A survey of learners with complex communication needs (CCN) in the foundation phase of selected special schools in the Western Cape province of South Africa

by

Charne' Edwina Gill
Student no: U22960393

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Supervisor: Prof. Kerstin Tönsing

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DECLARATION OF ORIGINALITY

Full names of student: Charne' Edwina Gill

Student number: U22960393

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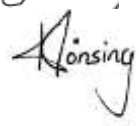
SIGNATURE OF SUPERVISOR: 

ETHICS STATEMENT

The author, whose name appears on the title page of this dissertation, has obtained, for the research described in this work, the applicable research ethics approval.

The author declares that she has observed the ethical standards required in terms of the University of Pretoria's Code of Ethics for Researchers and the policy guidelines for responsible research.

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> Where can I go from your Spirit? Where can I flee from your presence? If I go up to the heavens, you are there; if I make my bed in the depths, you are there. If I rise on the wings of the dawn, if I settle on the far side of the sea, even there your hand will guide me, your right hand will hold me fast (Psalms 139:7–10).

ABSTRACT

Background: Persons with complex communication needs (CCN) can be described as individuals who require augmentative and alternative communication (AAC) to compensate for impairments in speech-language production and/or comprehension. In South Africa, children with CCN often attend public special schools that are mandated by the Department of Basic Education to provide rehabilitation services and communication support, including AAC. Although previous studies helped describe the provision of aided AAC and communication support at certain special schools in the Gauteng province, not much is known about it in other parts of the country. The lack of prevalence data on children with CCN in Western Cape special schools may result in the inadequate provision, monitoring and implementation of AAC and communication supports. Thus, the aim of this study was to gather province-specific data regarding the prevalence of learners with CCN at public special schools in the Western Cape, as well as to describe some of the AAC support made available for them.

Methods: An online questionnaire was developed to determine the prevalence of learners with CCN in the foundation phase at selected special schools in the Western Cape, to describe their concomitant difficulties, the communication support provided to them, and teacher training in AAC. A non-experimental quantitative survey research design and a combination of purposive and comprehensive sampling were used in this study. The responses from 56 teachers were analysed using descriptive statistics.

Results: A prevalence of 23% of learners with CCN was found among learners in the foundation phase of 17 selected special schools in the Western Cape. Learners with CCN had concomitant difficulties such as difficulties remembering or concentrating for the purpose of learning and difficulties with self-care activities, such as washing and dressing themselves. A higher proportion of learners with CCN used informal methods of communication as opposed to AAC methods that are formally introduced and taught (e.g., keyword signing or speech generating devices), and a higher proportion of learners used unaided AAC rather than aided AAC. The majority of aided AAC communication boards/books and speech generating devices were provided by private individuals or outside institutions and not by the education department. Based on a subsample, about three-quarters of learners with CCN had communication support mentioned in their Individual Education Development Plan or Individual Support Plan but less than half received communication support from speech-language therapists based at the school. In addition, only two-thirds of the 56 teachers indicated

that they had received AAC training, while one-third of teachers indicated that they had not received any AAC training.

Conclusions: The results of this study indicate the significant need for efficient monitoring of communication support in the Standardised Identification, Assessment and Support policy, the need to consider alternative therapeutic communication support practices (i.e., classroom-based intervention and a focus on upskilling teachers), as well as considering increased departmental funding towards aided AAC provision and AAC teacher training. Improved AAC service delivery must thus be driven by impactful policy, effective AAC practice, and sufficient and appropriate funding. More research is needed in the other provinces of South Africa.

Keywords: augmentative and alternative communication (AAC), communication support, complex communication needs (CCN), foundation phase learners, prevalence, special schools

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LIST OF ABBREVIATIONS

AAC	Augmentative and Alternative Communication
ASD	Autism Spectrum Disorder
CCN	Complex Communication Needs
CP	Cerebral Palsy
DBE	Department of Basic Education
HRW	Human Rights Watch
IEDP	Individual Education Development Plan
ISP	Individual Support Plan
PD	Physical Disability
SGD	Speech generating device
SIAS	Standardized Identification, Assessment and Support Policy
SLT	Speech-Language Therapist/ Speech-Language Pathologist
SPID	Severe to Profound Intellectual Disability
SSA	Statistics South Africa
UN	United Nations
USA	United States of America
WC	Western Cape Province
WCED	Western Cape Education Department

1 PROBLEM STATEMENT AND LITERATURE REVIEW

1.1 Problem statement

Persons with complex communication needs (CCN) can be described as individuals who experience significant and complex communication disabilities characterized by impairments in speech-language production and/or comprehension (Beukelman & Light, 2020). Difficulties understanding language and expressing themselves adversely impact the abilities of learners with CCN to interact with their peers in the classroom environment and to learn (Beukelman & Light, 2020). Various studies attested to the efficacy of augmentative and alternative communication (AAC) in assisting children with CCN to communicate through using aided or unaided AAC systems (Beukelman & Light, 2020; O'Neill et al., 2018). AAC systems offer alternative modes of communication that can be used to build relationships, develop and maintain social closeness, and scaffold language development and literacy acquisition (Beukelman & Light, 2020; Kathard et al., 2015; Renner, 2003). Therefore, AAC may help children with CCN in a number of valued life activities, including increased participation in education and leisure.

In South Africa, children who have CCN often attend public special schools, which are mandated by the Department of Basic Education (DBE, 2001) to provide rehabilitation services, such as AAC. These special schools are supposed to be equipped to meet the high learning needs of children with various disabilities. Special schools also act as resource centres for mainstream and full-service schools (DBE, 2001; DBE, 2010). However, recent reports by the DBE (2015) and the Human Rights Watch (HRW) highlighted a lack in implementation of assistive technology in special schools. In addition, Tönsing and Dada (2016) conducted a study in six school districts in Gauteng, one of South Africa's most affluent provinces, and concluded that although the provision of aided AAC had improved since the execution of a similar study (Alant, 1999), limitations still exist in terms of the provision and implementation of AAC at special schools. Surveying and recording the number of individuals who require AAC services and their characteristics and particular needs remain essential for continuous development in AAC as an area of practice (Alant, 1999; Simpson et al., 1998; Siu et al., 2010; Sutherland et al., 2005). Gathering province-specific data regarding the prevalence of learners with CCN at public special schools in South Africa and acquiring more information regarding some of the AAC support made available for children with CCN through the school system would enable an estimation regarding the degree to which AAC needs among learners with CCN are met at

special schools in South Africa. While previous studies conducted by Tönsing and Dada (2016) and McDowell and Bornman (2022) are useful to get an impression on the prevalence of learners with CCN and some of the AAC provision that learners receive at special schools in selected parts of the Gauteng province of South Africa, there are currently no studies on prevalence and provision in other provinces in the country. The Western Cape (WC) province has a large urban population and is the third most densely populated province in South Africa according to Statistics South Africa (SSA, 2022). The prevalence of learners in need of AAC at public special schools and the AAC provisions afforded to them in the WC are not fully known. Gathering data on AAC needs and use in this province can be helpful to identify potential gaps in service delivery as a first step in ensuring more effective service provision in the WC province in future.

1.2 Literature review

In this review of the literature, the context of the study and the rationale for conducting this study are discussed. The context of the study is addressed by looking at the significance of AAC for learners with CCN, the proven efficacy of AAC in improving the language and communication outcomes of learners with CCN, the multi-faceted implementation of AAC in the school context, previous prevalence studies focusing on individuals with CCN, and the practices and policies regarding AAC implementation in the South African school context. In discussing the rationale for the study, the dearth of research regarding prevalence studies of learners in need of AAC at public special schools in the WC is highlighted.

1.2.1 Augmentative and alternative communication for learners with complex communication needs

Individuals with CCN have difficulties communicating using natural speech (Beukelman & Light, 2020) and writing (ASHA, 2005), which leads to activity limitations and participation restrictions (Beukelman & Light, 2020; Bornman & Donohue, 2014). Individuals with CCN also have an array of functional capabilities in the areas of communication, vision, hearing, mobility, cognition, and self-care that are linked to factors such as the aetiology of the communication limitation, their age, and other personal factors, as well as the opportunities afforded to them by their environment (Loncke, 2008; Washington Group on Disability Statistics, 2020).

Beukelman and Light (2020) suggested estimates of 5 million Americans and 97 million individuals worldwide who may have CCN. The difficulties individuals with CCN experience are not limited to expressing basic needs and wants but also include challenges in transferring and exchanging information and creating social closeness, which impact areas of life such as education, leisure, vocation, and employment (Beukelman & Light, 2020). As communication is central to learning and participation in classroom activities, learners (i.e., who are defined as children attending school (DBE, 2001)) with CCN experience academic and social challenges within the school environment (Kathard et al., 2015; Raghavendra et al., 2012). They typically require AAC to meet communication, learning, and social needs in this context (Beukelman & Light, 2020; Crowe et al., 2021).

According to the American Speech-Language-Hearing Association (ASHA, 2005), AAC is used by persons who have difficulties communicating, and it includes all forms of communication, other than speaking. Beukelman and Light (2020) suggested that the aim of AAC implementation is to develop and maintain communication effectiveness, as well as to enhance participation in all aspects of daily life. This is in line with the *International Classification of Functioning, Disability and Health* (World Health Organization, 2001) that proposes that disability can be minimised by implementing environmental adaptations to enhance the active participation of persons with disabilities. Therefore, the main goals of AAC are to increase communicative effectiveness and enhance participation in daily life (Beukelman & Light, 2020). AAC systems can be aided or unaided: Unaided AAC systems do not rely on external or additional supports, but typically require a measure of both gross and fine motor skills of the hands and fingers to functionally communicate, such as using gestures and manual signs; whereas aided AAC systems require external or additional support outside of the communicator's body. Aided AAC systems include electronic speech generating devices (SGDs) such as apps on Apple™ [1] devices, GoTalk™ [2], and BIGmack™ [3], and non-electronic communication systems, such as paper-based communication boards, eye gaze boards, and alphabet boards (Crowe et al., 2021). These aided AAC modalities can be accessed using

[1] Apple™ devices is a registered trademark of Apple Inc., https://www.apple.com

[2] GoTalk™ is a registered trademark of Attainment Company Inc., https://www.attainmentcompany.com

[3] BIGmack is a registered trademark of AbleNet Inc., https://www.ablenetinc.com

different methods, such as eye gaze, touchscreen, and head pointer, to help convey a message (Crowe et al., 2021).

