school nursing compared to other professional services. No dietetic services were provided. Educators appeared to focus on the traditional roles of therapists (cf. 5.4.4).

5.4.6.8 *Parent involvement and transfer of skills to the home environment within the South African are not in line with best practices*:

Some 55 educators (64.0%) indicated that they offered parent feedback and training at their school. Given the importance of parent involvement as a critical success factor of ASD, all

schools should offer the service. Other researchers have also described unsupportive home environments, insufficient parenting skills and poor parental involvement in the South African context. Individual counselling and feedback appeared to be the primary method of transferring skills to the home environment. The frequency of feedback is not aligned with best practices (cf. 5.4.5).

5.5 CLASSROOM MANAGEMENT PRACTICES

Learners with ASD have atypical learning styles; unique learning needs; challenging behaviours; and they process information from the environment differently (Hanbury 2005:16). The condition affects all aspects of development, and educators should therefore focus not only on curriculums and classroom strategies that accommodate the diagnostic specific factors, but also on individualised learning needs (cf. 2.3). Curriculum differentiation (appropriate content and teaching methodology); scheduling of education outcomes; monitoring; measurement and control of progress (differentiated assessment methods); and strategies to accommodate individual learning styles (individual support plans, environmental adjustments, teaching aids, assistive devices, adjusted activities, etc.) are critical to the success of autism-specific education (cf. 2.3.5). Globally, the high cost of specialised education forces the policy makers in education to review different service models and education approaches to offer quality specialised education and lower costs (cf. 2.3.4). Due to the limited resources in the South African education context, the delivery of quality education within a complex socio-economical context amplifies these challenges (cf. 2.4).

This section deals with the following aspects:

5.9.1 Demographics of learners in South African ASD classes;
5.9.2 Autism-specific education versus inclusivity;
5.9.3 Curriculum differentiation;
5.9.4 Individual support;
5.9.5 Monitoring of programmes;
5.9.6 Classroom structure;
5.9.7 Safety during break; and
5.9.8 Conclusions on practices and challenges concerning classroom management practices.

5.5.1 Demographics of learners in South African ASD classes

The majority of educators were from schools where English (32.2%), Afrikaans (18.9%) and combinations thereof (26.7%) were the languages of learning and teaching (cf. Table 4.43). African languages as the language of teaching were not well represented in this study, possibly since Afrikaans and English are the official languages of learning and teaching (National Department of Basic Education 2010:1-2). The majority of schools (cf. Table 4.18) indicated that they accommodate learners between the ages of 5 and 18 years. However, the median ages of learners in ASD classes were described as between 8 and 13 years (cf. Table 4.35), which are in keeping with the researcher's experience.

The number of learners in a class was reported to be between 7 and 10 with, 8 as the median (cf. Table 4.36). Although these ratios appeared to be aligned with the critical success factors of autism-specific education, it is lower than the suggested 16 learners from a cost perspective (SA 2001(1):39). The gender ratio of girls versus boys was indicated as 1:7 (cf. Table 4.36). These findings are aligned with the epidemiological reports from the ADDM Network (Centres for Disease Control and Prevention 2013(3):online) which estimates that the prevalence of ASD in boys is significantly higher than in girls.

The majority of educators appeared to have learners with moderate to severe ASD in their classes (cf. Table 4.37). The results of this research indicate a high demand for more classes that accommodate learners with severe ASD symptoms and accompanying intellectual disability. A total of 59 educators (66.3%) were employed at special schools for learners with severe intellectual impairments (cf. Table 4.15). The results of this study seem to correlate with the findings of Alaimo and Heflin (2007:30) that 67-75% of the learners with ASD (in developing countries) present with intellectual disability. In contrast, the ADDM Network indicates that 46% of children diagnosed in the USA presents with average and above-average intellectual ability (Centres for Disease Control and Prevention 2013(3):online). According to the results of this study, 32 educators (cf. Table 4.37) reported learners with mild ASD in their classes, which possibly suggests that learners across the spectrum are in need of specialised support and education.

5.5.2 Autism-specific education versus inclusivity

The educational approaches for learners with ASD vary and ranges from one-on-one educational programmes to full and partial inclusion (cf. 2.3.4). Given that autism-specific schools focus exclusively on learners with ASD, 15 educators reported that they only

accommodate learners with ASD (cf. Table 4.38). However, nine educators from autism-specific schools reported that learners with ASD were included with those who do not have the condition.

Educators from specials schools (cf. Table 4.38) reported that they offered classes that include diverse functional profiles (n=42) as well as classes that exclusively accommodate learners with ASD (n=44). Special schools that cater for learners with severe intellectual challenges offer services mainly to learners with intellectual disability, and the primary diagnoses may vary. Since many learners with ASD do not appear to benefit from the conventional education programmes, autism-specific education is provided to ensure that the learning needs of learners are met. Full-service schools reported the use of classes inclusive of diverse functional profiles, but three educators (42.9%) reported that they exclusively accommodate learners with ASD in separate classes (cf. Table 4.38).

These findings are in keeping with the opinions of Frederickson & Jones (2010:1094) that not all learners are suitable candidates for inclusion. The successful inclusion of learners with high level support needs into existing special schools and mainstream schools is challenging, since conventional special needs programmes and teaching methods are not appropriate and accessible concerning their unique needs (Wagner 2011:27-28). Therefore, a variety of one-on-one, full and partial inclusion approaches appeared to be used globally (cf. 2.3.4). Hence, the functional profile and individualised needs of the learner would dictate the choice of an appropriate approach.

5.5.3 Curriculums and differentiation

Schools play a key role in preparing learners for the challenges of adulthood and should include programmes that improve diagnostic specific impairments; developmental deficits; functional independence; social skills; and community integration (cf. 2.3.5.6). In the results of this study, 55 educators (64.0%) reported that their school offered vocational training in their curriculum (c.f. Table 4.40). Autism-specific, special and full-service schools indicated that they offer vocational training as part of their curriculum (cf. Table 4.40). However, only 11 educators (cf. Table 4.43) rated vocational skills as critical in the curriculum of ASD learners. Learners in ASD classes were reported to be between the ages of 8 and 13 years (cf. Table 4.35) and educators possibly argue that vocational training is not critical to learners within this age group. Social interaction; emotional management; communication skills; functional independence; use of tools and daily aspects; academic skills; as well as working skills (task completion, listening

to instructions, etc.) were rated as vital components of an ASD curriculum (cf. Table 4.43). These findings are in keeping with global views (cf. 2.3.5.6).

The majority of educators (cf. Table 4.41) who responded reported using self-developed curriculums (n=41) or the ELSEN curriculum developed by SANASE (n=39). Educators from autism-specific schools (cf. Table 4.42) reported using self-developed curriculums (n=13) or the ELSEN curriculum developed by SANASE (n=12). Since autism-specific schools focus more on learners with intensive support needs and more severe ASD traits, learners may benefit mostly from tailor-made curriculums. Self-developed curriculums (n=24) and the ELSEN curriculum developed by SANASE (n=25) were also mainly used in special schools (cf. Table 4.41). However, 15 educators from special schools also reported the use of a differentiated CAPS curriculum. Since full-service schools manage learners with mild to moderate ASD traits, the majority of educators (n=4) reported the use of a differentiated CAPS curriculum. Curriculum differentiation for learners with ASD in full-service schools requires further investigation.

5.5.4 Individualised support

Since learners with ASD present with different combinations of impairments and are in need of individual support; educators often require additional assistance in class to ensure that they accommodate and monitor the progress of all learners (cf. 2.3.5.1). Some 70 educators (cf. Table 4.39) responded that they have class assistants. Autism-specific (n=22) and special schools (n=45) appeared to be well-resourced with class assistants, possibly since they manage learners with intensive support needs. Only three educators from full-service schools seemed to use class assistants (cf. Table 4.39). Since full-services schools only accommodate learners with mild to moderate support needs, the need for class assistants may be less. More than 65% of educators (n=51) reported that their schools did not allow learners to bring their own caregivers (cf. Table 4.56), possibly since schools could not be held accountable for the job descriptions, performance, safety and development of external assistants.

Learners with ASD have unique learning styles and require individualised approaches to ensure that learning needs are met (cf. 2.3.5.1). Individual support plans (n=55) and curriculum differentiation within structured programmes (n=32) were reported as strategies that were mostly used to accommodate the learning pace of individual learners (cf. Table 4.44). Individual support plans (n=80) were also reported to assist educators in the planning of individual strategies. A total of 80 educators (90%) indicated that other stakeholders were involved in the design of these individual support plans (cf. Table 4.45). These findings support

global views that an integrated, outcomes-driven individual support plan is key in the success of autism-specific education (cf. 2.3.5.1).

South African educators (cf. Table 4.45) reported to use daily (n=83, 92.2%) and weekly schedules (n=75, 90.4%). Learners with ASD have excessive devotion to routines and ritualised patterns behaviours, and resist changes in their environment and routines (American Psychiatric Association 2013(2):50). This behaviour poses many challenges to educators, since change is inevitable in any classroom setting (Hanbury 2005:81). Weekly and daily schedules are suggested to be efficient strategies to provide learners with routine, structure, predictability, consistency and thorough preparation for change (Smith-Myles 2005:23-24).

5.5.5 Monitoring and assessment

Simpson (2005:144) indicates that not all educational approaches come with clearly defined learning objectives and reliable methods to achieve these goals. The minority of educators (n=9) reported that they use standardised assessments to measure the progress of learners (cf. Table 4.46). This is in keeping with the findings of Koegel and colleagues (Koegel *et al.* 2011:online) that learners with ASD often struggle with formal assessments and standardised tests due to the complexity of their barriers to learning. The majority of educators (cf. Table 4.46) used the following:

(i) Checklists based on individual support plans and the curriculum (n=45; 50%);
(ii) Continuous, individualised assessment (n=38, 42.2%); and
(iii) Observation checklists and behavioural schedules (n=20; 22.2%). Koegel and colleagues (Koegel *et al.* 2011:online) also suggest the use of various contexts and sources in the compilation of learning objectives. Simpson (2005:144) indicates that outcomes measurement is a challenging process since it is unclear when, how, by whom and how frequently these assessments need to be performed. An in-depth study concerning outcomes measurement in ASD education will be recommended.

5.5.6 Classroom structure

The structuring of the classroom plays a role in optimising socialisation amongst learners, or to create stimulus-free workstations that assist learners to focus on tasks (cf. Table 2.5 and Table 2.8). Educators (cf. Table 4.47) reported positioning learners around tables (n=57); in stimulus-free workstations (n=53) ;or on a mat (n=51), which are in keeping with global strategies (cf. Table 2.5 and Table 2.8). Ordinary classroom structuring (n=13) did not appear to be widely

used and the researcher suspected that this arrangement would be used more in full-service schools.

Although learners with ASD appear to benefit from visual structure, many learners also struggle with distractibility and a short attention span (cf. 2.3.1.9). The researcher was therefore interested in determining how educators used visual stimuli to optimise learning in the classroom. A total of 55 of 84 educators (cf. Table 4.48) reported that they had stimulus-rich classrooms, which appears to be in contrast with opinions that stimulus-rich environments distract learners (cf. Table 2.8). The content and type of information educators visually display require more investigation.

5.5.7 Safety during break

Learners with ASD often have atypical play skills; sensory processing difficulties; motor deficits; attention deficits; cognitive impairment; and behavioural challenges, which may increase their risk for injury in unstructured settings (cf. 2.3.1.7, 2.3.1.9, 2.3.1.11). The researcher was therefore interested to determine what strategies educators employed to ensure the safety of learners during break time. Unfortunately, no previous research studies could be found on the topic. The strategies reported by educators were divided into structured and unstructured supervision and environmental strategies (cf. Table 4.49). Structured supervision (n=28) included specific adult-learner ratios or formal buddy systems. Structured environments (n=20) indicated strategies such as secure, fenced play areas, safety checks and repairs on playground equipment. Only five educators reported the use of unstructured environmental adjustments such as the removal of potentially harmful objects in the environment. The majority of educators (n=61) indicated the use of unstructured supervision where educators supervised learners in accordance with a break time schedule (cf. Table 4.49).

5.5.8 Conclusions on practices and challenges concerning classroom management practices according to the results of this study

5.9.8.1 *Afrikaans, English and combinations thereof are the main language of instruction of the educators who participated in the study:*

Few schools presents ASD education in African languages, which may be a challenge for learners with African home languages (cf. 5.5.1).

5.9.8.2 *Autism-specific education classes had on average 7 to 10 learners, with significantly more boys than girls:*

Providing specialised education for 7 to 10 learners is a very costly service model. However, educators reported a ratio of 1:6 as ideal, and indicated high numbers of learners as a challenge. The gender ratio of one female for every seven males is in keeping with international findings (cf. 5.5.1). However, this complicates the selection of gender-appropriate activities in class.

5.9.8.3. *Class assistants are mostly used in autism-specific – and special schools:*

A total of 70 educators reported to have class assistants. Autism-specific and special schools appeared to be better resourced in this regard (cf. 5.5.4).

5.9.8.4. *In keeping with global trends, schools used a variety of educational approaches (partial inclusion and ASD classes) to accommodate the needs of individual learners*:

Educators indicated using a variety of educational approaches (partial inclusion and ASD classes) in relation to the needs of individual learners (cf. 5.5.3).

5.9.8.5. *There is variability in the use of curriculums and curriculum differentiation strategies for learners with ASD within the South African context*:

The type of school dictated the use of curriculum. Autism-specific mainly used self-developed curriculums and the ELSEN curriculum developed by SANASE. Educators from special schools reported to use self-developed curriculums and the ELSEN curriculum developed by SANASE, and differentiated CAPS appeared to be mostly used. Full-service schools mainly used differentiated CAPS (cf. 5.5.3).

5.9.8.6. *The practices concerning individual support plans, daily and weekly schedules are similar to global practices:*

The majority of educators reported the use of individual support plans (ISP). Some 90% of educators reported that other stakeholders were involved in the design of the ISP. The majority of educators reported using daily and weekly schedules (cf. 5.5.4).

5.9.8.7. *The classroom structuring of ASD classes is in keeping with recommended practices:*

Educators reported positioning learners around tables in stimulus-free workstations, or on a mat, which are in keeping with global strategies. Ordinary classroom structuring (n=13) did not appear to be widely used. Educators did, however; report stimulus-rich classrooms, which are

in contrast with recommendations that learners with ASD require stimulus-free areas to avoid visual distractibility (cf. 5.5.6).

5.9.8.8. *The majority of educators indicated the use of unstructured supervision during break time:*

The majority of educators indicated the use of unstructured supervision, where educators supervised learners in accordance with a break time schedule (cf. 5.5.7).