There is a growing body of research supporting the effectiveness of AAC to improve language and communication outcomes for children who have CCN (Crowe et al., 2021; Light & McNaughton, 2015). The research suggested that AAC can positively impact receptive and expressive language development (Allen et al., 2017; Gevarter & Zamora, 2018; O'Neill et al., 2018), can increase functional communication skills (Barbosa et al., 2018; Muharib & Alzrayer, 2018), can improve social communication and engagement (Hong et al., 2017; Morin et al., 2018), and can have small to moderate positive effects on speech outcomes for some individuals (Ganz et al., 2014a; Schlosser & Wendt, 2008). The effective use of AAC has the potential to reduce frustrations and improve challenging behaviour related to communication failure (Murray et al., 2014; Walker et al., 2018; Walker & Snell, 2013) and to improve participation and engagement in school settings (Ganz et al., 2014b; Stauter et al., 2017).

1.2.2 Multi-faceted implementation of augmentative and alternative communication in the school context

In spite of the evidence on effectiveness, AAC is not always implemented (Andzik et al., 2019; Dada, Kathard, et al., 2017). Successful implementation of AAC is affected by both intrinsic factors, such as body functions, structures, and personal factors, and extrinsic factors, which are environmental, related to components such as the AAC user, the AAC system, and the AAC communication partners in the environment (Smith, 2006). Research suggested that individuals with severe intellectual disability, cerebral palsy (CP), Down syndrome, autism spectrum disorder (ASD), and developmental apraxia of speech often have CCN (Beukelman & Light, 2020). These developmental conditions can affect other areas of cognition, communication, memory, movement, and other physical functions such as sight, hearing, and sensory skills, and can impact the selection and implementation of AAC systems in accordance with the individual's capabilities (Mercurio-Standridge, 2014).

Access to appropriate AAC in the school context helps improve communication between learners with CCN, their educators, and their peers, promoting the inclusion of learners with CCN and increased participation in all classroom- and school-related activities (Beukelman & Light, 2020). When engaging in learning, learners who have CCN are able to access the curriculum and all learning programs through the effective use of AAC in the classroom context (Calculator, 2009). Therefore, the selection of appropriate AAC systems for a particular learner

is important and begins with a collaborative process in which issues and concerns are identified and possible goals are outlined by the multidisciplinary team (Mercurio-Standridge, 2014).

International treaties such as Article 23 of the United Nations (UN) Convention on the Rights of the Child (UN, 1989) and Article 24 of the UN Convention for the Rights of Persons with Disabilities (UN, 2006) have directed education policies and practices across the world towards inclusive education. However, the literature suggested that AAC is mostly implemented in segregated school settings, such as special schools or special units attached to mainstream schools and not in inclusive school settings (Iacono et al., 2022a; Iacono et al., 2022b).

AAC provision for school-aged children comprises a variety of facets. At minimum, a learner with CCN should be taught and/or provided with an aided or unaided AAC system, the choice of which should be based on a thorough initial assessment (Beukelman & Light, 2020). AAC intervention services at special schools are provided in a number of ways, including the traditional pull-out method of individual one-on-one therapy by a Speech-Language Therapist/ Speech-Language Pathologist (SLT) and through offering support within the classrooms and by providing training (Kent-Walsh et al., 2008). Learners and their communication partners, such as the classroom teacher, caregiver, and teaching assistant, typically require ongoing training and support to help develop communicative competence and facilitate the fluent and sustainable use of AAC in various natural contexts, such as the classroom or home environment (Beukelman & Light, 2020; National Joint Committee for the Communication Needs of Persons With Severe Disabilities, 1992). The effectiveness of AAC interventions require constant monitoring and ongoing assessment to adjust the interventions where needed.

Both AAC assessment and intervention must ideally be carried out by a skilled multidisciplinary team that is knowledgeable in AAC and can include various professionals, depending on the learner's needs (Beukelman & Light, 2020; Binger et al., 2012; National Joint Committee for the Communication Needs of Persons With Severe Disabilities, 1992). In the school context, the team can consist of a teacher, a SLT[4], an occupational therapist, a physiotherapist[5], and a teaching assistant (i.e., who assists the teacher and the learners with severe functional difficulties), and they can be employed by the DBE as seen in South Africa

[4] In the South African context, the term speech-language therapist is used, but other countries often use speech-language pathologist.

[5] In the South African context, the term physiotherapist is used, but other countries often use physical therapist.

(DBE, 2014; Mercurio-Standridge, 2014). However, in some countries, for example, Malaysia, teachers are the first and only point of introduction to AAC (Singh et al., 2020). In other countries like the United States of America (USA), AAC service delivery is included as part of the scope of practice of SLTs (ASHA, 2016), and therefore, their insight in the implementation of AAC in the school context is highly valued (Kent-Walsh et al., 2008). Although consulting AAC specialists who are not based at schools can be involved in the AAC assessment process (Mukhopadhyay & Nwaogu, 2009), research suggested that school-based SLTs in developing countries are most often involved in the continuous implementation of AAC on a daily basis (Kent-Walsh et al., 2008). There may be challenges with the high demand of AAC users in the school context in relation to the limited amount of school-based SLTs (Kent-Walsh et al., 2008). Effective AAC service delivery and collaboration by professionals and educators working at schools can be affected by low levels of confidence and training in AAC (Kent-Walsh et al., 2008; Tönsing & Dada, 2016).

Furthermore, AAC implementation must be supported by sufficient and appropriate funding (Harris, 2015), effective practice (Brock et al., 2024), and impactful policy (Kent-Walsh et al., 2008). In many contexts, the multi-faceted implementation of AAC is negatively impacted by a lack of resources, such as a lack of aided devices, a lack of training for teachers and professionals, and a lack of skilled professionals based at schools (Kent-Walsh et al., 2008; Tönsing & Dada, 2016; Weiss et al., 2005).

1.2.3 Prevalence and augmentative and alternative communication provision studies: children with complex communication needs

Studies that determine the prevalence of individuals with CCN and the extent to which AAC is implemented in this population play an important role in highlighting the gap between AAC needs and AAC provision (Alant, 1999; Binger & Light, 2006; Binger et al., 2021; Matas et al., 1985; Siu et al., 2010; Tönsing & Dada, 2016; Weiss et al., 2005). Prevalence studies in the field of AAC are primarily surveys aimed at determining the number of children and/or adults with CCN in various contexts, as well as the AAC support provided. The information gathered from prevalence studies can function as baseline data for the development of the field, inform future program planning, and help shape national policy (Fowler, 2009; Simpson et al., 1998).

A range of studies aimed at establishing prevalence of persons in need of AAC, or AAC needs, and the extent of AAC provision have been conducted over the years in a number of

countries, including the USA (Simpson et al., 1998), New Zealand (Sutherland et al., 2005), and the United Kingdom (Creer et al., 2016). Some studies focused on both children and adults, for example in Hong Kong (Siu et al., 2010), and others focused specifically on the preschool and school context, for example, in the USA (Binger & Light, 2006; Binger et al., 2021), Israel (Weiss et al., 2005), and South Africa (Alant, 1999; McDowell & Bornman, 2022; Tönsing & Dada, 2016). In the studies focusing on preschool and school contexts, researchers obtained the prevalence rates for learners with CCN and information on the extent to which AAC services are provided or not provided in specific school and preschool contexts. The findings were expected to influence policy and direct the development of AAC service delivery in the school context, ultimately improving access to services and resulting in better outcomes for children with CCN.

In the USA, for example, Binger and Light (2006) conducted a study at 10 special education agencies in the state of Pennsylvania with preschoolers from as young as 3 years old to 5 years and 11 months old. The results indicated that 15% used voice output devices, whilst the majority of children used gestures, picture boards or books. They also found that 24% of preschoolers who attended SLT sessions required AAC. The preschoolers who required AAC services, required services from SLTs (100%), special education teachers (89%), occupational therapists (77%), physiotherapists (51%), and 10% and less required services from other professionals such as teaching assistants, vision specialists, behaviour specialists, and others. All of the professionals offering AAC services indicated that competency in AAC was beneficial for professionals other than SLTs to better understand learners who use AAC, to be an effective AAC communication partner, and to assist in the implementation of AAC through collaborative assessment and AAC intervention. The critical need for early intervention for children who require AAC was highlighted, as well as the need for all preschool SLTs to be prepared to provide AAC services. In addition, the need for secure funding to ensure high-quality AAC services are provided for children with CCN was mentioned.

Binger et al. (2021) conducted a survey in New Mexico that demonstrated that 1 in 89 school-aged students in K-12 in public schools have highly unintelligible speech, and that only 22% of these students received AAC services. They discussed complex provision issues regarding aided AAC technologies, with low-tech AAC being utilized by 10% of students and high-tech AAC being utilized by 10% of students. All of these findings highlighted the gap in service delivery and the need for professionals in New Mexico to be prepared to provide AAC

services, as well as the need for regional or state levels to provide support for AAC interventions.

Siu et al. (2010) found that out of a total of 6 691 children (30%), 599 of children at special preschool centres and 1 418 children at special intellectual disability and physical disability (PD) schools were identified as learners with little or no functional speech. They demonstrated that there is a higher number of children with CCN that had access to AAC service provision in schools for children with intellectual disability and PD than in preschool centres and other types of special schools. Therefore, they were able to draw attention to the lack of access to AAC service provision in both preschool centres and other types of special schools in Hong Kong. Furthermore, they were also able to draw conclusions regarding the issues related to the generalisation of AAC services beyond the classroom setting, the dissatisfaction of 72% of the professionals in relation to AAC training, and the advocacy needed to increase awareness of the need for AAC support as it directly impacts the quality of life of children and adults with CCN.