5.6 THE USE OF AUTISM-SPECIFIC SUPPORT STRATEGIES

Educators require specialised knowledge, skills and resources to optimally enhance the development, behaviour, learning and functional independence of learners with ASD (cf. 2.3.5.2). In recent years, there has been a dramatic increase in the quantity and range of focused interventions, comprehensive treatment models, teaching programmes and classroom strategies proposed for learners with ASD (cf. 2.3.5.7). These approaches include the use of ASD programmes, assistive technology, alternative teaching strategies, environmental adjustments, and specialised human resources. Since limited training opportunities and access to resources appeared to be challenges within the South African education context (cf. Table 4.58), the researcher was interested in determining the practices and challenges concerning diagnostic specific support.

The discussion includes the following aspects:

5.6.1 Utilisation of research-based programmes;

5.6.2 Educators' rating of their skills level in diagnostic-specific support;

5.6.3 Use of assistive technology, alternative methods and other strategies; and

5.6.4 Conclusions on practices and challenges concerning the use of autism-specific support strategies

5.6.1 Utilisation of research-based programmes

Few educators seemed to use researched-based programmes on a monthly basis. The majority of educators appeared to either use the same programmes on daily or weekly basis, or would never use a programme at all (cf. Table 4.50). More than 50% of educators (cf. Table 4.11) were trained in the Children Picture Exchange Communication System (PECS) (n=55; 61%) and Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH) (n=51; 56.7%). Globally, these two programmes are trained, used and

recommended for autism-specific education (cf. 2.3.5.8). Educators rated TEACCH (n=41; 45.6%), PECS (n=40, 44.4%) and Makaton Language Programme (n=27, 30.0%) as the three most popular international, science-based programmes (cf. Table 4.51). Nevertheless, educators appeared to be trained in (cf. Table 4.11) and used (cf. Table 4.50) a wide range of programmes. According to Hanbury (2005:16-17) a combination of elements from different approaches, which considers the interaction of different parts of the syndrome, appears to be an effective intervention strategy, whereas customised programmes have the disadvantage of decreased scientific value (cf. 2.3.5.8).

The Tiny Handz programme (n=42; 46.7%), the Fishbowl programme (n=33, 36.7%) and the Special Needs Adapted Programme (n=25; 27.8%) are South African developed programmes (cf. 2.3.5.7) in which educators reported to be trained (cf. Table 4.11). Although the Makaton Language programme (n=41; 45.6%) is considered to be an international research-based programme for ASD (Duffy & Sheehy 2009:91), an equal number of educators reported to be trained in Tiny Handz (cf. Table 4.11). Educators indicated that they used South African developed programmes on a daily or weekly basis (cf. Table 4.50) and approximately 20% of educators reported Tiny Handz (n=19) and Fishbowl (n=18) as the most popular programmes (cf. Table 4.51). South African developed programmes appeared to gain increasing support, possibly due to the affordability, accessibility and relevance to the South African context, given the reality of limited resources and training opportunities (cf. 2.4.3.1, 2.4.3.2). The researcher was unable to access any scholarly literature concerning the scientific value of these South African developed programmes.

The Applied Behaviour Analysis is considered to be a scientifically based programme (Simpson 2005:146), but it appeared to be less used (cf. Table 4.50) and trained (cf. Table 4.11) in the South African context. A total of 31 educators (34.4%) reported training in the following other programmes (cf. Table 4.11): Non-punitive restraint (n=2; 2.2%); ASD certificate of competence (n=1; 1.1%); Studio 2 (n=1; 1.1%); Studio 3 (n=6; 6.7%); Alternative Augmentative Communication (n=7; 7.8%); Social Stories™ (n=1; 1.1%); Apple software (n=2; 2.2%); and informal ASD courses (n=11; 12.2%). Alternative Augmentative Communication (cf. 2.3.5.8) and Social Stories™ (Gray 2012:online and Kincaid *et al.* 2004:194) are mentioned in literature as commonly used in autism-specific education. However, not all these programmes have been proven to have scientific value in autism-specific education.

Five educators (cf. Table 4.11) reported to be trained in the use of the Developmental, Individual Difference, Relationship-Based Model (DIR® / Floortime™), but 33 educators indicated that they used the programme on a daily basis (cf. Table 4.50). Nevertheless, only

five educators rated the programme as most beneficial to learners with ASD (cf. Table 4.51). Social Stories™ (cf. Table 4.50) seemed to be used daily (n=20), weekly (n=29) or monthly (n=9). However, only one educator indicated to be trained in the use thereof (cf. 4.4.6). Some 19 educators rated Social Stories™ as beneficial to learners with ASD (cf. Table 4.51). Although educators indicated that they used DIR® / Floortime™ and Social Stories™, few educators appeared to have received formal training in the use of these programmes. Hence, this study indicates that educators used programmes for which they did not necessarily receive training, or considered using programmes that added the most benefit to learners. These findings are aligned with the results in international studies (Koegel *et al.* 2011:online and Simpson 2005:141-142) and is possibly not unique to the South African context.

5.6.2 Educators' rating of their skill level in diagnostic specific support

Hanbury (2005:1-2) indicates that classroom practices (creating a responsive classroom, a structured class routine, opportunities for social interaction, positive behaviour support, etc.) are predominantly influenced by the knowledge, attitude, skills and experience of educators concerning autism-specific support. In spite of a dramatic increase in the prevalence of ASD and the availability of programmes, there appears to be a global decline in literature focusing on educator training and effectiveness (cf. 2.3.5.3). Given the limited training opportunities in the South African context, the identification of educators' rating of their skills level in diagnostic-specific impairments was a vital consideration.

Table 4.52 indicates that more than 50% of educators reported that they were developing skills in:

(i) Sensory processing and praxis;
(ii) Motor control;
(iii) Socio-emotional control and behaviour; and
(iv) Activity level and focus.

Some 7-10% of educators indicated uncertainty regarding their skills in:

(i) Destructive and self-stimulatory behaviours;
(ii) Sensory defensiveness;
(iii) Decreased social sensitivity;
(iv) Poor social interaction;
(v) Preoccupation with objects and activities;
(vi) Withdrawal from classroom activities; and
(vii) Hyperactive behaviours.

Many of the abovementioned dysfunctions appeared to be related to sensory processing and praxis difficulties (cf. 2.3.1.7). Sensory behaviours were included in the descriptors for "restricted, repetitive patterns of behaviours" in the DSM-5 and fall within the specialist field of occupational therapy (cf. Miller 2013:online). This specialist knowledge of occupational therapists positions them to equip educators concerning sensory processing and the challenges it presents regarding participation in daily activities. The majority of schools (cf. Table 4.27) were resourced with occupational therapists, which may create an opportunity to equip educators regarding the use of sensory strategies.

Poor socio-emotional control and behaviour (cf. Table 4.52) were also indicated as areas in which educators required more training. Autism is a behaviour defined condition and therefore behavioural analysis is essential in developing educational support strategies (Adreon 2005:59-60). Educators need to understand the factors that contribute to behaviour, the cycle of tantrums and strategies to enhance self-awareness and calming (Adreon 2005:61:69). Table 2.10 describes classroom strategies to enhance emotional and behavioural support in learners with ASD. Applied Behaviour Analysis (ABA) is mentioned as a systematic process where behaviour is studied and modified through manipulation of the environment. Only 17 educators (cf. Table 4.11) had received training in Applied Behaviour Analysis, while 15 educators (cf. Table 4.50) used the programme on a daily basis. Hence, educators participating in this study indicated a need for structured programmes and strategies to manage challenging behaviour and socio-emotional control.

Educators also expressed a need for training in the management of destructive and self-injurious behaviours, as well as hyperactive behaviour. More than 50% of educators reported that they were developing skills in:

(i) Sensory processing and praxis;
(ii) Motor control;
(iii) Socio-emotional control and behaviour; and
(iv) Activity level and focus.

Attention Deficit Hyperactivity Disorder (ADHD) often co-occurs in learners with ASD, which complicates the disability profile. Learners with both ADHD and ASD present with lower cognitive functioning, social processing difficulties, motor deficits, poor executive functions and delays in adaptability (Murray 2010:online and Landa & Rao 2013:online). Self-injurious behaviour is considered to be repetitive behaviour restricted to the "lower level" (LoVullo & Matson 2008:61) and is complex to manage in learners with ASD. Although training in these

areas is vital, the researcher is of the opinion that many educators will continue to struggle with the management of learners with both ASD and ADHD as well as those with self-injurious behaviours due to the complexity of these behaviours.

5.6.3 Use of assistive technology, alternative methods and other strategies

Due to the intensive support needs of learners with ASD, they often require assistive technology, alternative methods and other strategies to assist them in compensating for functional deficits and to optimise learning. Children with ASD appeared to learn well through visually-based approaches that assist learners to focus on relevant stimuli, to condense content to the essential, to make abstract concepts concrete, and to shift attention in a structured way (Cook *et al.* 2011:8). Visual support (visual scripts, schedules, photographs, line drawings, words, visual task analyses, etc.) have been proven efficient in increasing work completion for learners, increasing social skills, improving communication and decreasing problem behaviours (Fettig *et al.* 2011:29-35). Between 39-51 educators reported to use visual aids (Velcro worksheets and sequence cards, visual schedules, line drawings, pictures and photos) on a daily basis (cf. Table 4.53). However, the majority of educators (>59%) indicated that they do not use hi-tech assistive technology such as data projectors (n=44) and interactive whiteboards (n=39). A total of 15 educators reported daily use and 29 educators indicated weekly use of computer workstations. Nevertheless, 19 educators indicated that they never use computer workstations.

In addition to the classical diagnostic criteria of ASD, learners can experience the symptoms of inattention, hyperactivity and impulsivity seen in ADHD. Hyperactive impulsive symptoms include fidgeting; challenging in-seat behaviour; inappropriate running and climbing; disturbance of others; and increased psychomotor activity (American Psychiatric Association 2013(2):59). These behaviours affect the child's capacity to focus on activities, to cooperate in the classroom and to benefit from the educational programme. Chairs with postural straps (New Brunswick Department of Education 2005:71) are used at times to enhance in-seat behaviours in learners with hyperactive behaviours. The majority of educators (n=41) reported that they never used restrain chairs, but seven educators reported daily use and 12 educators weekly use of restrain chairs (cf. Table 4.53). Hence, restrain chairs did not appear to be commonly used, but there are educators who used this when required.

Learners with ASD struggle with sensory modulation difficulties, which affect their arousal, attention, emotional responses and general behaviour in class (Henderson *et al.* 2011:76). They can be distracted by a cluttered desk or by the movements of another learner who is

sitting too close. Except for the use of trampolines and sensory rooms, the majority of educators indicated that they never use sensory strategies (cf. Table 2.8). The low usage of sensory strategies and devices may be linked to the fact that educators reported that they were uncertain or still in the process of developing skills in the management of sensory processing difficulties (cf. Table 4.52). Another possibility is that school-based occupational therapists are responsible for the implementation of sensory strategies and that educators may be less involved in this regard. Both these suggestions require further investigation.

Although delayed onset of language is not a diagnostic criterion for ASD in the DSM-5, most individuals with ASD present with varying levels of language deficits. These deficits range from receptive and expressive difficulties, absence of speech, echoed speech and overdeveloped vocabularies (American Psychiatric Association 2013(2):50 and Kaufmann 2012:online). Approximately one-third (35-40%) of children with autism are non-verbal (Hughes *et al.* 2011:56). Educators indicated that they made use of picture files (n=40) and communication boards (n=44) to assist them in communicating with learners with ASD. These devices are also recommended in literature (Lee and Low 2011:23) and used with research-based programmes e.g. the Makaton Language Programme (New Brunswick Department of Education 2005:12-13, 37).

Clumsiness, dyspraxia, poor motor control, impulsivity and decreased sensory processing appeared to be some of the factors that increased risk of injury in learners with ASD. Many learners also present with self-injurious behaviour. However, results in Table 4.53 indicated that the majority of educators indicated that they did not make use of protective clothing.

Results in Table 4.54 display that the majority of educators indicated that visual schedules in files (n=54) were by far the most popular assistive device. Velcro worksheets (n=26) and trampolines in class (n=22) also appeared to be popular. Results in Table 4.55 indicate that few educators (<20%) responded when asked to name other useful strategies in class.

Educators recommended structured and unstructured play, individualised structure and support, discipline and behavioural strategies, as well as music and singing as useful strategies.

5.6.4. Conclusions on practices and challenges concerning the use of autism-specific support strategies according to the results of the study

5.6.4.1 *The training, perceived value and usage of PECS, TEACH and the Makaton Language Programme appeared to be similar to global trends:*

Since educators reported limited access to research-based programmes and accredited training programmes; the credibility of the training in South Africa and the efficiency in the use of techniques require further investigation (cf. 5.6.1).

5.6.4.2 *Training, development and implementation of South African developed programmes are reported:*

The scientific value of these programmes requires more research since it has only been recently introduced (cf. 5.6.1).

5.6.4.3 *Educators indicated that they were trained in and using a wide range of programmes on a daily basis:*

Educators appeared to use an eclectic approach, with elements from different approaches. The disadvantage is that the customised and selective use of research-based programmes decreases the scientific value of the approach. The scientific use of research-based programmes requires further investigation (cf. 5.6.1).

5.6.4.5 *Educators reported that they require more training, skills and classroom support strategies concerning the deficits related to ASD:*

Further development was indicated concerning management strategies in: sensory processing and praxis; motor control; socio-emotional control and behaviour; as well as activity level and focus (cf. 5.6.2).

5.6.4.6 *Educators reported high usage of low-tech visual aids on a daily basis, but limited usage of high-tech assistive technology:*

Educators reported high usage of low-tech visual aids (Velcro worksheets and sequence cards, visual schedules, line drawings, pictures and photos) on a daily basis. Computer workstations appeared to be used, but other devices (interactive whiteboards and data projectors) were seldom used. Variability in the availability of hi-tech devices appears to occur (cf. 5.6.3).

5.6.4.7 *The efficient use of sensory strategies and devices is influenced by the knowledge and skills of educators:*

Educators reported to use devices such as trampolines and sensory rooms, but they also indicated that they require more training regarding the management of sensory strategies and devices (cf. 5.6.3).

5.7 CHALLENGES AND CRITICAL SUCCESS FACTORS

Autism-specific education is challenging because of the complex symptoms, atypical learning styles, and behaviours not aligned with expected classroom behaviour. The challenging behaviour and severe learning disabilities of learners with ASD often leave educators feeling unskilled (Smith-Myles 2005:2-5). General mental health difficulties and occupational burnout appeared to be significantly higher in educators of ASD learners (Ahmadi *et al*. 2013:20). South African ASD educators seem to deal with contextual challenges, which include systemic barriers and operational difficulties (cf. 2.4) The researcher was therefore interested to determine the challenges of ASD educators, to investigate whether they experience accomplishment in their jobs and what they perceive as critical to the success of ASD education.

This section deals with the following aspects:

5.7.1 Educators' experiences of accomplishment and reason for working with ASD;
5.7.2 Educators' rating of potential challenges;
5.7.3 Opinions on critical success factors; and
5.7.4 Conclusions concerning challenges and critical success factors.

5.7.1 Educators' experiences of accomplishment and reason for working with ASD

Educators with positive attitudes towards their jobs, supervisors and general work conditions appear to have fewer signs of burnout, and increased job satisfaction (Ahmadi *et al.* 2013:20-27, cf. 2.3.3). Educators who show positive attitudes towards the learners they teach, and towards their ability to have a positive impact on the development of children with ASD, appear to facilitate better social adjustment and fewer behavioural challenges (Robertson *et al.* 2003:online). The results of this study indicated that 82 educators (95.4%) in ASD classes (cf. 4.8.3) experienced accomplishment in their jobs. Some 52% of educators reported positive attitudes towards learners with ASD, personal attributes and choice (cf. Table 4.57) as reasons why they decided to work in ASD education. Hence, these results are in agreement with the findings of other researchers (Ahmadi *et al.* 2013:20-27, cf. 2.3.3) that a positive attitude towards learners and jobs appears to be vital to job satisfaction.

Factors that contribute to positive attitudes of educators towards the education of special needs include: adequate resources; the availability of a support network at school; and involvement in an ASD network or membership to an autism-specific support group (Ahmadi *et al*. 2013:20-27 and Moreno *et al.* 2011:online). The results in the current study indicated adequate access to consumable resources (cf. Table 4.58); the availability of a school support network (cf. Table 4.1, cf. Table 4.14); and affiliation with autism support groups (cf. Table 4.33) in schools. These mentioned support structures possibly contributed to the experiences of accomplishment of ASD educators who participated in this study. However, the severe challenges concerning limited opportunities for training, operational challenges, lack of therapeutic support, limited support by the Department of Education and restricted opportunities for debriefing (cf. Table 4.58) can influence the attitudes of educators in the future.

Educators teaching learners with ASD often have a strong need for training, support and development (Rodrígues *et al.* 2011:online), and increased knowledge, skills and experience in ASD education were also described as critical success factors for ASD education (cf. 2.3.5.3). A total of 25 educators (27.8%) indicated personal and professional development as a reason for deciding to work in ASD education (cf. Table 4.57). Although educators indicated a need for training and development, 44 educators reported limited training in ASD education as a severe challenge (cf. Table 4.58). Hence, there appeared to be conflict between educators' need for training and the availability of training opportunities within the South African context.

Some 17 educators (cf. Table 4.57) reported that operational requirements because of the increasing demand for ASD prompted school management teams to start autism-specific education at their schools. It was uncertain whether their involvement in the ASD education was compulsory or by choice. The researcher is of the opinion that existing ASD classes at schools should be requested to expand their ASD services due to an increasing demand for services. In keeping with the critical success factors of ASD education and the job satisfaction of educators, schools need to select educators for ASD classes who are positive towards learners with ASD, and have the personal attributes and preference to work with these learners.

Educators also indicated the progress of learners (n=43), the positive impact of ASD education on the lives of learners and carers (n=30); as well as the unique manifestation of ASD (n=20) as factors that contributed to their experiences of accomplishment at work (cf. Table 4.60). Two educators indicated negative experiences concerning their accomplishment when working

with learners with ASD, and one educator indicated a mixed experience. The high burden of care of the learners and limited resources at their schools were reported as the main reasons for their frustration (cf. Table 4.60). These findings appeared to be aligned with the results of Moreno and colleagues (2011:online), who indicated that perceptions regarding resources and limited experience in handling learners with ASD may contribute to negative attitudes concerning special needs education. Other factors that may contribute to negative experiences are time pressure, high administrative loads, decreased teacher-parent relations, decreased teacher independence, team approach in schools and lack of support from school leadership (Moreno *et al.* 2011:online and Skaalvik & Skaalvik 2009:1068-1069). Operational challenges in schools (cf. Table 4.58), decreased parent involvement (cf. Table 4.30, cf. 2.3.5.5), and decreased support from leadership (cf. Table 60, cf. 2.4.3) may affect the job satisfaction of ASD educators in future.

Educators working with learners with ASD and their intensive support needs are at higher risk for burnout and poor job satisfaction (Ahmadi *et al.* 2013:20-27). Educators employed at autism-specific (n=6) and special schools (n=20) indicated limited opportunity for debriefing as a severe challenge. Although the majority of educators indicated a sense of accomplishment concerning their work, the situation may change in future given increasing operational demands, limited support and resources.

5.7.2 Educators' rating of potential challenges

Educators rated the traits and behaviours related to ASD as a severe challenge (cf. Table 4.58), which is in keeping with global views (cf. 2.3). The successes in the improvement of diagnostic-specific symptoms and functional independence were indicated by participants as providing them (n=43; 52.4%) with a sense of accomplishment. However, slow learner progress appeared to cause burnout and frustration (cf. Table 4.60). Educators in full-service schools (cf. Table 4.59) did not seem to perceive the traits and behaviours of ASD as a severe challenge, possibly because they mainly deal with learners who presented with mild symptoms. The personal factors (attitude, level of experience with learners with ASD, personal attributes, etc.) seemed to influence the perception of educators concerning the complexity of traits and behaviours (cf. 2.3.3). An analysis of these factors is beyond the scope of this study and requires further investigation.

Some 44 educators indicated limited training in autism-specific education as a severe challenge (cf. Table 4.58), in contrast with findings of international researchers (Adeniyi 2009:online and Moreno *et al.* 2011:online) where educators in special schools showed a

lower demand for training compared to educators in mainstream settings. Educators in South African special schools (cf. Table 4.59) showed a high demand for training in autism-specific education. The practice of autism-specific classes being linked to existing special schools may contribute to the need for training, since educators may be specialists in special needs education but not necessarily in autism-specific education.

More than 50% of educators in autism-specific and special schools indicated inappropriate curriculums and limited access to research-based programmes as a severe challenge (cf. Table 4.58). A variety of curriculums and strategies for differentiation appeared to be used in schools (cf. Table 4.41). Guidance regarding curriculum implementation, adaptation and differentiation are managerial functions at school, district, provincial and national level (cf. 2.4.3, 2.4.4.). However, limited leadership and support from management (at all levels) were reported as severe challenges concerning the implementation of inclusive policy within the South African context (cf. Tables 4.58 and Table 4.59). Educators in autism-specific and special schools who deal with learners with intensive support needs indicated the increasing numbers of learners in classes as a severe challenge (cf. Table 4.59). The majority of classes had 7-10 learners (cf. Table 4.36), while educators perceived an educator-learner ratio of 1:6 to be ideal (cf. Table 4.61). The increasing demand for ASD education, limited resources and high cost of specialised education appeared to be a challenge in the South African context.

Parent involvement was perceived to be a critical success factor of ASD education (cf. 2.3.5.4), but educators that participated in the study (cf. Table 4.59) reported limited insight and cooperation of parents to be a severe- (n=28; 34.6%) or moderate challenge (n=38; 46.9%). Schools also seemed to struggle involving parents through direct and regular feedback (cf. Table 4.29, cf. Table 4.30, cf. Table 4.31). These findings are also in keeping with the results of other research studies in the South African context (cf. 2.4.2).

Educators in full-service and special schools indicated that they perceived the limited support from the Department of Education as a severe challenge (cf. Table 4.59). Since autism-specific services only recently commenced at these schools, there may be an increased need for vision, structured leadership and guidance concerning best practices within the South African context.

5.7.3 Opinions on critical success factors

Educators reported 18 clusters of critical success factors (cf. Table 4.61) and these critical success factors are similar to views of other researchers and specialists in the field of autism-

specific education (Boutot 2013:online, Dunlap *et al.* 2003:online, Hanbury 2005:24 and Hughes *et al.* 2011:58). The researcher is of the opinion that the results in Table 4.61 could be clustered in the following five sub-divisions of critical success factors:

Firstly, the results indicated critical success factors that were educator-focused. These critical success factors were supported by approximately 20% of educators and included:

(i) Personal attributes;
(ii) Attitude, expectations and commitment;
(iii) knowledge, skills and practical experience; and
(iv) Insight, integration and reasoning of the educator.

Educators also viewed their choice to work with learners with ASD as well as their personal attributes as reasons for working in autism-specific education (cf. Table 4.57). Hanbury (2005:1-2) and other authors (Wagner 2011:29) also highlighted the critical role of the educators in understanding the impact of the condition on each child, the factors that contribute to the behaviour of the child, as well as the attitude of educators towards learners and their unique learning needs.

Secondly, 7-15 educators mentioned critical success factors related to the curriculum and teaching programmes. These factors are also supported in the literature (cf. 2.3.5.5) and included an autism-specific curriculum and teaching framework (New Brunswick Department of Education 2005:48-49); diagnostic-specific support within an all encompassing programme (Bazyk & Case-Smith 2010:713); an individual support plan and tailor made education (Hughes *et al*. 2011:58); as well as inclusive education and diversity management (Boutot 2013:online). Nevertheless, there are authors (Frederickson & Jones 2010:1094 and Wagner 2011:27-28) who recognise the challenges of including learners with ASD into mainstream settings and therefore do not recognise inclusion as a critical success factor for ASD education (cf. 2.3.4). This study had only a small sample of full-service schools and did not focus on inclusive practices in mainstream schools. A research study regarding the inclusion of learners with ASD in mainstream settings may provide more information regarding practices in the South African context.

Thirdly, the results indicated the role of operational processes and management as critical to the success of autism-specific education. These factors are also supported in the literature and included adequate resources (Moreno *et al.* 2011:online); cooperation of all stakeholders (cf. 2.3.5.5); parent involvement and transfer of skills to the home environment (cf. 2.3.5.4); an integrated, multi-professional approach (cf. 2.3.5.1); and support from school- and district-

based management teams (cf. 2.3.5.3, Koegel *et al.* 2011:online). Although educators viewed the necessity of operational processes and management as critical to the success of autism-specific education, it appeared as if this area posed significant challenges to educators within the South-African context (cf. 2.4.2, 2.4.3). Results in Table 4.58 indicated moderate to severe challenges regarding most aspects of operational challenges and resources, integrated teams and support from management. The efficiency of classroom-based activities is strongly influenced by the commitment of school management teams and educators to implement research-based practices (Koegel *et al.* 2011:online). Thus, the next group of critical success factors (i.e. classroom-based strategies) would possibly be influenced by the mentioned operational and management challenges.

Fourthly, the results indicated the role of classroom strategies as critical to the success of autism-specific education. These strategies included discipline; routine; structure and consistency; a sense of humour and relaxed class atmosphere (Dunlap *et al.* 2003:online); and small classes with an educator learner ratio of 1:6. Although learners with ASD have high intensive support needs, the high cost of specialised education may challenge educators to have more learners in their classes (cf. 2.2.11, 2.4.1, Daily 2012:online). Literature also made mention of multiple, context-based assessment strategies (cf. 2.3.5.6); research-based intervention strategies in the classroom (cf. 2.3.5.6); promotion of positive peer interaction; and analysis of challenging behaviour (Boutot 2013:online) as critical success factors. These factors did not appear to be prominent in the current study.

Only one educator mentioned the use of medication as a critical success factor for successful ASD intervention. Although medication (cf. 2.2.9) may improve the behaviour and capacity of individual learners to engage in learning, the researcher is of the opinion that this could not be generalised as a critical success factor for all learners with ASD.

5.7.4 Conclusions: challenges and critical success factors according to the results of this study

5.7.4.1 *The profile of ASD educators differs from other educators in the South African context:*
The majority of educators who participated in the study were experienced, female educators between the ages of 40-60 years, which is in agreement with global findings. More experienced educators leave the profession due to limited financial prospects later in their careers. Currently, this does not appear to be case for ASD educators (cf. 5.2.1, 5.2.2).

5.7.4.2 *The majority of educators who participated in the study indicated that they experience job satisfaction.*

The majority of educators (n=82, 95.4%) in ASD classes reported to experience accomplishment in their jobs. Positive attitudes towards learners with ASD, personal attributes, preference, professional development and personal growth were primary reasons for working in ASD education (cf. 5.7.1).

5.7.4.3 *Educators employed in autism-specific education are at high risk for occupational burnout:*

Literature indicated that educators of ASD are at high risk for occupational burnout. Factors that influence the job satisfaction of educators were indicated as personal factors; adequate resources; the availability of a support network at school; and involvement in an ASD network or membership to an autism-specific support group. Educators reported these factors as challenges at their schools (cf. 5.7.1).

5.7.4.4 *The critical success factors for autism-specific education indentified by the educators who participated in the study are similar to those identified in international literature.*

The critical success factors identified in the study are similar to what is described by other researchers and authoritarians in ASD education. Critical success factors were related to the following four domains:

(i) Educator-focused;
(ii) Curriculum-focused;
(iii) Operational processes and management; and
(iv) Classroom management strategies (cf. 5.7.3).

5.7.4.5 *Challenges concerning autism-specific education are divided into two groups, namely global challenges and challenges specific to the South African context.*

i) *Global challenges*: Global challenges were mainly derived from literature and include:

- The increased prevalence of ASD, which raises the demand for ASD education (cf. 2.2.6);
- The recent introduction of the DSM-5, which causes debates and insecurity (cf. 2.2.2);
- Challenges concerning the inclusion of learners with ASD in mainstream settings (cf. 2.3.4); and
- The practical implementation of the critical success factors of autism-specific education are challenging (cf. 5.7.3).

ii) *Challenges in the South African context*: Educators reported the following challenges:

- Limited training in autism-specific education;

- Inappropriate curriculums and limited access to research-based programmes;
- Increasing numbers of learners in classes;
- Limited chance to work with or limited support from therapists;
- Limited parent involvement; and
- Lack of management, leadership and support at district, provincial and national level (cf. 5.7.2).

5.7.4.6 *There appears to be an interaction between the challenges and practices of autism-specific education in the South African context that requires further investigation:*
A challenge in a specific area, e.g. limited access to international research-based programmes seemed to stimulate the development of a new practice, e.g. the development of context-based programmes. Nevertheless, the implementation of new practices, e.g. a context-based programme, appeared to create new challenges in itself, e.g. the scientific value of the newly developed programme has not been researched.

5.8 SUMMARY

Through the interpretation and discussion of the results presented in Chapter 4, the practices and challenges relevant to each study objective were identified. The results in the study confirm global practices and challenges concerning autism-specific education. The critical success factors for autism-specific education seem to be uniform, irrespective of contextual factors. Global challenges include the increasing demand for the expansion of autism-specific education; the complexity of managing learners with ASD; costs of specialised education; and decreasing operational resources. However, there are practices and challenges that are unique to the South African context. Limited resources appeared to have stimulated the development of context-based educational approaches, training programmes, support structures and ASD education facilities. Socio-political and socio-economical challenges, and challenges within the South African education system seem to create unique barriers concerning ASD education in South African public schools. These barriers include, amongst others, the implementation of inclusive practices; limited structure and support from the Department of Education concerning curriculums differentiation and standardised operational procedures; and variability in the provisioning of resources.

Chapter 6 will focus on the limitations of the study, the final conclusions and recommendations of the study.