In South Africa, two subsequent prevalence and provision studies were conducted, of which one was conducted in the foundation phase of the school, which is defined as the phase in which learners are usually between the ages of 5 years old to 12 years of age (DBE, 2001). Tönsing and Dada (2016) investigated the extent to which aided AAC was implemented in selected special school classrooms in six school districts in the Gauteng province, and analysed teacher's perceptions of the implementation process. They found that 45% of learners across eight special schools had limited speech. They concluded that 91% of special schools in the selected districts had access to some form of aided AAC, and 36% of learners across the eight schools had access to both personal and shared aided AAC systems. Their results suggested an improvement in AAC service provision in terms of aided AAC when compared to less than 1% of special schools in the same area having some form of aided AAC in 1999 (Alant, 1999). However, less than half of the schools that possessed aided AAC implemented it to support learners with CCN in the preschool and foundation phase classrooms (Tönsing & Dada, 2016). In addition, 19% of preschool and foundation phase learners with CCN had no access to aided AAC and the more expensive electronic aided systems were shared among peers rather than exclusively used by one learner with CCN (Tönsing & Dada, 2016).

Another recent study by McDowell and Bornman (2022) at special schools in Gauteng also determined the prevalence of learners with CCN, but aimed to describe the implementation of keyword signing. The authors found a prevalence of 500 out of 1 015 (49%) learners taught

with CCN. The 49:51 (CCN:verbal) ratio was in line with the 45:55 ratio demonstrated in the Tönsing and Dada (2016) study conducted at special schools in Gauteng. McDowell and Bornman (2022) found that keyword signing is not always used in classrooms and that teachers experience various barriers, such as lack of time and training, to keyword signing implementation. They demonstrated that teachers from both public and independent special schools gained most of their signing knowledge from books and manuals, followed by in-service training, training by other teachers, and training by SLTs, Makaton, and Tiny Handz training courses. They also highlighted that less than 25% of signing knowledge was obtained from a school principal, websites, formal training in sign, conferences, South African Sign Language workshops, parents, and other sources.

While the studies conducted by Tönsing and Dada (2016) and McDowell and Bornman (2022) are useful to get an impression of prevalence of learners with CCN and some of the AAC provision that learners receive at special schools in selected parts of Gauteng, there are currently no studies on prevalence and provision in other parts of the country. In addition, Tönsing and Dada (2016) only focused on six educational districts, and McDowell and Bornman (2022) only included schools where keyword signing was implemented. Therefore, their samples were likely biased towards schools with better AAC provisions.

1.2.4 The South African school context: Learners with disabilities

In the South African context, there have been various developments in educational policy supporting the provision of AAC in special schools in South Africa over the years, as well as opposing challenges and barriers in reaching inclusion for persons with disability. These are discussed chronologically.

The South Africa constitution and the Bill of Rights drafted by the African National Congress (ANC) and the South African Government (SAG) protects the rights of vulnerable populations, and the right to appropriate healthcare and quality education for children are enshrined in Sections 28 and 29 (ANC, 1993; SAG, 1996). Therefore, the government is constitutionally obliged to develop appropriate education and rehabilitation opportunities for children in need of AAC. However, in 1999, Alant conducted a study at special schools in Pretoria, which were previously known as schools for students with severe mental retardation, and found a prevalence of 39% of learners with severe mental retardation experiencing CCN, as well as a lack of direct communication training within the school program, a lack of trained professionals at schools to support teachers working with learners with little or no functional

speech, and little AAC use. She found that only 9% of teachers reported spending "all of their time" providing instruction for communication training and 27% reported spending "little to no time" on communication training. She also highlighted the scarcity of professionals at schools for children with severe mental retardation as only 8 out of 19 schools had contact with SLTs and occupational therapists, with 35% having contact with occupational therapists and 13% having contact with SLTs, and therapy services were run on the traditional 'pull-out' model of service delivery. In addition, she found that less than 1% of learners with functional speech and learners with little or no functional speech used some form of AAC.

A significant policy development took place in 2001, when the *Education White Paper 6 on Special Needs Education* (DBE, 2001) was released, which mandated the provision of access to education to all children with disabilities, as well as to all children who experience barriers to learning, such as CCN. This policy document was intended to inaugurate an inclusive education system in South Africa, as opposed to the previous segregated model, where special education schools, which are defined as "schools equipped to deliver education to learners requiring high-intensive educational and other support" (DBE, 2010, p. 8), and mainstream schools were strictly separated (DBE, 2001). In addition, South Africa ratified the UN Convention on the Rights of Persons with Disabilities in 2007. However, despite the progressive policies in place, according to the most recent DBE (2015) progress report, the integration of a more inclusive education system remains a challenge and special schools were not abolished. Disparities in resources required for the implementation of inclusive education remain in various provinces of South Africa due to a lack of clarity regarding the strategic intent of the Education White Paper 6 policy and inadequate directives and support given to ensure the successful implementation of the policy by the DBE, (Bornman & Donohue, 2014; HRW, 2015). These disparities include limited access to specialist services, limited ongoing support to mainstream schools in overcoming barriers to learning, inadequate specialist professional support staff and non-teaching staff, and no structured engagement from stakeholders in terms of changing attitudes towards disability and addressing the shortage of health professionals in the country (HRW, 2015). Inclusive education has also been hindered by school-level barriers, such as the attitudes of staff and their beliefs regarding disability, as well as by social barriers, such as ostracism of learners with disabilities by other learners, society perceptions rooted in the old medical model, and traditional beliefs linking disability to sins, witchcraft, and angered ancestors (Bornman & Donohue, 2014). Therefore, the number of learners with disabilities and barriers to learning, such as CCN, enrolled in special schools remains higher than those who attend mainstream schools (HRW, 2015).

Though special schools are mandated to ensure access to education for all learners with disabilities or barriers to learning, such as CCN, recent education reports suggested special schools were still not adequately equipped to implement the necessary strategies, interventions, such as AAC, and professional support, such as teachers and professionals who have received AAC training, as outlined in the White Paper 6 document (DBE, 2001; DBE, 2010; DBE, 2015; HRW, 2015). AAC service provision in South Africa remains adversely affected by factors such as poverty and gross inequalities (Kathard et al., 2015). Although the provision of AAC systems has improved, a lack of AAC-trained professionals based at schools and district level, and a lack of collaborative team efforts in implementing AAC in the school context in South Africa remain a challenge (Alant, 1999; DBE, 2015; HRW, 2015; McDowell & Bornman, 2022; Tönsing & Dada, 2016).

In 2014, the DBE (2014) implemented the Standardised Identification, Assessment and Support (SIAS) policy for learners to help build an inclusive education and training system. This policy aims to address the needs of vulnerable and marginalised learners, allowing children with disabilities to exercise their right to basic education. The implementation of the policy introduced new roles and responsibilities for the education support system in the country with school-based and district-based support teams and acknowledged the role teachers and parents play in the decision-making and support processes. The policy stipulated guidelines in terms of screening and assessment of learners, placement of learners at mainstream and special schools, and ensuring the necessary support structures are put in place for learners with disabilities. This policy is intended to help ensure all schools in South Africa promote inclusion of learners with disability, work towards adapting school structures to better accommodate learners with various disabilities, such as CCN, as well as help to reduce inequalities and disparities across the nine provinces in South Africa. Matolo and Rambuda (2022) conducted a study evaluating the implementation of the SIAS policy, and suggested that the implementation of the policy has been modest and that more teacher training is necessary to improve the implementation of the SIAS policy.

The WC is the fourth largest province in the country by size, and the third most densely populated province among the nine provinces of South Africa (SSA, 2011, 2022). The WC is home to 12% of the country's population, which is 7.6 million people out of a total population of 63 million in South Africa (SSA, 2022). Situated at the tip of Africa, the WC is one of three provinces that significantly contribute to the country's economic value, and it has the lowest unemployment rate in the country (SSA, 2012). Despite the WC having a large metropolitan

area and the lowest unemployment rate, disparities still exist in terms of housing and access to toilets, water, and electricity supply (SSA, 2012). According to a recent DBE (2015) report, the education department of the WC procured assistive technology from 2012 to 2014 and focused its inclusion budget on building resources and filling of posts at district and circuit levels. Furthermore, the Directorate of Inclusive Education reported that adequate and careful monitoring of assistive devices and their use is essential in procuring assistive devices and specialised technology through transversal tenders (DBE, 2015).

At present, the prevalence of learners in need of AAC at public special schools and the AAC provisions afforded to them in the WC are not fully known. The current study therefore aimed to determine the prevalence of children with CCN in the foundation phase at special schools in the WC, as well as some of the AAC provisions they receive, based on teacher report. It was decided to aim the survey at teachers as they are the professionals most directly involved with learners (Hunt et al., 2002; Patel & Khamis-Dakwar, 2005). Furthermore, the profile of professional specialist support personnel varies from school to school, and professionals supporting communication, like SLTs, are not employed at all special schools in South Africa (Tönsing & Dada, 2016).

2 METHODOLOGY

2.1 Study aims

2.1.1 Main aim

The main aim of the study was to determine the prevalence of learners with CCN in the foundation phase at selected special schools in the WC and to describe the AAC support provided for them.

2.1.2 Sub-aims

The study had the following sub-aims:

i. To determine the prevalence of learners with CCN in the foundation phase at selected special schools in the WC;
ii. To describe their concomitant difficulties in other functional areas;
iii. To describe the communication methods they use in class;
iv. To describe communication support for learners with CCN including the following:
    - Aided AAC provision;
    - Therapeutic support;
    - Documentation of communication support in the Individual Education Development Plan (IEDP) and/or Individual Support Plan (ISP); and
v. To describe teacher training in AAC.