CHAPTER 6

LIMITATIONS, CONCLUSIONS AND RECOMMENDATIONS

6.1. INTRODUCTION

The previous chapter interpreted and discussed the results referring to relevant literature. Valuable findings have been made concerning practices and challenges of autism-specific education in South African public schools. In this chapter the limitations (6.2), conclusions (6.3), recommendations (6.4), summary (6.5) and the conclusions will be discussed.

6.2 LIMITATIONS OF THE STUDY

The delimitation of the problem (cf. 1.4) discussed factors that limited the scope of the study. In addition, the following factors can also be viewed as limitations to the study:

Although, the majority of educators employed at autism-specific schools were from the Western Cape and Gauteng, the response rates (cf. Figure 4.1) from these schools were lower than expected. School principals indicated that staff members were under pressure due to high operational demands (cf. 4.2). The lower response rate form autism-specific schools is a possible limitation in the study since it can be assumed that these schools would reflect best practices in terms of autism-specific education (cf. 5.2.4.). The low representation of autism specific schools were also affected by inaccuracies in the number of educators at an autism specific school in Gauteng which possibly affected the numbr of educators targeted for the study. Some of the study results, however, were broken down in terms of autism-specific-, special- and full-service schools to display the practices and challenges in different settings. Currently, the expansion of autism-specific schools to other provinces is not a national priority and the resources and operational practices of autism-specific schools may not be relevant to full-service and special schools (cf. 2.4, cf. 5.2.4.3). Special- and full-service schools are linking autism-specific education to existing operational frameworks (cf. 5.2.3). Fortunately, educators from special schools were well represented in the study and their service models are more relevant to autism-specific services in the Motheo District (cf. 5.2.3).

The low representation of full-service schools can also be perceived as a limitation in the study. However, although few full-service schools that offer autism-specific education were identified, all the identified educators participated. The low presentation of full-servic therefore not a limitation in the study, but a reflection of the limited role full-service schools are playing concerning autism-specific education within the South African context.(cf. 5.2.3, 5.2.4.2).

6.3 CONCLUSIONS

The aim of the study was to identify the practices and challenges concerning autism-specific education within South African public schools. Through the interpretation and discussion of the study results, it was possible to make conclusions that provided valuable insights regarding the complexity of autism-specific education within the South African context. The conclusions will now be discussed in terms of the five research objectives:

6.3.1 Training and experience of educators

The following conclusion was made from the first research objective, which investigated the level of training and experience of educators of autism-specific classes in public schools nationally:

6.3.1.1 *Educators and school-based therapists require training and support in autism-specific education:*

Educators teaching learners with ASD within the South African context have variable standards of qualifications and levels of specialisation (cf. 5.3.6.1). Autism-specific education has been recently introduced in the South African context and there is a need for mentorship, support and training from the Department of Education (cf. 5.3.6.2). School-based professional working groups, autism support groups and educators themselves take responsibility to create opportunities for professional development and training (cf. 5.3.6.3). Educators in ASD classes reported a high demand for training in autism-specific education, but indicated limited training opportunities and support from the Department of Education as a severe challenge. Since educators do not always have access to training in research-based programmes, they often use programmes that they are not optimally trained for.

Educators require more training and guidance in:

i) Sensory processing and praxis;

ii) Motor control;

iii) Socio-emotional control and behaviour; and
iv) Activity level and focus (cf. 5.6.2, cf. 5.6.4.5).

School-based therapists play varying roles in the enablement of educators, but they also require opportunities for continued professional development.

6.3.2 School-based operations

The following conclusions were made from the second research objective which was to investigate school-based operations concerning admission criteria and procedures of learners with ASD, extra-curricular services, therapeutic support and parent collaboration:

6.3.2.1 *Barriers in the implementation of inclusive policy and operational procedures hamper autism-specific education services:*

Educators reported lack of management, leadership and support at district, provincial and national level (cf. 5.7.2), and inadequate access to specialised resources and provisioning of training from the Department of Education. The national strategy on Screening, Support, Identification and Assessment is implemented with limited success due to insufficient training and resources. The full spectrum of learners with ASD is currently not accommodated in autism-specific, special and full-service schools. Autism-specific schools are filled beyond capacity and these schools are limited to three provinces (cf. 5.2.4.3). ASD classes linked to special schools (mainly schools for learners with intellectual disability) are the fastest growing service model for learners with moderate to severe ASD (cf. 5.2.4.1). Mainstream and full-service schools offer limited autism-specific support and the inclusion of learners with ASD is challenging in mainstream settings (cf. 5.2.4.2). Full-service schools play a minor role in the provision of autism-specific education to learners with mild to moderate autistic traits (cf. 5.2.4.1).

6.3.2.2 *Schools providing autism-specific education develop their own service models and operational models in accordance to the availability of resources:*

Schools have similar admission criteria and procedures concerning autism-specific education (cf. 5.4.6.2.) which include:

i) Continence and independence in toileting;
ii) Formal diagnosis of ASD by a medical specialist;
iii) Screening by a school panel;
iv) Age restrictions; and
v) Functional communication and language skills in full-service schools (cf. 5.4.1.4).

The study results indicated that district-based support teams have different levels of efficiency concerning admissions of learners to special schools, the provision of ASD training and support strategies and development of educators.The extracurricular services offered depend on the type of school, the availability of funding, school infrastructure and parent involvement (cf. 5.4.6.3). Learners with ASD can be accommodated in hostels using specific strategies, but access to hostel facilities are limited (cf. 5.5.6.4). Educators indicated that children with ASD are in need of therapeutic services at schools that offer autism-specific education (cf. 5.4.6.5) but there are differences in the availability and utilisation of therapeutic resources (5.4.6.6). Hence, schools provide services in accordance to their resources and current operational models.

6.3.2.3 *Autism support groups play a key role in the expansion of autism-specific education in South African public schools:*

Autism support groups advocate the right of learners with ASD to education and create awareness concerning the unique support needs of these learners (cf. 2.3.5.8). Pressure is created through parent action groups and collaboration with the Department of Education to develop and expand autism-specific education in public schools. Autism support groups provide training for educators in autism-specific education (cf. 2.3.5.8, 5.3.6.3, 5.3.4). Networking and regional support contributes to the development and emotional support of educators and parents (cf. 2.4.2, cf. 5.3.5).

6.3.2.4 *There is a need for collaboration between various stakeholders concerned with autism-specific education:*

Parent-educator collaboration is a critical success factor for ASD education, but parent involvement and transfer of skills from the school to the home environment were indicated to be serious challenges (cf. 5.4.6.7). Schools collaborate well with one another through professional learning groups, but require support, guidance and training from the Department of Education, universities and other authoritarians within the field of ASD. Results indicated that autism-specific education is mainly provided for learners between the ages of 8-13 years, which highlights the role of health practioners and social development in assisting with the early identification in intervention of learners with ASD to ensure readiness for the admission requirements of schools. Opportunities for vocational training in learners older than 13 years are limited and require a collaborative multi-professional approach to increase the employability and community integration of learners who need to exit school.

6.3.3 Classroom management practices

The following conclusions were made from the third research objective which was to investigate classroom management practices in terms of the curriculum, work schedules, monitoring of learner progress as well as activity and environmental adjustments:

6.3.3.1 *Schools use a variety of educational approaches and curriculum differentiation strategies:*

In keeping with global trends, schools used a variety of educational approaches in partial inclusion and ASD classes to accommodate the needs of individual learners (5.5.8.4). There is variability in the use of curriculums and curriculum differentiation strategies for learners with ASD within the South African context. The challenges concerning monitoring and assessment are similar to global challenges.

6.3.3.2 *Visual and environmental structure is an important component of classroom practices in ASD classes in the South African context:*

The classroom structuring of ASD classes is in keeping with recommended practices: The majority of educators indicated the use of unstructured supervision during break time. The practices concerning individual support plans as well as daily- and weekly visual schedules were similar to global practices. The visual strategies and structures used in PECS and TEACCH were used by most educators.

6.3.4 Autism-specific support strategies

The following conclusions were made from the fourth research objective to investigate the use of autism-specific support strategies with reference to research-based programmes, diagnostic specific support strategies as well as assistive technology and alternative methods:

6.3.4.1 *The efficiency in the use of research-based intervention strategies and South African developed programmes require further investigation:*

Training, development and implementation of South African developed programmes are increasing but these programmes require more research (cf. 5.6.4.2). Educators indicated that they were trained in- and used a wide range of programmes on a daily basis (cf. 5.6.4.3.) but the efficiency of this eclectic approach requires further investigation.

6.3.4.2 *The availability of resources and training influenced the use of ASD specific support strategies:*

Educators reported high usage of low-tech visual aids on a daily basis, but limited usage of high-tech assistive technology. The efficient use of ASD strategies, such as sensory processing strategies, and devices is influenced by the knowledge and skills of educators.

6.3.5 Challenges and critical success factors

The following conclusions were made from the fifth research objective which was to investigate the aspects that educators had regarded as challenges and critical success factors in managing learners with ASD in public schools:

6.3.5.1 *Educators agree with international views on critical success factors for autism-specific education, but challenges in the South African education context hamper implementation:*

The critical success factors identified in the study are similar to what is described by other researchers and authoritarians in ASD education. Critical success factors were related to the following five domains:

i) Educator-focused;
ii) Curriculum-focused;
iii) Operational processes and management; and
iv) Classroom management strategies (cf. 5.7.3).

The practical implementation of the critical success factors of autism-specific education is hampered by challenges in the South African education system (cf. 5.7.3).

6.3.5.2 *Educators employed in autism-specific education within South African public schools are at risk for occupational burnout:*

The educators who participated indicated that they experienced feelings of accomplishment in educating learners with ASD (cf. 5.7.4.2). Recognition from management and parents, operational support and opportunities for personal growth and professional development were indicated as factors that contributed to their job satisfaction (cf. 5.7.4.1). These educators are at high risk for occupational burnout (cf. 5.7.4.3) since critical success factors such as training and access to ASD-specific resources are not met in all schools (cf. 5.7.4.5). Educators reported the following challenges which are all related to barriers in the current education system:

i) Limited training in autism-specific education;
ii) Inappropriate curriculums and limited access to research-based programmes;

iii) Increasing numbers of learners in classes;

iv) Limited chance to work with or limited support from therapists;

v) Limited parent involvement; and

vi) Lack of management, leadership and support at district, provincial and national level (cf. 5.7.2).

6.4 RECOMMENDATIONS

The primary aim of the research study entailed an investigation of practices and challenges in South African public schools that offer autism-specific education with the end goal of contributing to the development of monitoring tools, strategies to support and develop educators and to expand quality ASD education in the Motheo District. The study results indicated practices and challenges on various levels within the education system. However, for the purposes of the study, recommendations will focus on the scope of practise of district-based occupational therapists within the limited availability of resources.

6.4.1 Training and experience of educators

6.4.1.1 *Training and support for ASD educators and school-based therapists:*

The training and support needs of educators have been discussed. In accordance with White Paper 6, school-based therapists should play a key role in the enablement of educators concerning learner support strategies. However, therapists also require strategies for continued professional development and opportunities for specialist training, e.g. in sensory integration. Although the study did not focus on the training needs of therapists, district-based occupational therapists need to support school-based therapists through structured workshops and professional learning committees.

6.4.1.2 *Collaboration with Universities*

Study results indicated that universities are currently playing a minor role in the professional development of educators teaching in autism-specific education. Collaboration with universities is imperative to inform educators regarding the latest research in ASD and autism-specific education. Educators, on the other hand, could also assist universities in developing curriculums and support strategies that consider contextual realities within the South African education system. Universities could also assist with proposed research projects.

6.4.2 School-based operations

6.4.2.1 *Strengthen the role of district-based support teams in terms of ASD support:*
District-based occupational therapists are in a position to enable district-based support teams concerning admission criteria, the critical success factors of autism-specific education and classroom strategies. The study highlighted that district-support teams are currently inefficient in their role concerning the admissions of learners to special schools, advice concerning classroom support strategies and the development of educators through structured training (cf. 6.3.5). The enablement of district-based support teams is vital to optimally assist schools in the provisioning and expansion of quality autism-specific education.

6.4.2.2 *Collaboration with stakeholders:*
The results of this study indicated that there is a need for district-based occupational therapists to collaborate with various stakeholders, which include the following:

Health care occupational therapists: Early identification and intervention were indicated as a critical success factors for autism-specific education, since learners present with developmental delays in various domains and struggle to master pre-academic skills (cf. 5.4.1.3). Since occupational therapists employed in the Department of Education work with school-aged learners, it is essential to collaborate with therapists working with children with ASD younger than five years, to ensure the inclusion of preparation for school admission (cf. 6.3.6) in intervention plans.

Social development: The study results indicated limited access to autism-specific education for learners younger than five years, as well out-of-school learners who do not meet the criteria of formal schooling. There is an urgent need to develop more learning and stimulation centres within the public sector for the mentioned population.

Schools-based support teams: District-based support teams need to collaborate with school-based support teams on a regular basis to ensure improved implementation of inclusive policy and operational procedures, to optimise admission criteria and to enable educators with classroom support strategies.

Autism support groups: Autism support groups are currently playing a key role in the training and support of educators and advocate for the expansion of autism-specific education in the public sector. Collaboration with provincial and district-based support teams is needed to ensure training content and advocacies are aligned with inclusive practices and resources.

Autism support groups may also play a role in motivation of parents to be more involved in school activities.

6.4.3 Classroom practices and autism-specific support strategies:

6.4.3.1 *Development of service standards and monitoring tools to improve and expand quality autism-specific education:*

Study results indicated variability in the use of curriculums; curriculum differentiation strategies; the utilisation of SIAS; and the implementation of critical success factors for autism-specific education (cf. 6.3.1.2*)*. The development of context-based service models and monitoring tools are critical to ensure the development and expansion of quality autism-specific education. The study provided adequate contextual information to guide the development of these mentioned management tools.

6.4.3.2 *Further research*:

The following is recommended as possible research projects in terms of the study results:

i) An investigation concerning the efficiency of South African developed ASD training and educational programmes;

ii) The efficiency of extra-curricular services for learners with ASD; and

iii) The efficiency of current classroom practices in autism-specific education within South African public schools.

6.4.4 Critical success factors and challenges

6.4.2.1 *Advocacy to policy makers concerning operational challenges:*

Advocacy is required to continuously inform policy makers of challenges in the inclusive system and the delivery of autism-specific education through monthly reports, review meetings and provincial professional learning committees.

6.4.2.2 *Support and recognition of best practises:*

The implementation of best practices, such as the use of individual support plans, and critical success factors of ASD education should be encouraged and supported by school management and district-based support teams.

6.4.2.3 *Training of senior management teams concerning factors that prevent occupational burnout in the educators of ASD classes:*

Senior management teams need to understand the factors that contribute to the job satisfaction of educators of ASD classes. Adequate support, recognition and realistic service targets would assist to prevent occupational burnout in educators of ASD classes.

6.5 TO CONCLUDE

The aim of the study was to identify the practices and challenges concerning autism-specific education within South African public schools. The study had five research objects that focussed on:

i) The training and experience of educators of ASD classes;
ii) School-based operations;
iii) Classroom practices;
iv) Autism-specific support strategies; and
v) Challenges and critical success factors of autism-specific education.