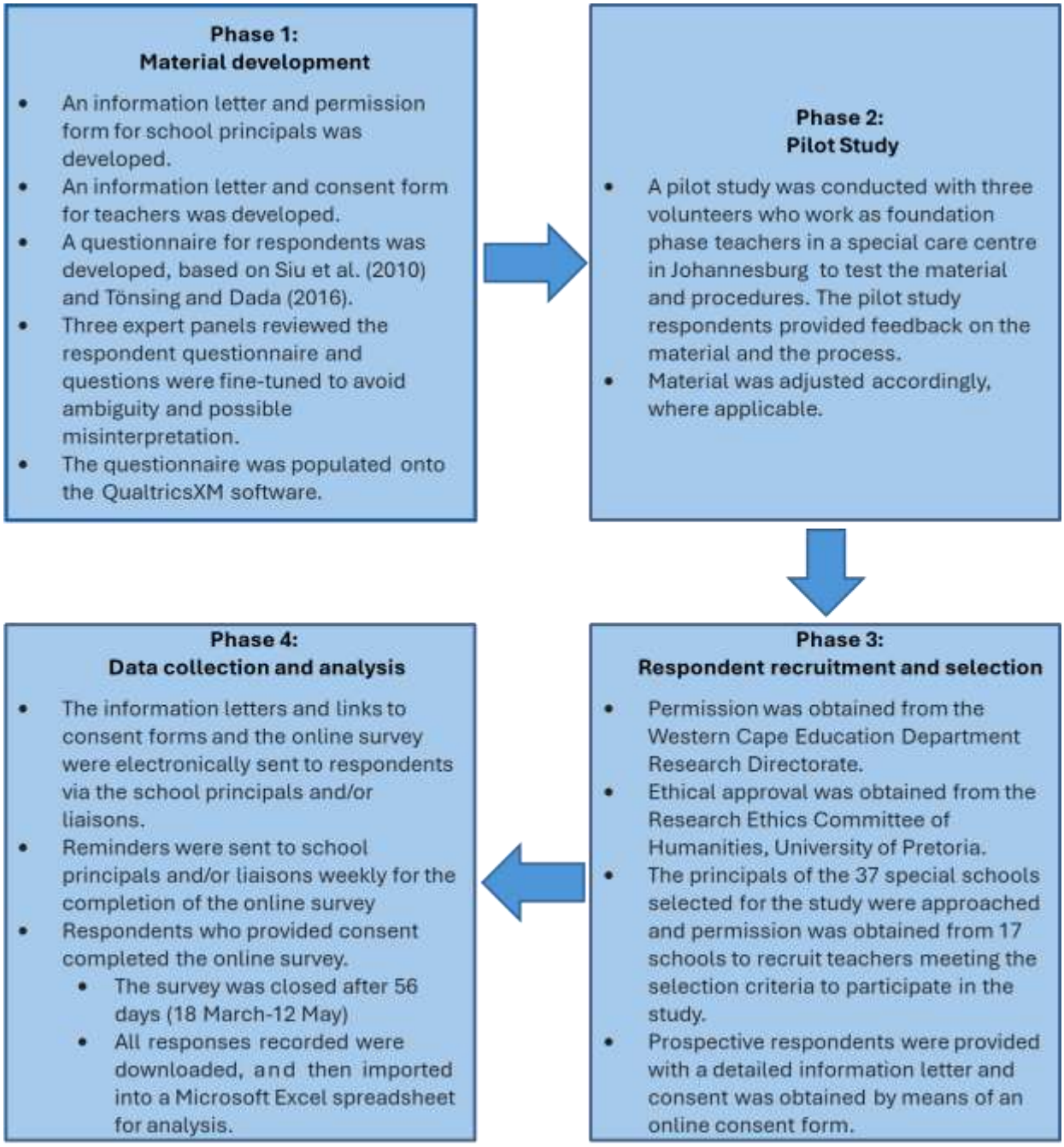
2.2 Research design and phases

A non-experimental quantitative survey research design was used in this study (McMillan & Schumacher, 2014). According to McMillan and Schumacher (2014), a quantitative research design is objective in measurement and describes occurrences. Obtaining objective numerical data helped understand the proportion of learners who have CCN in the foundation phase of selected special schools in the WC. Survey research obtained from a sample of the population is often used in educational research to fill information gaps with regards to provision or support provided to various populations, to gather baseline data for the development of various fields, and to inform program planning, policy, and practice (Fowler, 2009). Inferences are made from the data collected with survey research designs, and information obtained from the sample are inferred to the greater population (McMillan & Schumacher, 2014). This design was thus well

suited to the current study, as the survey used helped obtain information regarding the prevalence of learners who have CCN in the foundation phase of special schools in the WC and systematic descriptions regarding the AAC support provided for these learners and their teachers, which may, with caution and certain provisos, be taken as a reflection of the situation in the province (Alant, 1999; McMillan & Schumacher, 2014). A summary of the phases of the study is seen in Figure 1.

Figure 1

Phases of the Study



2.3 Teachers

2.3.1 Sampling and recruitment

Prior to the recruitment of teachers, ethical approval to conduct the study was obtained from the Research Ethics Committee of Humanities, University of Pretoria (Appendix A). Permission was also obtained from the Western Cape Education Department (WCED) to contact the special schools in the WC (Appendix B).

A combination of purposive and comprehensive sampling was used to recruit teachers. Firstly, the researcher purposefully selected special schools for learners with special educational needs where (a) learners with CCN were likely to be included, and (b) foundation phase learners were taught, which included Grade R learners. All 37 special schools designated on the website of the WCED[6] to specialise in teaching leaners with ASD, physical disabilities, CP, and severe intellectual disabilities were contacted. Once it was confirmed that the school included a foundation phase (see process described in paragraph following), the principal of the school was approached for permission to recruit the foundation phase teachers in their school in the study. In this way, the researcher was confident that most teachers meeting the inclusion criteria were likely to have a chance to be included in the study, which is comprehensive sampling. The benefits of this sampling method are that a larger sample size holds more credibility and validity for numerical data obtained, and that this sampling method helps compensate for a possible poor response rate (Arya et al., 2012; Fowler, 2009; McMillan & Schumacher, 2014). Although the exact population size was unknown, it was calculated that each responding school could have between three and four teachers who meet all the selection criteria, resulting in a possible sample size of 111–148. However, bearing in mind the actual response rate of schools and teachers, the researcher estimated a possible sample size of 30–40 teachers.

The researcher contacted each of the 37 schools to ascertain whether they are a special school and whether they have a foundation phase (Grades R–3). Through the telephonic screener, four schools were excluded from the study as they did not include a foundation phase. When the contact person confirmed that the school was a special school with a foundation phase, a principal letter (see Appendix C) explaining all aspects of the study was sent to the school principal or acting head. A permission form with a space for the school stamp was

[6] https://wcedonline.westerncape.gov.za/Specialised-ed/listofschools/listofschools_index.html

included. Thirty-three permission forms were electronically sent out, and four schools did not grant permission to do the study at their schools and 12 schools did not respond. Once permission was received from the 17 remaining principals/acting heads (52% of schools) and clearance was obtained from the Research Ethics Committee of Humanities, University of Pretoria, the information letter with consent form for teachers (Appendix D) was electronically sent to the schools with a request to distribute to Grade R and foundation phase teachers.

2.3.2 Selection and descriptive criteria

In order to take part in the study, teachers had to meet the selection criteria stated in the information letter and the online consent form (Appendix D) and presented in Table 1.

Table 1

Teacher Selection Criteria

Criterion	Justification	Measure used
Teacher registered with the South African Council for Educators (SACE)	Teachers must be qualified teachers. According to law, the council keeps a record of teachers qualified to teach at schools in South Africa.	Self-report (consent form, see Appendix D)
Teacher currently teaching Grade R or any other foundation phase class in a special needs school in the WC	The DBE (2014) stated the foundation phase is a priority. For the purpose of this study, data must be obtained regarding learners with CCN in the foundation phase of special schools in the WC. Respondent must be familiar with learners in the foundation phase (learners aged 5;0 -13;11)	Self-report (consent form, see Appendix D)
Proficiency in written English	As English is the lingua franca of South Africa (Khokhlova, 2015) and is extensively used in higher education, it can be expected that persons with a tertiary qualification, like teachers, would be proficient in written English to read the information letter, give informed written consent, and participate in a survey.	Included as part of respondent selection criteria in information letter (Appendix D)
Proficiency and internet access to answer an online questionnaire (e.g., on smartphone or computer)	The researcher did not make any direct contact with teachers to avoid any research bias. Therefore, all written information was electronically sent and received.	Included as part of respondent selection criteria in information letter (Appendix D)

Additional descriptive information about the teachers was obtained via the questionnaire and is shown in Table 2.

Table 2

Description of Teachers (N = 56)

Variable	Description		
	M	*SD*	Range
Age	41	11	25–63
Years teaching	15	10	1–39
Years teaching in special education	11	8	4 months–34 years

Variable	Description		
	Category	*n*[a]	%
Highest qualification	Teaching diploma	21	38
	Bachelor's degree	19	34
	Honour's degree	13	23
	Master's degree	2	3
	Matric	1	2
Area situated	Urban area	41	70
	Semi-rural or peri-urban area	9	20
	Rural area	6	10
Disability focus of the school	SPID, ASD	14	25
	SPID, CP or PD, ASD	13	23
	ASD	11	20
	SPID	6	11
	SPID, CP or PD, ASD, other[b]	6	11
	CP or PD, ASD	3	5
	ASD, other	2	4
	CP or PD, ASD, other	1	2
Support staff based at the school	Occupational therapist/s	54	96
	SLT/s	44	79
	Physiotherapist/s	18	32
Support staff in the classroom	Teaching assistants	50	89

Note. *M* = mean; *SD* = standard deviation; SPID = severe to profound intellectual disability.
[a] *n* = the number of teachers for which this was relevant
[b] other = foci that included Down syndrome, attention deficit hyperactivity disorder, specific learning disorders, and hearing impairments.

According to the findings, teachers who participated in the study were between the ages of 25 and 63 years, with an average age of 41 years. Thus, the sample was both representative of teachers starting out in their career and those who were close to retirement. On average, the findings suggested that teachers are well experienced in education and teaching in special education. Most teachers had a teaching diploma or a bachelor's degree, and the least number of teachers had matric and a master's degree as their highest qualification.

Out of the 56 teachers, 70% were teachers from a special school in an urban area, 20% were teachers from a special school in a semi-rural or peri-urban area, and 10% were teachers from a special school in a rural area. The teachers were asked to select their school disability focus and were asked to select all that apply. Therefore, out of these 56 teachers, 25% reported a dual disability focus of ASD and severe to profound intellectual disability (SPID) at their school, and 23% indicated that the disability focus of their school is a combination of SPID, ASD, and CP or PD.

In terms of school support staff, out of the 56 teachers, 96% had one or more occupational therapists as part of the school staff, 79% had one or more SLTs as part of the school staff, and only 32% had one or more physiotherapists as part of the school staff. In terms of classroom support staff, 89% indicated that they have at least one teaching assistant in their classroom.

2.4 Materials and equipment

The materials used in this study were information letters, permission/consent forms, and an online survey.

An information letter (Appendix C) that fully disclosed the details of the study was compiled for the principals/acting heads of the special schools that met the criteria. A permission form was also compiled, giving the principal/acting head the opportunity to provide or deny permission for recruitment of teachers at the school. The letter with a permission form was sent via email in PDF format.