The study managed to produce valuable results concerning these five objectives that would assist district-based occupational therapists in the development of tools to monitor quality education (e.g. service standards and a self-audit tool to determine performance on key objectives); strategies to support and develop educators (e.g. practical workshops on autism-specific education and the management of challenging behaviours) and to expand quality ASD education in the Motheo District.

The study not only supplied information for the development of context-based training models, support strategies, and service standards, but provided valuable insights in the complexity of autism-specific education within the South African inclusive education system. The need for leadership and a shared vision, operational support, specialised resources and standards management have been highlighted. Although, the systemic barriers in the education system create concern, it also generates opportunities for school and district-based occupational therapists to review their services, to develop context-based service models and to play a key role in improving autism-specific education in South Africa.

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ADDENDUM A

LIST OF SCHOOLS THAT FIT THE INCLUSION CRITERIA

Addendum A: list of schools that fit the inclusion criteria

Public- Autism specific schools: filtered list to fit study criteria

	Focus of school	Province	Number of ASD educators	Number of ASD learners	Regional representative
1	Autism Specific	Western Cape Woodstock	2	18	WC01
2	Autism Specific	Western Cape Rondebosch- East	11	111	WC01
3	Autism Specific	Gauteng Braamfontein	4	24	G07
4	Autism Specific	Gauteng Pretoria East	10	102	G07
5	Autism Specific	Eastern Cape Port Elizabeth	9	60	EC06
			36	**315**	

Public -Special schools: filtered list to fit study criteria

	Focus of School	Province	Number of ASD educators	Number of ASD learners	Regional representative
1	Learning disability	Western Cape Rondebosch	2	12	WC01
2	Intellectually Impaired	Western Cape Bellville	5	20	WC02
3	Intellectually Impaired	Western Cape George	4	18	WC02
4	Intellectually Impaired	Western Cape Paarl	4	18	WC01
5	Intellectually Impaired	Western Cape Cape Town	2	12	WC01

	Focus of School	Province	Number of ASD educators	Number of ASD learners	Regional representative
6	School for the deaf	Western Cape Khayaletsha	2	12	WC01
7	Intellectually Impaired	Free State Kroonstad	2	12	FS03
8	Intellectually Impaired	Free State Thaba Nchu	3	20	FS03
9	Intellectually Impaired	Free State Bloemfotnein	4	16	FS03
10	Intellectually Impaired	Free State Bloemfontein	5	20	FS03
11	Learning Disability	Free State Bloem	1	6	FS03
12	Physical Disability and autism	Northern Cape Kimberley	4	20	NC04
13	Intellectually Impaired	Northern Cape Kimberley	2	12	NC04
14	Intellectually Impaired	Northern Cape Kimberley	4	24	NC04
15	Physical Disability and autism	KZN Pietermartisburg	7	28	KZN05
16	Intellectually Impaired	KZN Madadeni	4	18	KZN05
17	Intellectually Impaired	KZN Pietermartisburg	5	20	KZN05
18	Intellectually Impaired	KZN Durban	2	12	KZN05
19	Intellectually Impaired	Gauteng Randberg	2	14	G07
20	Intellectually Impaired	Gauteng Vereeniging	2	12	G07

	Focus of School	Province	Number of ASD educators	Number of ASD learners	Regional representative
21	Intellectually Impaired and Autism	Gauteng Parktown	3	14	G07
22	Intellectually Impaired	Eastern Cape King Williams Town	1	12	EC06
23	Intellectually Impaired	Eastern Cape East London	4	15	EC06
24	Intellectually Impaired	North West Potchefstroom	2	12	NW8
25	Intellectually Impaired	North West Potchefstroom	4	20	NW8
26	Intellectually Impaired	Limpopo	1	8	L09
			81	**419**	

Public-Full service schools: filtered list to fit study criteria

	Focus of school	Province	Number of ASD educators	Number of ASD learners	Regional representative
1	Full Service School	Free State Kroonstad	3	12	FS03
2	Full Service School	Free State Thaba Nchu	3	16	FS03
3	Full Service	Limpopo Polokwane	3	12	L09
			9	**40**	

ADDENDUM B

SUBMISSION OF MINOR PROTOCOL AMENDMENTS

Addendum B: Submission of minor protocol amendments

education
Department of Education
FREE STATE PROVINCE

The Chairperson: Ethics Committee
For Attention: Ms H Strauss
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Reference: Ecufs 09/2013
Corina Botha – Occupational Therapist

Date: 27 May 2013

AMENDMENTS TO RESEARCH PROTOCOL – JC BOTHA

Thank you for taking the time to review the proposed amendments to my research protocol. The main purpose of my study is to determine current practices and challenges regarding autism-specific education in South African public schools. The study results would provide valuable information in the expansion and monitoring of quality autism-specific education in the Motheo District. The study would also be valuable in the identification of support strategies for educators and learners with autism spectrum disorders.

I have completed my pilot study and I recommend the following minor chances to the data collection process:

- Amendments to the schools suitable for the study: The list of schools indicated to provide autism-specific schools has changed slightly (see Addendum 9) due to inaccurate statistics on the Education Information Management System. These changes would not have any effect on the population size or study design. The following table has also changed:

Table 1: Summary of number of schools and educators for the different types of ASD schools (p.20-21 in research protocol).

Type of public schools	Number of schools	Number of educators	Updated: Number of Schools	Updated: Number of educators
Autism-specific schools	5	42	5	42
Special schools with autism-specific classes	26	48	27	54
Full service schools	3	3	3	3
Total:	34	93	35	99

- The changes to the list of schools have also impacted the proposed division of regional representatives who help to coordinate the data collection process. Schools in desolate areas where there are no occupational therapists to serve as regional representatives would not be excluded from the study due to the small population size. Documents would be e-mailed/couriered to the schools directly.

Table 2: Changes to data collection to accommodate schools in desolate areas

Original Text: (p. 23: research protocol)	Amended Text
The researcher identified 12 representatives nationally (occupational therapists) to accommodate the 34 schools selected for the study. Gauteng will have three representatives and the Western Cape two due to logistical challenges. The occupational therapists, selected as regional representatives participate voluntary and may be replaced with another regional representative should they be unable to honour the commitment.	The researcher identified representatives (occupational therapists) nationally to accommodate the schools selected for the study. The occupational therapists selected as regional representatives participate voluntarily and may be replaced with another regional representative, should they be unable to honour the commitment. Schools in desolate areas where there are no occupational therapists to serve as regional representatives would not be excluded from the study due to the small population size. Documents would be e-mailed/couriered to the schools directly. Principals will then be asked to follow the same data collection process recommended for the regional representatives.

The following paragraph will also be added to the data collection guideline (Addendum 6).

Exceptions:

In cases were schools are not able to allocate a time slot for data collection, you may be requested to provide all participants with a questionnaire and envelope. The educators will complete the questionnaires during the day and place the completed questionnaire in an envelope. You will be requested to collect the sealed envelopes at the end of the day.

- One school had indicated that it would be difficult for them to have all the educators together for a session to collect data all at once. It is therefore suggested that educators would have the opportunity to complete the questionnaires during the day and that it should then be collected by the end of the day. However, educators will then be requested not to discuss the questionnaire with one another to prevent the contamination of data. The researcher does not want to exclude these schools from the study since the population is small.

Table 3: Description of roles in the data collection process (p.25 research protocol)

	Original Text	Suggested Amendment
6.	The researcher will make telephonic contact with principals to schedule an appointment during which the regional representatives could collect data from the participating educators. Principals will be requested to allocate a 60 minute timeslot and quiet venue for the data collection process.	The researcher will make telephonic contact with principals to schedule an appointment, during which the regional representatives would collect data from the participating educators. Principals will be requested to allocate a 60 minute timeslot and quiet venue for the data collection process. However, in schools where this could not be arranged, the researcher will inform the regional representative to hand out and brief the participants regarding the questionnaire. The researcher and regional representative will be telephonically available for questions. The regional representatives will collect the completed questionnaires, sealed in envelopes, by the end of the day.

The following challenge would affect the time frame of the data collection process:

The researcher had struggled to establish contact with some of the principals and needed to phone and e-mail several times to get them to complete the consent forms. The SADTU Go Slow also influenced the levels of responsiveness at some schools. The process of obtaining consent from schools is very time consuming and may have an impact on the proposed timeframe of the study. The study is proposed to take three months longer (amendments p. 35 of research protocol).

Table 4: Timeline for research project (p. 25 research protocol)

Time allowed/anticipated for a quantitative study:	Time allocated in months	Dates: Original	Dates: Amendment
Choice of a research topic, scanning literature, objective of research	2	1 February to 31 March 2012	1 February to 31 March 2012
Research proposal	3	30 June 2012	30 June 2012
Corrections and completion of final protocol	2	15 August 2012	15 August 2012
Review expert committee	1	27 September 2012	27 September 2012
Review evaluation committee	1	4 December 2012	4 December 2012
Review ethics committee	1	31 January 2013	31 January 2013
Written consent from Directorate: Strategic Planning, Policy and Research	1	28 February 2013	28 February 2013
Written consent from participating schools	1	28 February 2013	30 March 2013
Pilot study	1	30 March 2013	30 April 2013
Start empirical survey • Preparing questionnaires to be sent out • Inform schools and regional representatives	0.5	20 April 2013	30 May 2013

Time allowed/anticipated for a quantitative study:	Time allocated in months	Dates: Original	Dates: Amendment
• Confirm dates and venues with principals			
Data collection procedure: • Courier forms • Consent from participants • Completion of questionnaires • Collect forms • Prepare for analyses	1.5	10 May 2013	10 September 2013
Analyse data	3	30 June 2013	30 December 2013
Write research thesis	2	30 September 2013	30 April 2014
Proofread and corrections	2	30 November 2013	30 May 2014
Final submission	2	31 December 2013	15 June 2014
Bind and submit	1	31 January 2014	1 July 2014

I have attached all the relevant documents requested by your office. Should you have any queries or require more information, please do not hesitate to contact me.

I am looking forward to your feedback.

Kind Regards

Corina Botha
SES Occupational Therapist
Motheo Inclusive
Tel: 082 202 5952 / 051 404 8944

ADDENDUM C

RESEARCH QUESTIONNAIRES

ADDENDUM D

RATIONALE OF THE RESEARCH QUESTIONNAIRE

RATIONALE OF THE RESEARCH QUESTIONNAIRE

DESCRIPTION OF QUESTION TYPES:

Question types	Level of data	Comment:
Dichotomous questions • Highly structured closed questions. • Require a yes / no response.	Nominal	The researcher used dichotomous questions extensively in the questionnaire since it saves time and fits well with the quantitative approach.
Multiple choice questions • Choices are designed to capture the possible range of responses given to statements.	Nominal	Multiple choice questions have also been used extensively since it facilitates the accessibility and speed of completion.
Open-ended questions • Invite honest, personal comments from respondents. • Ownership and responsibility for data rests with the respondent.	Word-based data	The researcher limited the use of open-ended questions since it requires more energy and effort from respondents. However, the researcher used these questions in some case to get the views from individuals.
Rank ordering • Moves beyond multiple choice questions by asking respondents to choose priorities.	Ordinal	The researcher has not used this approach since it may be too complicated for respondents.
Rating scales • These scales build in a degree of sensitivity and differentiation of responses but still produce structured quantitative data.	Ordinal	Rating scales have been used in cases where the researcher wanted to determine the frequency of use of programmes, challenges, etc.
Constant sum questions: • Respondents are requested to distribute a given number of marks between a range of items, e.g. distribute a total of 5 points among the sentences you think closely describe your teaching style. • The respondent needs to decide the relative weight of the aspects provided before coming to a decision regarding the balance of one aspect compared to another.	Ordinal	Constant sum questions have not been utilised.
Ratio data questions • A fixed answer or category is not provided and the respondent indicates an exact number. Ratio data questions handles continuous variables where there may be a true zero e.g. How many days have you been absent form school?	Ratio	Ratio data questions have been used in the demographical information.

RATIONAL OF RESEARCH QUESTIONNAIRE

BIOGRAPHICAL QUESTIONS NOT COVERED IN OBJECTIVES:

No.	Question	Type of question	Literature source	Motivation
Demographical 1.1.	Date on which the questionnaire is completed	Ratio data questions Ratio	-	-
Demographical 1.2.	What is your age?	Ratio data questions Ratio		To determine the average age of autism-specific educators.
Demographical 1.3.	What is your gender?	Dichotomous Nominal	-	To determine the gender ratio of autism-specific educators.
Demographical 1.4.	In which province are you working?	Multiple choice questions Nominal	-	To determine the provinces that mainly participated in the study.
Objective 1: To determine the level of training and experience of educators of autism-specific classes in public schools nationally				
No.	**Question**	**Type of question**	**Literature source**	**Motivation**
Demographical 1.10.	In which year did you complete your education qualification?	Ratio data questions	-	To determine the time frames during which educators completed their education qualification.
Demographical 1.11.	Are you qualified for:	Multiple choice questions Nominal	-	To determine the phases for which the majority of educators are qualified.
Demographical 1.12.	Was your basic education qualification a:?	Multiple choice questions Nominal	-	To determine the basic training educators received.
Demographical 1.13.	Do you have any qualification post your basic qualification?	Dichotomous questions (yes/no)	-	To determine whether educators of autism-specific classes have post-basic qualifications.
Demographical 1.14.	If you answered yes to question 1.13, please indicate which post-basic qualification you completed.	Multiple choice questions Nominal	-	To determine the type of post-basic qualification educators of autism-specific classes have completed.
Demographical 1.15.	Are you currently busy with any post basic training?	Dichotomous questions (yes/no)	-	To determine whether educators of autism-specific classes are busy with post-basic training.

Demographical 1.16.	If you answered yes in question 1.15, please describe (e.g. B Ed Hons in support).	Open-ended Word-based	-	To determine whether the postgraduate training involved autism-specific training or related training.
Demographical 1.17.	How many years experience do you have in the management of learners with autism?	Open-ended Word-based		To determine the average years of experience educators have regarding autism-specific education.
Demographical 1.18.	Have you ever worked abroad with learners on the autism spectrum?	Dichotomous questions (yes/no)	-	To determine how many educators have worked abroad. Educators who have worked abroad had an example of how autism-specific education is performed efficiently within an inclusive education setting. Educators who gained experience and received mentorship within well recognised autism-specific education facilities have an example and role model of the resources, skills, programmes and interventions required to perform efficient autism-specific education.
Autism-specific Training: 2.1.	Do you have any formal training in any of the following autism-specific programmes?:	Multiple choice questions Nominal	Carr & Felce 2006:780-787, Gray 2012:online, Hume & Odom 2007:1166-1180, Lund and Thorba 2008: 719-730, Ryan, Hughes, Katsiyannis, McDaniel, and Sprinkle 2011:56-64, (Pheiffer, Koenig, Moya, Sheppard and Henderson 2011: 2011:76, Sheehy & Duffy 2009:11, Simpson 2005:140-149, Smith Myles 2005:80-81	To determine whether South African educators are trained in the internationally recognised research programmes. The research-based programmes indicated in the question are developed to assist educators and therapists to optimise learning and to optimally manage challenging behaviour. These programmes are costly and involve training to ensure efficient use. These programmes are frequently used and recognised internationally.