A second information letter (Appendix D) covering the same content was compiled for teachers. The letter contained an embedded link to the consent form, populated onto the Qualtrics^{XM} platform[7], and survey. For ease of refence, the offline version of the consent form is included in Appendix D.

The survey (see Appendix E for an offline version) was developed guided by questions from previous surveys published in the literature, such as the surveys used by Tönsing and Dada (2016) and Siu et al. (2010). The survey contained three sections, namely (a) an explanation of terms, (b) biographical and school background questions, and (c) the survey items pertaining to the aims of the study.

The first section of the online survey provided an explanation of important terms used in the questionnaire. The term ‘severe communication difficulties’ was used in the survey instead of CCN for ease of understanding. Eight biographical/descriptive questions followed that pertained to teachers’ age, qualifications, teaching experience in general, teaching experience in special schools, the area in which the school is situated, the disability focus of the school, the number of professionals based at the school, and as well as the number of teaching assistants in

[7] Qualtrics^{XM} is a software platform of the registered company Qualtrics; https://www.qualtrics.com

the class. The remaining questions pertained to the sub-aims of the study. Table 3 provides an overview of which questions related to specific sub-aims.

Table 3

Overview of Survey Questions

Sub-aim	Questions
To determine the prevalence of learners with CCN in the foundation phase at selected special schools in the WC	Questions 9, 10, 11 & 12
To describe their concomitant difficulties in other functional areas	Questions 13 &22
To describe the communication methods used in class	Questions 14 & 22
To describe communication support such as aided AAC provision	Questions 15, 16 & 22
To describe communication support such as therapeutic support	Questions 17, 18 & 22
To describe communication support in documents such as the IEDP and/or ISP	Questions 19 & 22
To describe teacher training in AAC	Questions 20 & 21

The questionnaire ended with one open-ended question asking teachers to provide any further comments regarding learners with severe communication difficulties, the communication methods the learners use, and the support that is provided to them.

The questionnaire was reviewed by a number of experts to ensure face validity. Firstly, an electronic copy was reviewed by an SLT who is the acting deputy chief education specialist for learners with severe to profound intellectual disabilities in the WC and employed by the WCED. Written feedback and suggestions were sent to the researcher via email to ensure face validity of the questionnaire. This expert reviewer had eight years' experience with learners with CCN working as an SLT with an outreach team for learners with severe to profound intellectual disabilities in the WC. The questionnaire was also reviewed by an expert panel of three students who are in their second year of study at the University of Pretoria doing the Coursework Master's in AAC. One of the panellists was an SLT and audiologist who was working at the time as the deputy chief education specialist for speech therapy and audiology services in Johannesburg, and had 25 years' experience working in education and 14 years' experience providing mainly low technology communication systems to children with CCN. The second panellist was working as an SLT at a government special education school and had two to three years' experience working with learners with CCN and learners with severe to profound intellectual disabilities, as well as working with AAC in that context. The third panellist was an SLT who works as a chief education therapist at special care centres in the Northern Cape and had three years' experience working with learners with CCN and AAC in the education sector. The questionnaire was discussed by the panel using an online discussion forum and during a face-to-face panel meeting. Lastly, the questionnaire was reviewed by two experts who had

previously worked as teachers in the WCED. The first expert was a retired teacher with 32 years' experience working with children with CCN, and therefore, using AAC in the classroom, and working in special education in South Africa. The second expert was a special needs teacher currently working as a lecturer at a teacher's college in South Africa. This expert had seven years' experience working with children with CCN and AAC in the education sector. The questionnaire was emailed to these experts and they provided written feedback.

Table 4 gives an overview of the expert feedback received from all three groups and the actions taken in response; minor editorial changes are not captured in Table 4.

Table 4

Overview of Expert Feedback and Action Taken

Provided by	Question Number	Comment or suggestion made by expert	Action taken
Education specialist	2	"Are you going to look at which disability group the teacher teaches? The Personnel Administrative Measures (PAM) weighting according to disabilities is used to work out human resources, including therapists and norms and standards etc."	The following question was added: "2. Does your school have a specific disability focus? Please tick ALL that apply: Severe to Profound Intellectual Disability Cerebral Palsy or Physical Disability Autism Spectrum Disorders Other (Please specify): _____"
	14	"The WCED has augmentative and alternative communication (AAC) libraries based at certain special schools and learners might travel with their AAC devices from special care centres to Special Schools. The conditional grant for learners with profound intellectual disabilities makes provision for the province to procure AAC devices for learners in special care centres. Once the learner is placed in school, the device goes with the learner."	The following was used: "… provided by the Department of Basic Education (DBE) or people and/or institutions outside of the school?"
	15	"Where would one capture the inclusive education outreach teams? They are linked to a special school resource centre and provide outreach services."	The following was used: "School speech therapists (i.e., therapists who are part of the school staff), other speech therapists who come to the school (i.e., district-based speech therapists, speech therapists from the Department of Health or private speech therapists) and other speech therapists who see learners outside of the school."
	End of survey	"Some teachers forget to click submit. End off the survey considering this."	The following was stated: "A summary of your responses will be displayed which may be downloaded as a PDF document or printed if you wish to do so. Thank you for participating in this survey. Please click on submit below. Thank you for your time."
2nd year Master's in AAC students	1	"Provide examples of places that are rural, semi-rural or peri-urban and urban, some individuals do not know the difference. If they see examples, they will be able to determine what category their school is located in."	The following examples were added according to the education districts in the WC: Rural area (Example: Overberg, Eden and Central Karoo Education Districts) Semi-rural/peri-urban area (Example: Cape Winelands and West Coast Education Districts)

Provided by	Question Number	Comment or suggestion made by expert	Action taken
			Urban area (Example: Metro Central, Metro East, Metro North and Metro South Education Districts)
	3–5	"It is generally recommended to start with background questions before moving into more specific details."	The following was shifted up in the questionnaire: "How many of these **professionals** are based at your school? Indicate the number." The following questions were added: "What is your age?" "What is your highest academic qualification?"
	11	"The following question could be too ambiguous or confusing for educators to answer: "How many learners in your class have SCD [severe communication difficulties] (i.e., no speech, very limited or unclear speech, or speech that seems unusual or inappropriate)?" Consider inserting a button, which teachers could click on to explain the term SCD if needed."	The definition of 'severe communication difficulties' was stated at the start of the questionnaire and the question rephrased to read as follows: "How many learners in your class have **severe communication difficulties** (i.e., learners that cannot rely on speech to communicate with others functionally)?"
	12	"Considering the sub-aims of the study, obtaining information regarding the learner's concomitant difficulties, cannot merely be obtained with asking the educator about the diagnosis of the child, as there are potential challenges in expecting teachers to report on the learner's official diagnosis."	The Washington Group short set questions was incorporated into the survey because it is easy to read, understand, and respond to with increased accuracy. The measurement tool incorporated is focused on measuring difficulty of functioning in basic, universal actions (capabilities) that, in an unaccommodating environment, would place an individual at risk of restricted social participation.
	15	"I see that regarding therapeutic intervention your focus is on individual therapy in question. However, in schools where there is limited access to therapy services it is possible that learners with SCD [severe communication difficulties] might be seen in **small groups** i.e., two or more."	Both individual and small group therapy were included in the question as follows: "This question is about learners with severe communication difficulties who receive individual or small group **therapy to help them communicate better**. Please fill in the number of learners that receive such individual or small group therapy from the following professionals. If you are unsure, you may provide an estimate. If you do not know please write 'unknown'".
	17	"The WCED uses the Screening, Identification, Assessment and Support (SIAS) process and as a result some teachers might get confused between the Support Needs Assessment 1 (SNA1) and an Individualised Support Plan (ISP). SNA 1 will also include for example 'communication difficulties and the strategies put in place to assist.	The question was rephrased as follows: "How many learners with severe communication difficulties in your class have communication goals in their IEDP or ISP?"

Provided by	Question Number	Comment or suggestion made by expert	Action taken
		The terms Individualised Education Development Plan (IEDP) and ISP may be used interchangeably across provinces and possibly schools. Your proposed table format is clear. You might want to include a brief instruction like, "For each document listed, please indicate the number of learners with communication difficulties for whom these difficulties and/or a support plan are noted".	
	19	"If listing the details of workshops etc. attended is compulsory some might struggle to get the exact dates. Often times they do not have a copy of the attendance register."	The question was phrased as follows: "Please fill in any details you can remember, for example: the topic or title of the course and the date; or the title of the book/journals etc. You may select more than one option."
	Question omitted	"What is the name of your register class (For example: preschool, junior, class 1, Grade 1, any description used at your school)?"	The suggested question was not relevant to the sub-aims of the study and was therefore omitted.
	Other suggestion	"If asking the teacher for the diagnosis, preface this section by asking if the teacher is aware of the specific diagnoses of their students. If they are not, you can potentially skip the diagnosis-based questions to avoid inaccurate data."	A question related to the learner diagnosis was not included.
	Other suggestion	"Rephrasing: 'to communicate with others in a functional way' to 'to communicate with others functionally'. AND 'but their speech does not really make sense' to 'but their speech does not make sense' AND 'struggles to communicate in an effective way' to 'struggles to communicate effectively'."	The wordiness was reduced to simplify the question to avoid fatigue and confusion.
	Other suggestions	"The question's phrasing is clear. To further simplify, you might consider: "For learners with communication difficulties in your class, how many receive support through the following methods?" Then list the methods."	The following phrase is clear and does not require further simplification: "How many learners with severe communication difficulties in your class use these methods of communication? (One learner may use more than one method)"
Ex-teacher	14 & 18	"Speech generating device should be written as speech-generating device"	Speech generating device was not replaced with speech-generating device to keep abreast with international literature.
	16	I would add a question: "Do you have a teaching aide in your class?"	The following question was added: "How many teaching assistants do you have in your class? Please indicate the number. If none please type 0."
	20	Avoid redundant questions, as it adds to the length of the questionnaire	Two lengthy open-ended questions were reduced to the following:

Provided by	Question Number	Comment or suggestion made by expert	Action taken
			"Are there any other comments you would like to make regarding learners with severe communication difficulties, how they communicate in class and the support that is provided to them to help them communicate better?"
	Other suggestions	Consider language barrier for isiXhosa-speaking special school teachers.	English and Afrikaans are mostly spoken, and English is the predominant medium of teaching at higher learning institutions in the WC. No action taken.
	Other suggestions	Should it be Picture Exchange Communication System™ (PECS)[8] or Picture Communication Symbols™ (PCS)[9]	PCS is the correct use of the abbreviation as it refers to the pictures used rather than the system taught

[8] PECS is a registered trademark of Pyramid Educational Consultants UK Ltd., https://pecs-unitedkingdom.com/pecs/

[9] PCS is a registered trademark of Mayer-Johnson Crick Software, Inc., https://www.cricksoft.com/us/symbol-sets/mayer-johnson-pcs

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2.5 Pilot study

According to McMillan and Schumacher (2014), a pilot study should closely resemble the main study, and pilot study teachers should be asked to provide feedback on the questions posed. A pilot study was conducted with three individuals who work at an independent school that primarily caters for children on the autism spectrum.

In order to avoid reducing the sample size for the main study, the researcher recruited teachers from private schools in South Africa and not from public special schools in the WC province for the pilot study. A list of 17 private schools catering for learners with special education needs in South Africa was drawn up based on the recommendations of teachers who currently work at special schools in the country. However, some schools were not approached for the pilot study as their contact details were difficult to trace online or the schools did not meet the inclusion and exclusion criteria set out for the main study. Therefore, only five schools were approached for the pilot study, and only one private school based in Gauteng, with a focus on children with ASD, responded. An information and permission letter (Appendix C) was sent via email to the school principal with a request to recruit foundation phase teachers from the school for the pilot study. Once permission was obtained, a liaison at the school was sent an email with an information letter attached for distribution. The email instructed the liaison to distribute, via email or mobile device, the information letter to all eligible teachers, encouraging teachers to read the information letter prior to commencing the survey. Three teachers who were proficient in English, able to complete an online survey, and who worked in the foundation phase completed the survey and the MS Word document feedback form at the end of the survey. Data collected from the pilot study were analysed using descriptive statistics to determine whether the survey was appropriate for the main aim and sub-aims of the study.

Table 5 gives an overview of the aims of the pilot study, the materials and procedures used, the results and the subsequent recommendations.

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Table 5

Pilot Study Aims, Materials, Procedures, Results, and Recommendations

Aims	Materials	Procedures	Results	Recommendations
To test the ease of access to complete the survey on Qualtrics[XM]	Respondent information letter (Appendix D) and questionnaire populated onto Qualtrics[XM] (Appendix E)	The teachers were provided with the information letter and asked to click on the embedded link to access the survey. The teachers were asked to provide feedback on the ease of access to complete the survey.	Teachers reported ease of access with no technical issues or difficulty completing the survey.	No changes recommended for main study
To assess the clarity, appropriateness, and relevance of the questions posed in the questionnaire	Questionnaire populated onto Qualtrics[XM] (Appendix E)	The teachers completed the questionnaire and were asked to give feedback regarding clarity, appropriateness, and relevance of the questions. The teachers were asked to provide suggestions for changes, additions, or omission of questions.	Teachers stated that questions were clear, straightforward, and relevant. However, one respondent reported that some questions were long-winded and placed too much focus on the provision of devices. Another teacher reported that the questions focusing on school therapy were unnecessary and redundant.	The phrasing of questions 15 and 16 was changed to simplify the question related to the provision of AAC communication books and boards and speech generating devices by the WCED and privately, and an option was added to report 'unsure who provided it'. To align with what teachers would know, the question related to the provision of communication support through speech therapy was simplified to inquire about both individual and small group therapy as one of the teachers stated that they were unaware of the type of therapy provided. In addition, this question was further simplified to inquire about the therapy provided by (1) school SLTs who are part of the school staff, (2) other school therapists who come to the school, and (3) other SLTs who see learners outside the school. Teachers were not required to distinguish who employed the SLT coming to the school to avoid asking teachers about aspects they may be unsure about.
To obtain an estimate of how long the online questionnaire may take to complete	Questionnaire populated onto Qualtrics[XM] (Appendix E)	The teachers reported on how long the questionnaire took them to complete and whether this was a concern.	The time it took to complete the survey ranged between 11 minutes and 21 minutes per teacher. One teacher raised concerns regarding	Question 20 was simplified to document the number of learners who have communication goals in all relevant documents, such as the IEDP and the ISP, instead of requesting numbers for specific documents.

Aims	Materials	Procedures	Results	Recommendations
			the length of the questionnaire.	Question 4 was simplified to indicate number of teaching assistants in the class instead of asking number of teaching assistants employed by the school or others. Questions 8 and 9 were simplified to obtain learners' age in years rather than years and months.
To pilot the quantitative and qualitative analysis of the collected data	Questionnaire populated onto Qualtrics^{XM} (Appendix E) downloaded using MS Excel.	The data responses were downloaded in MS Excel format, and descriptive statistics were drawn up of Part 1 and Part 2 of the pilot study. The researcher tested whether MS Excel allows descriptive statistics, such as frequency analysis, means, and standard deviation, to be drawn up, looked into the answers to open-ended questions, and checked pilot responses for any misinterpretation of the questions.	MS Excel was efficient in statistically analysing the data. Not all teachers used the open text boxes in the open-ended questions, but answers given were brief and could be categorised. However, some questions were misinterpreted.	No changes were recommended for the main study in terms of collecting quantitative data. Codes were to be generated as data responses were received. Questions 13 and 17 were rephrased to reduce ambiguity using the words 'in your class' as one respondent answered Question 17 giving the number of children with CCN in the school instead of in the class. Question 21 was more clearly stated to reduce any ambiguity as a respondent selected all training options and then typed yes/no in the description box instead of only selecting the training attended and adding a description of the training attended.

2.6 Procedures for the main study

2.6.1 Data collection

The data collection process only commenced after the researcher received ethics approval from the Research Ethics Committee of Humanities and the WCED Research Directorate. Principals/acting heads who provided permission were asked to distribute the information letter to all teachers in the foundation phase of their schools (Appendix C). The teachers clicked on an embedded link in the information letter to gain access to the consent form and the survey populated onto Qualtrics^{XM} software. They were required to give consent electronically prior to gaining access to the survey. The survey was available for completion for a period of six weeks, and reminders were sent out in collaboration with school principals/acting heads at an agreed-upon frequency. All teachers who completed the questionnaire had the opportunity to enter their names into a draw to win a R500 shopping voucher from South African online retailer Takealot.com.

2.6.2 Data analysis

Data from the online survey were downloaded from the Qualtrics^{XM} platform in MS Excel format. The data from closed-ended questions were quantitatively analysed using descriptive statistics, including measures of central tendency (mean, median, and mode) and measures of variability (range, variance, and standard deviation), as is consistent with the research design (Leedy et al., 2021). Measures of central tendency and variability only allow the spread of data to be viewed and cannot be used to draw causal relationships. Data from the open-ended questions were analysed in accordance with the type of data received, and the researcher did simple categorisation and tabulation of results.

2.6.3 Reliability and validity

According to McMillan and Schumacher (2014), validity refers to the degree to which scientific explanations of a phenomena match the reality. Therefore, improving internal validity, instrument validity, and external validity increases the truthfulness of the study findings and conclusions (McMillan & Schumacher, 2014).

Various measures can be used to ensure a high level of internal validity in a study, such as ensuring instrument validity and minimising respondent effects (McMillan & Schumacher, 2014).

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Instrument validity, which includes content and face validity, refers to whether a research instrument measures what it is intended to measure (Leedy et al., 2021). Content validity addresses whether the items included in the questionnaire are representative of the research area and whether they can achieve the research aims, and face validity is a judgement made by an expert to see whether there is a logical link between the objective of the study and the data being collected in the questionnaire (Leedy et al., 2021). In the current study, the content validity of the questionnaire was ensured by basing questions on previous literature and questionnaires (Siu et al., 2010; Tönsing & Dada, 2016). Face validity was ensured through expert review and the pilot study (Leedy et al., 2021; Thabane et al., 2010).

In the current study there are three potential respondent effects, namely social desirability, confusion, and fatigue. The Hawthorne effect, also referred to as social desirability effects, is observed when respondents answer questions in a desirable manner or in ways that they feel are expected by the researcher or their superiors, and is a potential threat to internal validity (McMillan & Schumacher, 2014). To counteract this effect, the researcher emphasised in the information letter and at the beginning of the survey that all data received are anonymous. Neither the researcher nor anyone else would therefore be able to trace the responses received back to a specific person. In addition, in the information letter, the researcher stated that the study is not aimed at testing teachers' knowledge but is aimed at describing the support available for learners who have difficulties with communication. To avoid confusion when answering the questionnaire, constructs such as 'severe communication difficulties' and 'methods of communication' were explained in the questionnaire cover letter. The Flesch-Kincaid reading ease test and the Flesch-Kincaid grade level test were used to improve general readability levels to ensure the teachers clearly understood the constructs under investigation (Centre for Inclusive Design, 2013). The researcher ensured fatigue effects, which is exhaustion leading to omitting answers on a questionnaire, skipping questions, or answering in a set sequence (i.e., a response set), were avoided by constructing the questionnaire so it was both easy to read and quick to complete within 15 to 20 minutes.

External validity refers to the generalizability of results and conclusions to other people and locations, such as being able to generalise findings from special schools in the WC to the target population, which was children with CCN and teachers at specials schools in various parts of South Africa. According to Fowler (2009), sampling errors can negatively impact external validity and decrease generalizability. Sampling errors occur when the respondents selected for a study do not mirror the overall target population. In addition, a failure to select everyone from the

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sample results in source bias as randomised sampling cannot always account for missing certain characteristics of respondents; for example, in the current study, teachers varied in years of teaching and may not have been selected in randomised sampling if grouped together in particular schools by coincidence. Adequate sampling with a larger sample size ensures a greater probability of increased external validity. The researcher used comprehensive sampling to avoid sampling errors and source bias. Bi-weekly reminders were used in an attempt to increase the response rate.

2.7 Ethical issues

Since human respondents (i.e., teachers) were involved in this study, the researcher upheld the ethical principles of autonomy, beneficence, and justice as set out in the *Belmont Report* (1979). These principles were applied in this study in the way described in the following sections.