Autism-specific Training: 2.2.	Please name any other autism-specific programme that you are trained in which is not mentioned in the previous section.	Open-ended Word based	Carr & Felce 2006:780-787, Gray 2012:online, Hume & Odom 2007:1166-1180, Lund and Thorba 2008: 719-730, Ryan, Hughes, Katsiyannis, McDaniel, and Sprinkle 2011:56-64, (Pheiffer, Koenig, Moya, Sheppard and Henderson 2011: 2011:76, Sheehy & Duffy 2009:11, Simpson 2005:140-149, Smith Myles 2005:80-81	To determine whether there are any other research-based programmes for which South African autism-specific educators are trained.
Autism-specific Training: 2.3.	Who trained educators of autism-specific classes?	Multiple choice questions Nominal	Dalton, Mckenzie & Kahonde 2013:online, Geldenhuys & Wevers 2013:7, Ladbrook 2009:46,116-117, National Department of Education: Directorate Inclusive Education, 2001:29, Wagner 2011:27-29,	To know whether information is merely cascaded down, or whether educators receive training from recognised, accredited trainers. The researcher is also interested to determine who is mainly responsible for autism-specific Training in South Africa.
Autism-specific Training: 2.4.	Does your school offer training on autism-specific education to other schools?	Dichotomous questions (yes/no)	National Department of Education: Directorate Inclusive Education 2001	To determine whether schools with autism-specific classes offer training to other schools. In accordance to White Paper 6, special schools and autism-specific schools should serve as resource centres to neighbouring schools. These schools therefore have a responsibility to empower colleagues with evidenced-based strategies and skills.
Autism-specific training: 2.4.1.	If you answered yes to 2.4, please describe the type of training you provide.	Open-ended Word-based	-	To determine the type of training schools with autism-specific schools provide.
Autism-specific Training: 2.5.	How do you keep updated with the latest developments in autism-specific education?	Open-ended Word-based	Wagner 2011:27-29	Educators need to take responsibility for their own development and training. The researcher wants to determine how and if autism-specific educators achieve this.

Objective 2: To determine school-based operations concerning admissions criteria and procedures of learners with ASD, extra-curricular services, therapeutic support and parent collaboration				
No.	**Question**	**Type of question**	**Literature source**	**Motivation**
Demographical: 1.6.	Type of school where you are employed.	Multiple choice questions Nominal	-	To determine the type of school the educators is employed at. The operational models and operational procedures differ in autism-specific schools, special schools and full service schools.
Admissions criteria and extracurricular support: 3.1.	Does the school make use of any of the following assessment tools?	Dichotomous questions (yes/no)	American Academy of Pediatrics, 2006:410-413, Falkmer, Anderson, Falkmer and Horlin 2013:329, Texas Statewide Leadership for Autism Training 2009:1-51,	To determine the assessment tools used in schools that provide autism-specific education. There a range of research-based screening and diagnostic tools available that could assist schools in determining the support needs of learners.
Admissions criteria and extracurricular support: 3.2.	Do you make use of the Screening Identification Assessment and Support (SIAS) guidelines?	Dichotomous questions (yes/no)	National Department of Education: Directorate Inclusive Education 2008:	The Screening Identification Assessment and Support (SIAS) guideline is a national document that has been designed to standardise operational procedures in the design of support strategies. The researcher is interested whether this tool is used in the design of support strategies for learners with ASD.
Admissions criteria and extracurricular support: 3.3.	For which age ranges do your school provide autism-specific education?	Ratio data questions Ratio	Matson, Wilkins & Gonzalez 2008:71-76	Ideally, schools should offer autism-specific support for the age group 3-18 years. Special schools and full service schools cannot accommodate the full age range and usually only have one or two classes that accommodate learners within a specific age range. The researcher wants to determine which age groups are mostly targeted and where the biggest gaps are in terms of service delivery.
Admissions criteria and extracurricular support: 3.4.	Please indicate which of the following aspects are prerequisites for admission to your school:	Multiple choice questions Nominal	National Department of Education: Directorate Inclusive Education 2007:7-8, American Psychiatric Association 2013:5-51	All schools have admissions criteria by which they select the learners who would optimally benefit from their programmes. The criteria are rigorously applied in some settings while others are much more lenient in the selection process. The researcher is interested to identify these prerequisites since it assists in the optimal

				preparation of learners for admissions.
Admissions criteria and extracurricular support: 3.5.	Does the school offer hostel accommodation?	Dichotomous questions (yes/no)	National Department of Education: Directorate Inclusive Education 2007:9-16	Learners in rural areas struggle more to access autism-specific education since specialised services are mostly offered in urban areas. Hostel accommodation is therefore a vital consideration in finding a suitable educational facility.
Admissions criteria and extracurricular support: 3.6.	If you answered yes to question 3.5, please describe how do you accommodate the individual needs of learners concerning the hostel routine.	Open-ended questions (word-based-data)	-	Since autism is a spectrum disorder, it implies variability in functional, academic and clinical profiles where symptoms may differ in nature, intensity and severity. Learners have individualised needs and are often resistant to change which creates concern when they need to adjust within a new routine. The researcher is interested to determine how schools accommodate the individuality of learners.
Admissions criteria and extracurricular support: 3.7.	Does the school offer any of the following extracurricular activities for learners with ASD?:	Multiple choice questions Nominal	Bass, Duchowny & Llabre 2009:1261, Lang, Koegel, Ashbaugh, Regester, Ence and Smith 2010:576, National Department of Education: Directorate Inclusive Education 2007:9-16, Pan 2010:9	To determine which extracurricular activities are offered for learners with ASD. Learners with ASD require an all-encompassing programme to optimise all aspects of their development. Many schools provide additional activities to optimise the development of their learners.
Admissions criteria and extracurricular support: 3.7.1.	If you answered yes to question 3.7, which of these activities do you think are most beneficial to learners with autism?	Open-ended questions (word-based-data)	-	To determine the extracurricular activities educators view as most beneficial.
Admissions criteria and extracurricular support: 3.8.	Who is responsible for the costs of the activities named in 3.7.?	Multiple choice questions Nominal	National Department of Education: Directorate Inclusive Education 2007:9-16, Geldenhuys and Wevers 2013:11, Ladbrook 2009:88-89	To determine whether schools or parents pay for extracurricular activities offered at schools.
Therapeutic services and parent collaboration: 4.1.	Do you think it is necessary to have therapists at schools that offer autism-specific education?	Dichotomous questions (yes/no)	Brown & Dunn 2010:475, National Department of Education: Directorate Inclusive Education 2007:13-17, Ladbrook 2009:90-92	Learners with ASD benefit from a multi-professional, all encompassing approach. The researcher wants to determine how schools experience therapeutic involvement.

Therapeutic services and parent collaboration: 4.2.	Please motivate your answer in 4.1.:	Open-ended questions (word-based-data)	-	To determine the reasons why educators feel they do or do not benefit from therapeutic inputs at schools.
Therapeutic services and parent collaboration: 4.3.	Which of the following therapeutic services are offered at your school?	Multiple choice questions Nominal	Bazyk & Case-Smith 2010:713-743	To determine which therapeutic services are offered at schools.
Therapeutic services and parent collaboration: 4.4.	Do you receive support from therapists to assist you with the handling of learners?	Dichotomous questions (yes/no)	Brown & Dunn 2010:475, National Department of Education: Directorate Inclusive Education 2007:13-17, Ladbrook 2009:90-92, Sonday 2012:5-6	To determine whether therapists provide hands-on support and advice to educators in order to optimise the management and learning of individual learners.
Therapeutic services and parent collaboration: 4.4.1.	If yes, please indicate the type of support they provide.	Multiple choice questions Nominal	Sonday 2012:5-6, Wagner 2011:27-29	The researcher wants to determine the type of support services therapists offer at schools.
Therapeutic services and parent collaboration: 4.5.	Do parents participate in the educational programme at your school?	Dichotomous questions (yes/no)	Wagner 2011:27-29	To determine the participation of parents in educational programmes offered at the school. Parents are also considered key stakeholders in the management of learners with ASD.
Therapeutic services and parent collaboration: 4.6.	How do you ensure the transfer of skills to the home environment?	Open-ended questions (word-based-data)	National Association of Elementary School Principals. Retrieved February 9, 2012, from www.NAESP.org: http://www.NAESP.org	To determine how skills learned at school are transferred to the home environment. In order to ensure transfer of learning and consistency in the handling of challenging behaviour; learning strategies should be communicated to parents.
Therapeutic services and parent collaboration: 4.7.	How frequently do you have parent feedback and information sessions?	Multiple choice questions Nominal	-	To determine the frequency of communication with parents.

Therapeutic services and parent collaboration: 4.8.	Do parents pay extra for the intensive, specialised education and services they receive?	Dichotomous questions (yes/no)	-	To determine whether specialised support is proved at additional cost. Parents from disadvantaged communities often struggle to access specialised services.
Therapeutic services and parent collaboration: 4.9.	Does your school offer specialised training and educational programmes for parents?	Dichotomous questions (yes/no)	Autism South Africa: Management Team 2012:online	Training and empowerment of parents is vital to ensure transfer for learning and a consistent, all encompassing educational approach. The researcher wants to determine whether schools offer additional training and support to parents.
Therapeutic services and parent collaboration: 4.10.	Is your school affiliated with Autism SA?	Dichotomous questions (yes/no)	Autism South Africa 2012:online	To determine whether schools are affiliated with Autism South Africa. Autism South Africa plays an important role in advocating for the rights of learners with autism, including the right to education. Individuals and schools affiliated with Autism South Africa become part of a network of individuals who represent ASD issues.
Therapeutic services and parent collaboration: 4.11.	Please name any other support group you are a member of:	Open-ended questions (word-based-data)	Autism South Africa 2012:online	To determine whether educators and school are affiliated with other support groups.

• **Objective 3: To determine classroom management practices in terms of the curriculum, work schedules, monitoring of learner progress as well as activity and environmental adjustments.**				
No.	**Question**	**Type of question**	**Literature source**	**Motivation**
Demographical 1.5.	What is your language of teaching?	Multiple choice questions Nominal	-	To determine the languages of teaching in autism-specific classes.
Demographical 1.7.	What is the age range of the learners in your class, e.g. 6-9 years?	Ratio data questions Ratio	Matson, Wilkins, Gonzalez 2008: 75-84	To determine the age ranges of learners. The age range of learners will influence the programmes, classroom strategies and learning objectives the educators will implement.
Demographical 1.8.	How many learners do you have in your class?	Ratio data questions Ratio	National Department of Education: Directorate Inclusive Education 2001	To determine how many learners are on average in autism-specific classes in South Africa. Since learners with autism have individualised needs, classes should ideally have 10 or less learners per class. Class size would directly influence classroom practices, administrative loads and effort the educator need to employ to efficiently manage the group of learners.
Demographical 1.9.	How many boys do you have in your class?	Ratio data questions Ratio	Fombonne 2003: 365-382. Centres for Disease Control and Prevention 2013:online	To determine the gender ratio of learners in autism-specific classes. Boys are five times more likely to be affected by autism. These ratios are important since it impact on the planning of class room activities.
Demographical 1.20.	Do you have a class assistant?	Dichotomous questions (yes/no)	Van Rijswijk 2012:online	To determine how many autism-specific educators have class assistants. The availability of class assistants impacts on the educators' planning, grading of activities and capacity to provide individualised attention.

Curriculum, additional support and classroom compilation: 5.1.	Please indicate which of the following options best describes the learners with autism spectrum disorders in your class?	Multiple choice questions Nominal	American Psychiatric Association 2013:50-51, Kaufmann 2012:online	To determine the severity of autism educators deal within classes. The severity of autism-specific symptoms may influence the choice of curriculum, teaching methods, the use of assistive technology and classroom adaptations.
Curriculum, additional support and classroom compilation: 5.2.	Does your school offer vocational training programmes for older learners?	Dichotomous questions (yes/no)	-	To determine whether schools offer vocational training programmes for learners with autism. A primary purpose of schools is to equip learners to become positive contributors to society. Vocational rehabilitation programmes would therefore be a primary focus to ensure extended opportunities after school.
Curriculum, additional support and classroom compilation: 5.3.	Are learners with autism spectrum disorders included with others who do not have the condition?	Dichotomous questions (yes/no)	National Department of Education: Directorate Inclusive Education 2001	The inclusive education system promotes that learners, irrespective of diagnoses, disability, race, gender, and other differences, should be accommodated in the same classroom. This does, however, pose some practical challenges and the researcher is interested to see whether schools implement inclusive strategies.
Curriculum, additional support and classroom compilation: 5.4.	Do you have classes that exclusively accommodate learners with autism spectrum disorders?	Dichotomous questions (yes/no)	-	To determine whether learners with autism are accommodated exclusively in autism-specific classes. Since learners with ASD have high-level support needs and atypical learning styles, many schools group their learners with ASD together since they benefit from diagnostic specific support.
Curriculum, additional support and classroom compilation: 5.5.	Which of the following curriculums do you offer for learners with autism spectrum disorders?:	Multiple choice questions Nominal	-	To determine which curriculums are used in schools that offer autism-specific education.
Curriculum, additional support and classroom compilation: 5.6.	Please indicate which of the following aspects are targeted in your curriculum:	Multiple choice questions Nominal	Bazyk, S., Case-Smith, J. 2010. School-Based Occupational Therapy. In Case-Smith J. O'Brien J. *Occupational Therapy for Children*. 6th Ed. Missouri:	Children with autism benefit mostly from holistic intervention in an all encompassing educational programme that focuses on all aspects of their development. The researcher wants to determine whether this aspect is accommodated in public schools.

			Mosby Elsevier: 713-743. Bellini, Peters, Benner and Hopf 2007:153-162. Brown and Dunn 2010: 474-481.	
Work schedules and monitoring of progress: 6.1.	How do you adjust your lesson plan to accommodate the learning pace of all the learners in your class?	Open-ended questions Word-based	National Department of Education: Directorate Inclusive Education 2008	To determine how educators plan their daily lessons to accommodate complex and individualised learning needs.
Work schedules and monitoring of progress: 6.2.	Do you make use of individual support plans?	Dichotomous questions (yes/no)	National Department of Education: Directorate Inclusive Education 2008 Bazyk, S., Case-Smith, J. 2010. School-Based Occupational Therapy. In Case-Smith J. O'Brien J. *Occupational Therapy for Children*. 6th Ed. Missouri: Mosby Elsevier: 713-743.	To determine whether individual support plans are used in public schools that offer autism-specific education. An individual support plan is the centrepiece of a specialised education programme and describes the support targets critical in meeting the learners' unique needs.
Work schedules and monitoring of progress: 6.3.	Do the individual support plans involve the input of other stakeholders, e.g. therapists, parents, etc?	Dichotomous questions (yes/no)	National Department of Education: Directorate Inclusive Education 2008 Bazyk, S., Case-Smith, J. 2010. School-Based Occupational Therapy. In Case-Smith J. O'Brien J. *Occupational Therapy for Children*. 6th Ed. Missouri: Mosby Elsevier: 713-743.	To determine whether a collaborative, multi-professional approach is used to design and provide intervention strategies focussed at individualised support needs.
Work schedules and monitoring of progress: 6.4.	Do you make use of daily schedules for individual learners?	Dichotomous questions (yes/no)	National Department of Education: Directorate Inclusive Education 2008	To determine whether educators of autism support classes make use of daily schedules. A daily schedule helps the teacher to achieve the goals in the individual support plan since it assist in daily goal setting and monitoring of a learners progress.

Work schedules and monitoring of progress: 6.5.	Do you make use of weekly schedules for individual learners?:	Dichotomous questions (yes/no)	National Department of Education: Directorate Inclusive Education 2008	To determine whether educators of autism support classes make use of weekly schedules. A weekly schedule helps the teacher to achieve the goals in the individual support plan since it ensures that individual schedules are monitored over a week.
Work schedules and monitoring of progress: 6.6.	Please describe how you assess and monitor the progress of learners.	Open-ended questions (word-based-data)	National Department of Education: Directorate Inclusive Education 2008	To determine how the performance of learners with ASD is measured, since they do not always benefit from traditional approaches.
Class and playground environment: 7.1.	Which of the following class room structures do you use to optimise the performance of learners in your class?:	Multiple choice questions Nominal	Hanbury 2005.	The researcher observed different classroom structures at schools and is interested to see what is commonly used.
Class and playground environment: 7.2.	Which of the following describes your class room best?:	Multiple choice questions Nominal	-	Due to the attention deficits (hyper-focus and under-responsiveness) some learners appear to benefit from stimulus-free settings; however, there are educators who suggest that busy classroom settings have the benefit of repetition of concepts and provide structured visual stimuli.
Class and playground environment: 7.3.	How do you ensure the safety of learners during break times?	Open-ended questions (word-based)	-	To determine how the safety of learners is ensured, especially during break times when there is usually less structure and control. Learners with autism do not always have insight in safety guidelines and may even present with self-injurious behaviour.
Objective 4: To determine the use of autism-specific support strategies with reference to research-based programmes, diagnostic specific support strategies as well as assistive technology and alternative methods.				
No.	**Question**	**Type of question**	**Literature source**	**Motivation**
Utilisation of research-based programmes: 8.1.	How much do you use the following programmes?:	Rating scale Ordinal	Ryan, Hughes, Katsiyanis, McDaniel and Sprinkle 2011 56-64.	To determine the frequency of use of research-based ASD programmes in public schools.
Utilisation of research-based programmes: 8.2.	Which four programmes do you find most beneficial in the management of learners with autism?	Open-ended questions (word-based-data)	-	To determine which programmes educators benefit mostly from.
Autism-specific handling skills: 9.1.	How do you rate your skill level in handling the following aspects in learners with	Rating scale Ordinal	Hanbury 2005	The symptoms and behaviours of ASD are challenging and specialised skills are required to handle individual learners. The researcher wants to

	autism spectrum disorders?			determine which aspect of ASD is most challenging to handle. This would also provide a guideline to indicate priorities for training and the development of management tools.
Assistive technology and alternative methods: 10.1.	How frequently do you make use of the following in your class?:	Rating scale Ordinal	Hanbury 2005	To determine which assistive devices are commonly used in class.
Assistive technology and alternative methods: 10.2.	Which of the above-mentioned assistive technology and assistive devices do you find most beneficial?	Open-ended questions (word-based)	American Occupational Therapy Association, 2008	To determine which assistive technologies and assistive devices are viewed by educators as successful.
Assistive technology and alternative methods: 10.3.	What other useful strategies and alternative teaching methods do you use with efficiency in the management of the learners with autism in your class?	Open-ended questions (word-based)	New Brunswick Department of Education 2005: 1-58,	Educators may use efficient strategies that other educators may benefit from. The researcher wants to indentify these.
Assistive technology and alternative methods: 10.4.	Are learners allowed to bring their own caregivers to class?	Dichotomous questions (yes/no)	Van Rijswijk 2012:online	To determine the utilisation of caregivers in classrooms. Since learners with autism have high level support needs, caregivers may assist to optimise an individual approach. The researcher wants to know whether this is allowed. There are educators that are of opinion that learners become too dependent of caregivers and therefore prefer that learners should cope independently..

Object 5: To determine the aspects educators regard as challenges and critical success factors in managing learners with ASD in public schools.				
No.	**Question**	**Type of question**	**Literature source**	**Motivation**
Demographic 1.19.	Please indicate why you have decided to work with learners with autism spectrum disorders.	Open-ended questions (word-based-data)	Hanbury 2005:24, Koegel, Matos-Fredeen, Lang and Koegel 2011:online, Wagner 2011:29,	To determine whether educators have a passion for learners with ASD or whether they were placed in this position due to operational demands.
Challenges and critical success factors: 11.1.	How do you rate the following aspects of autism-specific education?	Rating scale Ordinal	Geldenhuys and Wevers 2013:1-12, Ladbrook 2009:171	To determine how resources, logistics and operational systems impact on the challenges educators experience.
Challenges and critical success factors: 11.2.	Do you experience a feeling of accomplishment in working with learners with autism spectrum disorders?	Dichotomous questions (yes/no)	Rodríguez, Saldaña, and Moreno 2011:online, (Skaalvik and Skaalvik 2009:1068-1069 Zarafshan, Mohammadi, Ahmadi and Arsalani 2013:20-27	To determine whether educators experience any job satisfaction in dealing with a challenging population.
Challenges and critical success factors: 11.2.1.	Please motivate your answer in 11.2.	Open-ended questions (word-based-data)	Rodríguez, Saldaña, and Moreno 2011:online, (Skaalvik and Skaalvik 2009:1068-1069 Zarafshan, Mohammadi, Ahmadi and Arsalani 2013:20-27	To determine why autism-specific educators do or do not experience job satisfaction.
Challenges and critical success factors: 11.3.	What, in your opinion, are critical factors for success in working with learners with autism spectrum disorders?	Open-ended questions (word-based-data)	Boutot 2013:online, Daily 2012:online, Iovannone, Dunlap, Huber and Kinkaid 2003: online, Jones and Frederickson 2010:1094, Wagner 2011:27-28,	The identification of critical success factors gives an indication of what educators view as essential components of autism-specific programmes.

ADDENDUM E

DATA COLLECTION GUIDELINE

education
Department of Education
FREE STATE PROVINCE

Date _____

Dear _____

DATA COLLECTION GUIDELINE:
Autism-Specific Education in South African Public Schools: Practices and Challenges

Thank you for taking time to participate in this research project in spite of your busy schedule. Your contribution to this project is invaluable and I cannot thank you enough for your efforts and sacrifices.

I have compiled a data collection procedure to ensure a standard data collection process across schools. It will be appreciated it if you could review the document and watch the short PowerPoint presentation to ensure that you are well informed regarding the procedure.

Please do not hesitate to contact me should you have questions or concerns. I will be available telephonically during the data collection process to provide support and to assist with queries.

Regards

Corina Botha
SES: Occupational Therapist
Tel: 051-4048944/ 0822025952

DATA COLLECTION PROCEDURE:

Autism-Specific Education in South African Public Schools: Practices and Challenges

APPOINTMENT FOR DATA COLLECTION:

School:	Date:	Time:	Number of educators:

School contact details:

Principal:	Address:	Telephone number:

VENUE:

The schools have been requested to provide you with a quiet, comfortable venue (e.g. the staff room) for the completion of the questionnaire.

PROCEDURE:

- Thank all educators for their participation and invaluable contribution in the project.
- Shortly review the information document and reassure them of the confidentiality of their participation.
- Ensure that all the participants are comfortable. (Participants are allowed to have coffee while completing the questionnaire, should that assist in putting them at ease.)
- Hand out the questionnaires and envelopes. Ask educators to wait for your introduction prior to completion of the questionnaire.
- Introduce the research questionnaire and please highlight the following:
    - The questionnaire appears to be very long, but does not require extensive writing.
    - Motivate honest and comprehensive responses.
    - Restrict communication amongst educators during the completion of the questionnaires to avoid contamination of data.
    - Educators are invited to ask for clarity should they be uncertain regarding the meaning or interpretation of questions. (The data collector is welcome to contact the researcher telephonically should she require assistance.)
    - Educators are requested to check whether they have completed all sections of the questionnaire to optimise the usability of data.
    - The privacy of educators is respected at all times. The questionnaires are completed confidentially and only the province and regional representative will be coded for the purposes of data analysis. Questionnaires will be sealed individually in the envelopes provided with each questionnaire.

- Thank all participants as well as the school for their participation. After completion of the questionnaires, each participant can take an Autism South African ribbon and pen as a token of appreciation for their participation.
- Compile all the questionnaires and put it into the self-addressed envelope for return to the researcher. Please do not remove the questionnaires from their individually sealed envelopes, to increase the confidentially of the questionnaires.
- Complete the transport claim and e-mail it to the researcher for payment.
- The researcher will phone the regional representative to ask about possible variables that could have affected the data collection process.

Exceptions:

- In cases were schools are not able to allocate a time slot for data collection, you may be requested to provide all participants with a questionnaire and envelope. The educators will complete the questionnaires during the day and put the completed questionnaire in an envelope. You will be requested to collect the sealed envelopes at the end of the day.

CONTACT DETAILS OF THE PROJECT MEMBERS:

The researcher will be available to answer any questions you have concerning the study, the procedure and any risks or benefits that may arise from the study. Alternatively, the study leader can be contacted. Contact details are as follows.

Researcher:
Corina Botha
Tel (work): 051 404 8944
Cel: 082 202 5952
E-mail: corina.botha@gmail.com

Study leader:
Dr R van Heerden
Postgraduate Coordinator: Occupational Therapy
University of the Free State
Tel (work): 051 401 2829
082 461 1511
E-mail: rita@waldie.co.za

CLAIM FORM: RESEARCH REPRESENTATIVE:

Name: _____

HPCSA number: _____

Telephone number: _____

Address: _____

_____

_____

_____

Fax number: _____

E-mail address: _____

BANKING DETAILS:

Name of account: _____

Banking institution: _____

Branch name: _____

Branch code: _____

Type of account: _____

Account number: _____

Date: _____

TRAVELLING CLAIM:			
Destination	**Distance travelled**	**Unit Cost**	**Total**
OTHER EXPENSES:			

ADDENDUM F

POWER POINT REGIONAL REPRESENTATIVE

ADDENDUM G

Regional representative confirmation letter

education
Department of Education
FREE STATE PROVINCE

Addendum G: Confirmation of participation- Regional Representative

Date:_____

Dear Colleagues

CONFIRMATION OF PARTICIPATION: REGIONAL REPRESENTATIVE

Thank you very much for your willingness to assist me with the data collection for my research project. Since the research project is performed nationally, it would not be possible for me to collect the data personally and I am appreciative of your willingness to represent me in your region. I realise the enormous sacrifices you are making to assist me in the research project and can never repay you for your significant contribution to this project.

We have only discussed your involvement telephonically and I kindly request your confirmation to participate in the project. I shall provide you with an electronic copy of the protocol, an information sheet, PowerPoint presentation (with voice recording) and data collection guide to ensure that you are fully informed before you participate. Should you require more information, please do not hesitate to contact me.

I trust that this application will be given your kind consideration and time. Should you favourably consider the request to participate; please forward the attached confirmation slip to email: corina.botha@gmail.com or fax: 086 729 1476 by _____. Should you agree to assist me; I shall appreciate it if you can provide me with your postal address to facilitate the distribution of the research questionnaires.

I am looking forward on working with you and I am grateful for your support!

Regards

Botha

Corina Botha
SES: Occupational Therapist
Tel: 051 404 8944 / 082 202 5952

Participation as Regional Representative

Autism-Specific Education in South African Public Schools: Practices and Challenges

Researcher: JC (Corina) Botha (Bachelors in Occupational Therapy, UFS)

Student number: 1990110569

Academic Facility: University of the Free State

Department: Occupational Therapy

INVITATION TO PARTICIPATE:

You are requested to assist me with the data collection process at the following _____ school/ schools.

YOUR EXPECTED ROLE:

I. I will forward you a copy of the research protocol to develop some understanding of the purpose and process of the research study.
II. Three weeks prior to the data collection date, I will forward you the research questionnaires. It would be appreciated it if you could familiarise yourself with the questionnaire to ensure that you have a clear understanding of the content and procedure.
III. A time and date for data collection will be negotiated with you and the school. I will take responsibility for organising the appointments. We will try to agree on a timeframe that is most convenient for you and schools.
IV. Data will be collected on the scheduled date and time according to the attached procedure (Addendum 7).
V. The data collection process should not take longer than an hour (excluding travelling time to and from the school). This is only a once-off data collection process and repeated trips to schools are not expected.
VI. After the data collection, you will be requested to mail the consent forms and questionnaires to the researcher. Self-addressed envelopes will be provided to avoid any mailing cost on your side.
VII. Please complete the transport claim once you have completed the data collection process.
VIII. The researcher will phone you after the data collection process to ask about possible factors that could have influenced the data collection process.

DISCOMFORT OR RISKS:

There are no known risks and/or discomforts from this project. The results of this project will be used to expand and improve the quality of autism-specific education in the Motheo District.

BENEFITS:

Although you would not benefit directly from the project, your participation will contribute to research in the profession and the body of knowledge regarding autism-specific education. The results of the project would provide valuable contextual information in the expansion of

quality autism-specific programmes. The project would assist in the development of evidenced based training programmes and operational systems.

VOLUNTARY PARTICIPATION:

Participation is voluntary. You are free to withdraw from this project at any time without penalty or prejudice. However, I would really appreciate your commitment and support.

CONFIDENTIALITY:

The researcher will at all times respect the privacy of all participants. The identity or potentially identifying information regarding schools or individuals will not be revealed during the publication of results. Every effort will be made by the part of the researcher to ensure participants confidentiality.

REIMBURSEMENT AND FINANCIAL IMPLICATION:

Compensation for participation:

You will be compensated at R3 per kilometre for travelling costs. Telephone costs related to the project will also be reimbursed. The researcher will cover all postage fees. You will also receive a gift voucher of R100 as a token of appreciation.

Cost:

Unfortunately, I will not be able to compensate you for loss of clinical time and income. The data collection appointments will be scheduled at a time that is convenient for both you and schools to minimise loss of learner contact and clinical time.

Results:

The researcher will publish the results in relevant journals. The researcher will continuously consider the privacy and confidentiality of all participants.