Autonomy. The principle of autonomy recognises individuals' ability to make their own decisions regarding involvement in research and the need to respect those decisions (BR, 1979). Voluntary participation refers to participation that is not out of obligation, compulsion, or coercion but by informed consent. Informed consent means ensuring all respondents have received all relevant information about the study, including full disclosure of any risks associated with participation in the study, in an understandable format. Respondents must also have the opportunity to contact the researcher and ask questions before consenting.

In the current study, the information letter outlined the purpose of the study, gave a brief description of what is expected when participating in the study, and gave an estimate of the time it would take to complete the questionnaire, which was between 15 and 20 minutes. The information letter also explained that there were no sensitive questions or questions asking any identifying information, such as phone number, gender, and race, in the questionnaire. The names and contact details of the researcher and the supervisor were clearly stated, and the teachers were encouraged to contact the researcher should the teachers have any queries.

Although an opportunity to win a voucher from an online retailer was offered, this is unlikely to have unduly pressured participants to take part. The receipt of the voucher was not a given. Also, teachers are income-earning individuals and therefore unlikely to live in poverty.

Beneficence and Non-maleficence. Beneficence is potential benefits, and maleficence is possible risks of any kind to respondents that must be considered when conducting research (McMillan & Schumacher, 2014). Any known risks for respondents must be identified by the researcher, and the researcher must implement processes to reduce these risks (McMillan &

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Schumacher, 2014). There were no known risks or direct benefits to teachers participating in this study. This was highlighted in the information letter, which was provided to teachers prior to them granting informed consent. Teachers' privacy was respected, and no identifying information (name, date of birth, gender, IP address) was collected. All data were collected electronically, and responses were downloaded from the survey platform and stored on a password protected USB stick, which will be stored in a locked cabinet at the Centre for AAC at the University of Pretoria for a minimum of 15 years. The data collected from this study were used to write this master's dissertation and may also be used for writing a scientific article and for papers presented at conferences. The data, without biographical details, will be made publicly available on the University of Pretoria's online database, where other researchers may access it and reuse the data for analysis. The thesis and any other publications from the study will be made available to any respondent who expresses interest. Teachers were informed of all intended usage as well as how the data would be stored in the information letter.

Justice: It is the responsibility of the researcher to ensure any reports made available to the public reflect the actual results in their entirety (McMillan & Schumacher, 2014). Details of the researcher will be made available in the final dissertation and on the data repository where deidentified supplementary files containing raw data will be made freely available.

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3 RESULTS

3.1 Introduction

In this chapter, the responses received are reported on, followed by the quantitative and qualitative results from the survey according to the sub-aims of the study, namely (1) the prevalence of learners with CCN in the foundation phase at selected special schools in the WC; (2) the concomitant difficulties of learners in other functional areas; (3) the communication methods learners use in class; (4) communication support for learners with CCN, including aided AAC provision, therapeutic support, and the documentation of communication support in the IEDP and/or ISP; and (5) teacher training in AAC.

3.2 Responses

Permission to distribute the survey was received from 17 (52%) of the 33 eligible schools. The distribution of the survey to eligible teachers at the schools was not done by the researcher but by staff at the respective schools, and therefore, the number of teachers receiving the invitation is unknown and it is not possible to calculate a response rate. There were 73 teachers who accessed the Qualtrics^{XM} link embedded in the consent letter, but three teachers made no entries, nine teachers had incomplete entries, and five teachers had learners who were aged 14 to 18 years, which are senior phase learners. Therefore, 17 entries were excluded from the data analysis, resulting in 56 completed entries being included. It is not known whether the 56 completed entries were from all of the 17 schools, as the distribution and completion of the survey remained anonymous.

3.3 Survey responses according to sub-aims

The responses of 56 teachers are summarised in the following subsection in accordance with the sub-aims of the survey study. However, some teachers did not have learners with CCN in their classes and were therefore directed to skip questions that were not applicable to them. In addition, some teachers misinterpreted some of the questions, and their responses on these

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questions were excluded. In these instances, the total number of responses received was less than 56 and are reported as such.

3.3.1 The prevalence of learners with complex communication needs in the foundation phase at selected special schools in the Western Cape

In the questionnaire, teachers working as foundation phase teachers at special schools in the WC were asked to indicate the total number of learners in their class and the number of learners with CCN, which are learners who cannot communicate without support or learners who cannot rely on speech to functionally communicate.

The total number of foundation phase learners reported by teachers was 538 learners within the age range of 5 years old to 13 years old. A total of 367 learners (68%) attended schools in urban areas, 113 learners (21%) attended schools in semi-rural or peri-urban areas, and 58 learners (11%) attended schools in rural areas. A total of 41 teachers (73%) indicated that they had learners with CCN in their class, and 15 teachers (27%) indicated that they did not have any learners with CCN in their class. The total number of foundation phase learners with CCN in the WC sample was 124 learners, translating to a prevalence of 23% among the sample of 538 learners represented in 56 special needs classrooms across the province. Of the learners with CCN, 98 learners (27%) attended schools in an urban area, 18 learners (16%) attended schools in a semi-rural or peri-urban area, and eight learners (14%) attended schools in rural areas. The prevalence of learners with CCN according to the area in which the schools are based is indicated in Table 6 and Figure 2.

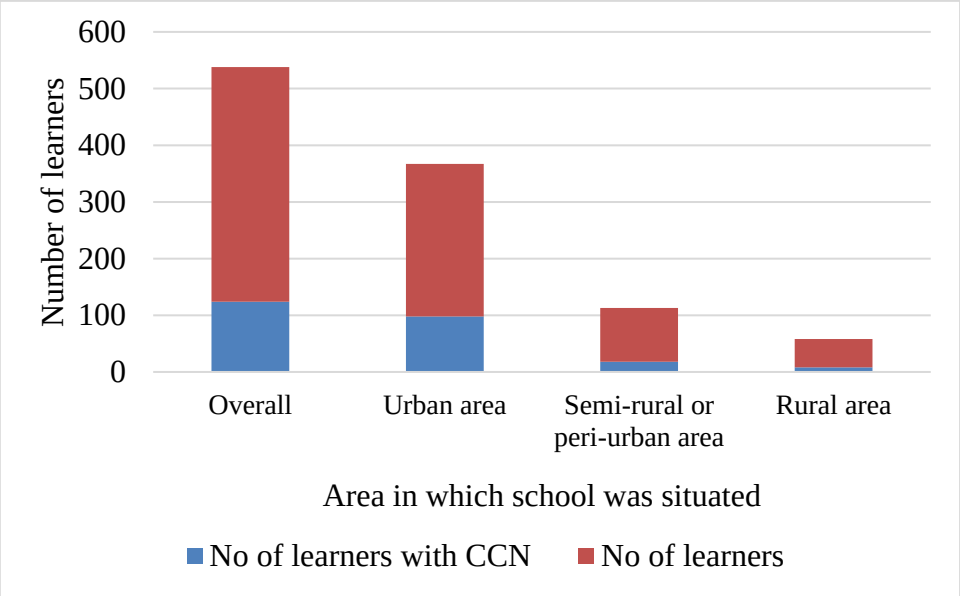
Table 6

Prevalence of Learners with CCN in 17 Special Schools in Three Areas in the WC

Areas	No. of learners	No. of learners with CCN	Prevalence
Urban area	367	98	27%
Semi-rural or peri-urban area	113	18	16%
Rural area	58	8	14%
Overall	538	124	23%

Figure 2

Prevalence of Learners with CCN in 17 Special Schools in Three Areas in the WC



The prevalence of learners with CCN was also captured with regards to the type of special school in accordance with the specific disability focus of the school. Special schools with an ASD focus had the highest prevalence of learners with CCN in the WC. The total number of foundation phase learners at ASD focus special schools was 91, and the total number of foundation phase learners with CCN at ASD focus special schools was 32, translating to a prevalence of 35%. Special schools with a SPID focus had a total of 53 learners in the foundation phase and a total of 16 learners with CCN in the foundation phase, resulting in a prevalence of 30%. Therefore, special schools with a SPID focus had the second highest prevalence of learners with CCN in the WC. Special schools that had a combined focus of ASD and SPID reported that 36 of 135 learners had CCN, resulting in a prevalence of 27%. The remaining schools all had multiple foci, for example, focusing on learners with ASD and/or SPID, in combination with learners with CP and PD. Altogether, the 40 of 222 leaners at these schools with multiple foci had CCN, resulting in a prevalence of 18%. The results of this prevalence data are captured in Table 7 and Figure 3.

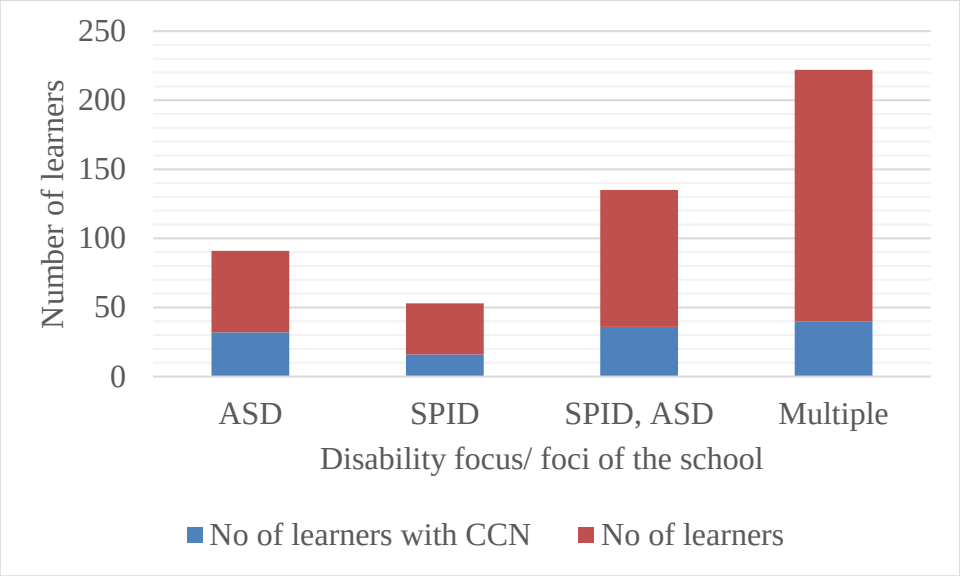
Table 7

Prevalence of Learners with CCN According to Disability Foci of the Special School

Disability foci	No. of learners	No. of learners with CCN	Prevalence of learners with CCN
ASD	91	32	35%
SPID	53	16	30%
SPID, ASD	135	36	27%
Multiple	222	40	18%

Figure 3

Number of Learners with CCN According to Disability Foci of Special Schools in the WC



3.3.2 The concomitant difficulties in other functional areas for learners with complex communication needs

The 41 teachers who had learners with CCN in their classes were asked to indicate how many learners who have CCN in their class also have difficulties seeing, hearing, moving, learning, and taking care of themselves. It seemed that 18 teachers misinterpreted the question as these teachers reported learner numbers that exceeded the number of learners with CCN in their classes. They seemed to have reported on concomitant difficulties of the whole class instead of only focusing on learners with CCN; these responses were omitted. When capturing the results of the number of learners who have CCN and who also have difficulties seeing, hearing, moving, learning, and taking care of themselves, only 23 entries were taken into account, resulting in 73 learners with CCN being considered.

According to the findings, 71% of learners with CCN in the 23 foundation phase classrooms of special schools in the WC were also reported to have difficulties remembering or concentrating for the purpose of learning, and 64% of learners with CCN were also reported to have difficulties with self-care in activities such as washing and dressing themselves. Lower proportions of learners with CCN in the foundation phase of special schools in the WC were also reported to have difficulties with seeing, hearing, and moving. These results are shown in Table 8.

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Table 8

Proportion of Learners with CCN for Whom Concomitant Difficulties were Reported

Concomitant difficulty	No. of learners	Proportion[a]
Remembering or concentrating for the purpose of learning	52	71%
Self-care in activities such as washing and dressing themselves	47	64%
Walking or climbing up steps	15	21%
Hearing, even if wearing hearing aids	4	5%
Difficulties seeing, even if wearing spectacles	2	3%

Note. [a] From a total of 73 learners

3.3.3 The communication methods used by learners with complex communication needs in class

The 41 teachers were asked how many learners with CCN in their class used various methods of communication. However, there were some illogical responses as 10 teachers indicated the number of learners using various methods of communication was higher than the number of learners indicated to have CCN in their class. Therefore, these responses were omitted from the analysis. Only 31 responses were taken into account, and these 31 responses reported on 94 learners with CCN.

The methods of communication were listed and defined as 1) informal methods such as making sounds, crying, and using body, which includes using facial expression, gestures, head nodding, head shaking, and pointing; 2) specific hand signs, such as Makaton, Tiny Hands, or South African Sign Language; 3) using objects, such as holding out an empty cup when asking for a drink or pointing to the door to ask to go out; 4) communication board or book used only by a specific learner; 5) communication board or book shared among different learners; 6) SGD used only by a specific learner; and 7) SGD shared across learners. The options to select were not mutually exclusive, but teachers were asked to select all that apply. In addition, teachers were asked to name the SGDs used by individual learners, as well as those shared by learners.

The responses showed that the most used method of communication for learners with CCN in special needs classrooms were informal methods, with 66 out of 94 learners using such methods of communication, translating to a proportion of 70%. The second most used method of communication for learners with CCN in special needs classrooms was using objects to communicate, with 61 out of 94 learners using this method of communication, translating to a proportion of 65%. The least used method of communication for learners with CCN in special

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needs classrooms was an SGD shared or used by a specific learner only. Table 9 is a summary of these findings.

Table 9

Number of Learners with CCN (n = 94) Who Use Different Methods of Communication

Communication method	*n*	Proportion
Informal methods	66	70%
Specific hand signs	29	31%
Using objects	61	65%
Communication board or book used by one specific learner	18	19%
Communication board or book shared across learners	17	18%
SGD used by one specific learner	5	5%
SGD shared across learners	3	3%

When teachers were asked to name the aided SGDs, they named the GoTalk™, the Apple™ iPad (application not named), Yes and No cards (not specified), and the Talkable[10] as SGDs used only by specific individual learners. Specifically, teachers indicated that two learners used the GoTalk™, one learner used an Apple™ iPad (application not named), one learner used Yes and No cards (not specified), and one learner used a Talkable[3]. In terms of shared-use SGDs, two teachers indicated that one of their learners shared the GoTalk™, and one respondent indicated that one of their learners shares a SGD, but the device was not named. It is possible that the GoTalk™ and SGD used may have been shared with learners who do not have CCN in their classroom as a teaching tool or it may have been shared with other learners with CCN in other classrooms.

3.3.4 Communication supports

Teachers were asked to indicate the communication support received by learners in special needs classrooms through the provision of aided AAC systems, which require an artefact or aid external to the communicator's body. Aided AAC systems thus include non-electronic communication systems, such as a paper-based communication board, an eye gaze board, and an alphabet board, and electronic SGDs, such as apps on Apple™ devices, GoTalk™, and BIGmack.

3.3.4.1 Aided AAC provision

Teachers were asked to indicate the number of non-electronic communication boards or books used by learners in their class in relation to the provider. They were also asked to indicate

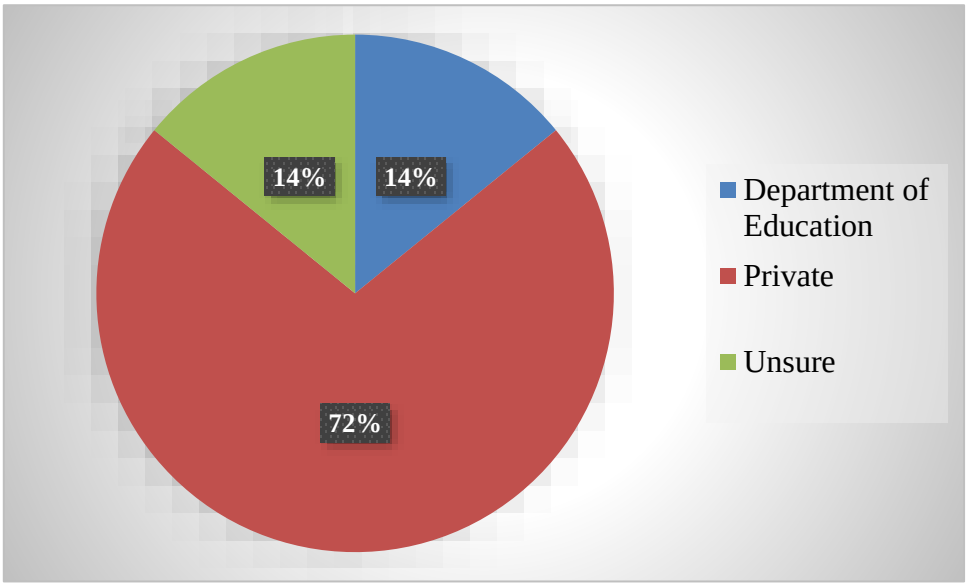
[10] Talkable is a registered trademark of Enabling devices, https://enablingdevices.com

the number of boards and books provided by the DBE versus people and/or institutions outside of the school. Teachers were also given the option to indicate when they were unsure about who provided the boards/books. The responses of all 56 teachers were analysed. The number of communication books or boards as well as the number of SGDs reported are therefore not in accordance with those reported in Table 9, as only 31 responses were taken into consideration as a basis for the data in Table 9.

When analysing the data in terms of the provision of communication boards/books used in special needs classrooms in the WC, a total of 19 teachers reported on the provision of a total of 35 boards/books. From the responses, it was derived that five aided AAC communication boards/books were provided by the DBE and 25 AAC communication boards/books were provided by private individuals or outside institutions. A total of five AAC communication boards/books were categorised under 'unsure' of the source of provision. The percentage of the three sources of provision is represented in Figure 4.

Figure 4

Percentage of communication boards or books provided to learners in special needs classrooms in the WC through various providers



When analysing the data in terms of the provision of electronic SGDs used in special needs classrooms in the WC, a total of seven teachers reported on the provision of a total of 17 SGDs.

Teachers were asked to indicate the number of electronic SGD systems provided to the learners in their class in relation to the provider. This question was not specific to learners with CCN only, but learners overall. From the responses, it was derived that 2 SGDs were provided by

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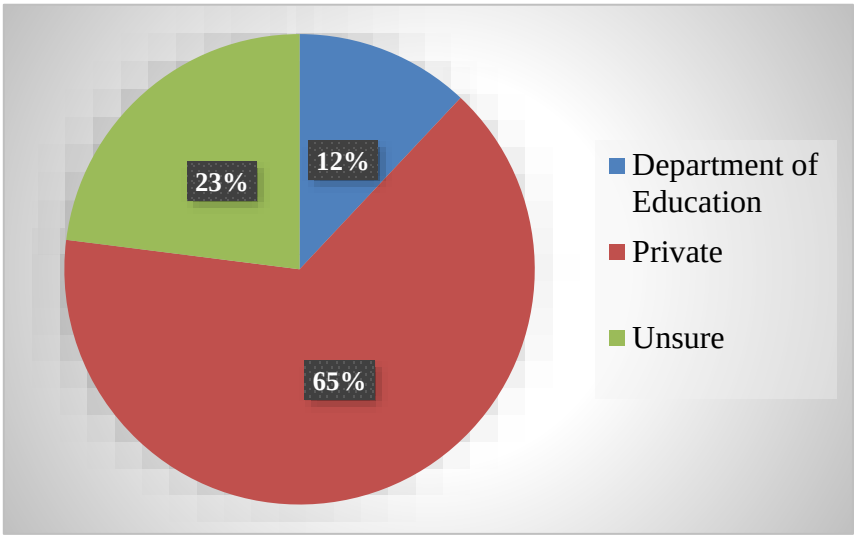
the DBE, 11 SGDs were provided by private individuals or outside institutions, and 4 SGDs provided were categorised under 'unsure' of the source of provision. The percentage of the three sources of provision for SGDs is represented in Figure 5.

Figure 5

Percentage of SGDs provided to learners in special needs classrooms in the WC through various providers



3.3.4.2 Therapeutic support

In order to obtain an indication of how many teachers who had learners with CCN had support staff at their school, the teachers were asked to report on the number of SLTs, physiotherapists, and occupational therapists at their schools and the number of teaching assistants in their classrooms. Of the 41 teachers who had learners with CCN, one teacher omitted indicating the number of SLTs, five teachers omitted indicating the number of physiotherapists and two teachers omitted indicating the number of occupational therapists at their school. Therefore, out