QUALIFICATIONS AND CREDENTIALS OF RESEARCHER:

Researcher:

- Corina Botha (B. Occupational Therapy, UFS).
- 18 years' experience in the field of adult and paediatric neurology.
- The researcher worked predominantly in healthcare, but has been employed at the Department of Education since 1 February 2011.
- Postgraduate qualifications in Adult NDT and Sensory Integration.

Study leader:

- Dr R van Heerden (PHD. Occupational Therapy, UFS)

CONTACT DETAILS OF THE PROJECT MEMBERS:

The researcher will be available to answer any questions you have concerning the study, the procedure and any risks or benefits that may arise from the study. Alternatively, the study leader can be contacted. Contact details are as follows:

Researcher:
Corina Botha
Tel (work): 051 404 8944
Cell: 082 202 5952
E-mail: corina.botha@gmail.com

Study leader:
Dr R van Heerden
Postgraduate Coordinator: Occupational Therapy
University of the Free State
Tel (work): 051 401 2829
082 461 1511
E-mail: rita@waldie.co.za

CONFIRMATION OF PARTICIPATION:
REGIONAL REPRESENTATIVE

I declare that I have read this document and understand all the risks and benefits of participating in this project.

I, _____, hereby confirm my participation in the data collection of a survey conducted by the researcher for the purpose of the project.

_____	_____
Therapist	Date:

My postal address is:

Name:	
Postal address	
Code:	
Telephone number:	

ADDENDUM H

ETHICS APPROVAL UNIVERSITY OF THE FREE STATE

ADDENDUM I

APPROVAL LETTER FROM PROVINCIAL DIRECTORATE:
FREE STATE

ADDENDUM J

INLIGTINGS DOKUMENT
INFORMATION DOCUMENT

education
Department of Education
FREE STATE PROVINCE

INLIGTINGSDOKUMENT:

Outisme-Spesifieke Onderwys in Suid Afrikaanse Openbare Skole: Praktyke en Uitdagings

Navorser: JC (Corina) Botha

(Baccalaureus in Arbeidsterapie)

Akademiese Instelling: Universiteit van die Vrystaat

Fakulteit: Gesondheidswetenskappe

Departement: Arbeidsterapie

UITNODIGING OM DEEL TE NEEM:

Onderwysers van leerders met outismespektrumversteurings (werksaam in outisme-spesifieke klasse in die openbare sektor) word uitgenooi om deel te neem aan bogenoemde studie.

AGTERGROND TOT DIE STUDIE:

Die arbeidsterapeute in diens van die distrik-gebaseerde ondersteuningspan: Motheo Inklusief is onder andere verantwoordelik is vir die ondersteuning van leerders wat nie toegang tot 'n skool het nie, vanweë hul gestremdheid of sosiale omstandighede. 'n Totaal van 40% van die buiteskoolleerders wat deur die arbeidsterapeute geassesseer is; is gediagnoseer met outismespektrumversteurings of blyk eienskappe van die toestand te hê. Leerders met ligter vorme van outismespektrumversteurings word in hoofstroomskole geakkommodeer indien hulle die kurrikulum en sosiale eise kan hanteer. Leerders met matige tot ernstige vorme van outisme het egter intensiewe ondersteuning nodig a.g.v. die kompleksiteit van hul simptome, atipiese leerstyle en moeilike gedrag. As 'n korttermyndoelwit om toegang tot toepaslike outisme-onderrig in die Motheo-distrik te verhoog, is outismespesifieke klasse in 2010 begin by drie spesiale skole en een voldiensskool. Ongelukkig akkommodeer hierdie outismespesifieke klasse slegs 'n beperkte aantal leerders (ongeveer 60). Die skole het ook waglyste en die kwaliteit van dienslewering wissel. Arbeidsterapeute werksaam by Motheo Inklusiewe Onderwys fokus op beide die effektiwiteit en die uitbreiding van 'n outismespesifieke onderwysmodel wat geskik en volhoubaar is binne die Suid Afrikaanse konteks.

Die navorser se doelwit is om die praktyke van outisme-onderwys in openbare skole in Suid-Afrika te identifiseer. Aangesien outismespesifieke onderwys 'n nuwe spesialiteitsveld in die Motheo-distrik is, kan die resultate van die studie waardevol wees in die ontwikkeling en verbetering van outismespesifieke onderwys in die area.

DOEL VAN DIE STUDIE:
Die hoofdoel van die studie is om nasionale praktyke en uitdagings ten opsigte van outismespesifieke onderwys in openbare skole te bepaal. Die studieresultate sal waardevolle inligting voorsien in die uitbreiding en monitering van gehalte-outismespesifieke onderwys in die Motheo-distrik. Die studie sal ook van waarde wees in die identifisering van ondersteuningstrategieë vir onderwysers en leerders met outismespektrumversteurings. Die studieresultate sal ook gebruik word om voorspraak te maak vir die opvoedkundige regte van leerders met outismespektrumversteurings.

WAT BEHELS DEELNAME AAN DIE STUDIE:
Deelnemers sal versoek word om ’n vraelys te voltooi. Indien u die vraelys voltooi, gee u vrywillige toestemming tot deelname aan die studie. Die voltooiing van die vraelys sal ongeveer 45 minute neem en is ’n eenmalige proses. Die projek sal uitgevoer word by die skool in ’n geskikte tydgleuf wat deur die skool aangedui word. Aangesien die projek nasionaal uitgevoer word, het die navorser plaaslike verteenwoordigers (arbeidsterapeute) geïdentifiseer wat verantwoordelik sal wees vir die proses van data-insameling by skole. Die plaaslike verteenwoordigers sal vrae hanteer tydens die voltooiing van die vraelyste. U word versoek om die vraelys so eerlik moontlik te beantwoord. Nadat u die vraelys voltooi het, kan u die vraelys individueel verseël in ’n koevert wat saam met die vraelys uitgedeel word. Aangesien die studie vertroulik uitgevoer word, hoef u nêrens enige identifiseerbare inligting (bv. u naam of die skool se naam) aan te dui nie.

ONGEMAK EN/OF RISIKO’S:
Daar is geen risiko’s en / of ongemak wat voorsien word tydens deelname aan die projek nie.

VOORDELE:
Alhoewel die deelnemers nie direkte voordeel trek uit die projek nie, sal die resultate van die projek waardevolle kontekstuele inligting verskaf in die uitbreiding van gehalte-outismespesifieke onderwys. Die projek sal bydra tot die ontwikkeling van navorsingsgebaseerde opleidingsprogramme en bedryfstelsels vir outismespesifieke onderwys.

VRYWILLIGE DEELNAME:
Deelname is vrywillig. Dit staan deelnemers vry om hul te enige tyd te onttrek uit die studie sonder vooroordeel of benadeling.

VERTROULIKHEID:
Enige informasie wat verband hou met die identifisering van deelnemende skole of individue sal vertroulik hanteer word. Slegs die provinsie en plaaslike verteenwoordiger (arbeidsterapeut) sal aangedui word in die kodering van vraelyste. Geen ander potensieel identifiseerbare inligting sal aangedui word nie.

VERGOEDING EN DIE FINANSIËLE IMPLIKASIE:

Vergoeding vir deelname:
Nog die opvoeders nog die skole sal enige finansiële vergoeding ontvang vir deelname aan die projek.

Koste:
Daar is geen kostes verbonde m.b.t. deelname aan die studie nie.

UITSLAE:
Die navorser sal die resultate slegs na oorleg met die Departement van Onderwys publiseer in 'n geakkrediteerde joernaal. Die resultate sal ook in die vorm van 'n dissertasie as deel van die kwalifikasie Magister in Arbeidsterapie beskikbaar wees. Die navorser sal te alle tye die privaatheid en vertroulikheid van die skole en deelnemers respekteer en beskerm. Die navorser sal met graagte die resultate beskikbaar stel aan belangstellende skole of individue.

KONTAKBESONDERHEDE VAN DIE PROJEKLEDE:
Die navorser sal beskikbaar wees om enige vrae te beantwoord m.b.t. die studie, die prosedure en enige risiko's of voordele wat mag voortspruit uit die studie. Alternatiewelik kan die studieleiers gekontak word. Kontak besonderhede is soos volg:

Navorser:
Corina Botha
Tel (werk): 051 404 8944
Sel: 082 202 5952
E-pos: corina.botha@gmail.com

Studieleier:
Dr R van Heerden
Nagraadse Koördineerder: Arbeidsterapie
Universiteit van die Vrystaat
Tel (werk): 051 401 2829
Sel: 082 461 1511
E-pos: rita@waldie.co.za

Medestudieleier:
A van Jaarsveld
Tel (werk): 051 404 2829

education
Department of Education
FREE STATE PROVINCE

INFORMATION DOCUMENT:

Autism-Specific Education in South African Public Schools: Practices and Challenges

Researcher: JC (Corina) Botha

(Bachelors in Occupational Therapy, UFS)

Academic Facility: University of the Free State

Faculty: Health Sciences

Department: Occupational Therapy

INVITATION TO PARTICIPATE:

Educators of learners with autism spectrum disorders (employed in autism-specific classes in the public sector) are invited to participate in the study.

BACKGROUND TO THE STUDY:

The occupational therapists employed at the district-based support team at Motheo Inclusive are amongst other duties responsible for the support of learners who do not have access to a school due to their disability or social circumstances. A total of 40% of out-of-school learners assessed by the occupational therapists are diagnosed with autism spectrum disorders or seem to have traits of the condition. These learners experience difficulty in accessing appropriate education. Learners with milder forms of autism spectrum disorders are accommodated in ordinary schools if they can cope with the curriculum and social demands. However, learners with moderate to severe forms of autism have intensive support needs due to the variability and complexity of autism-specific symptoms, their atypical learning styles and specialised educational support needs. As a short-term goal, to increase access to appropriate educational support, autism-specific classes were started in 2010 at three special schools and one full-service school in the Motheo District. Unfortunately, these autism-specific classes accommodate only a limited number of learners (approximately 60). They also have waiting lists have variability in service delivery. Occupational therapists working at Motheo Inclusive are focused on both the efficiency and expansion of an education model that is appropriate, applicable and sustainable within the South African context.

It is the researcher's aim to identify the practices of autism education in public schools in South Africa. Since autism-specific education is new in the Motheo District; the results could be valuable in the development and improvement of autism-specific education in the area.

PURPOSE OF THE STUDY:
The main purpose of the study is to determine national practices and challenges regarding autism-specific education in public schools. The study results will provide valuable information in the expansion and monitoring of quality autism-specific education in the Motheo District. The study will also be valuable in the identification of support strategies for educators and learners with autism spectrum disorders. The study will also assist in advocating the educational rights of learners with autism spectrum disorders.

WHAT THE STUDY INVOLVES:
Participants will be asked to complete a questionnaire. Completion of the questionnaire will be considered as voluntary consent to participate in the study. The completion of the questionnaire will take no longer than 45 minutes and is a once-off process. The project will be performed at the school in a suitable time slot (indicated by the school). Since the project is nationally executed, the researcher has identified local representatives (occupational therapists) who will be responsible for the data collection process at schools. The local representatives will handle questions during the completion of the questionnaires. You are requested to answer the questionnaire as honestly as possible. After you have completed the questionnaire, please seal the questionnaire in the envelope, which will be handed to you with the questionnaire. Since the study is conducted confidentially, no potential identifiable information (e.g. your name or school name) will be indicated on the questionnaire.

DISCOMFORT OR RISKS:
There are no known risks and/or discomforts from this project. The results of this project will be used to expand and improve the quality of autism-specific education in the Motheo District.

BENEFITS:
Although participants will not benefit directly from the project, the results of the project will provide valuable contextual information in the expansion of quality autism-specific education. The project will assist in the development of evidence-based training programmes and operational systems for autism-specific education.

VOLUNTARY PARTICIPATION:
Participation is voluntary. Participants are free to withdraw from the study at any time without penalty or prejudice.

CONFIDENTIALITY:
Any information related to the identification of participating schools or individuals will be treated confidentially. Only the province and local representative (occupational therapist) will be indicated in the coding of questionnaires. No other potentially identifiable information will be indicated.

REIMBURSEMENT AND FINANCIAL IMPLICATION:

Compensation for participation:
Neither the educators nor schools will receive any financial remuneration for participation in the project.

Cost:
There will be no costs incurred on your part for participation in this project.

RESULTS:
The research results will be published in an accredited journal only after consultation with the Department of Education. The results will also be available in the form of a dissertation as part of the qualification Magister in Occupational Therapy. The researcher will respect and protect the privacy and confidentiality of the schools and participants at all times. The researcher will gladly make the results available to interested schools or individuals.

CONTACT DETAILS OF THE PROJECT MEMBERS:
The researcher will be available to answer any questions you have concerning the study, the procedure and any risks or benefits that may arise from the study. Alternatively, the study leaders can be contacted. Contact details are as follows:

Researcher:
Corina Botha
Tel (work): 051 404 8944
Cell: 082 202 5952
E-mail: corina.botha@gmail.com

Study leader:
Dr R van Heerden
Postgraduate Coordinator: Occupational Therapy
University of the Free State
Tel (work): 051 401 2829
082 461 1511
E-mail: rita@waldie.co.za

Co-study leader:
A van Jaarsveld
Tel (work): 051 404 2829

ADDENDUM K

SCHOOL PERMISSION TO PARTICIPATE

education
Department of Education
FREE STATE PROVINCE

Date:_____

Dear Principal / School Governing Body

PERMISSION TO PERFORM RESEARCH AT SCHOOL

Thank you for making time to review my research application in spite of your busy schedules. I am a qualified Occupational Therapist, busy with my Magister in Occupational Therapy at the University of the Free State. I am employed as a Senior Education Specialist: Occupational Therapist at the Department of Education: Motheo Inclusive.

The main purpose of my study is to determine current practices and challenges regarding Autism Specific Education in South African public schools. The study results would provide valuable information in the expansion and monitoring of quality Autism Specific Education in Motheo District. The study would also be valuable in the identification of support strategies for educators and learners with Autism Spectrum Disorders.

Ethical clearance, as well approval from the Department of Education Directorate: Strategic Planning, Policy & Research has been obtained. Your school is hereby invited to participate in the research study and consequently I request permission to involve educators from your school in the research study. Your participation and support of this research project would be appreciated since there are only a limited number of schools that provide Autism Specific Education in the public sector.

An information document regarding this project is attached to ensure that you are fully informed before you participate. Should you require more information, please do not hesitate to contact me or my study leaders at the contact details provided.

I trust that this application will be given your kind consideration and time. Should you consider the request to participate favourably, please forward the attached consent to e-mail: corina.botha@gmail.com or fax:0867291476 by _____

Kind regards

Botha

Corina Botha
SES: Occupational Therapist
Tel: 051-4048942

CONSENT TO PARTICIPATE: SCHOOLS

Hereby I, (full name)_____ of_____ (name of School) give permission for the research project to be performed at this school. I realize that participants must still give informed consent and that the school and educators may at any time discontinue their participation to no detrimental effects.

_____ Principal	_____ Date:
_____ Witness	_____ Date: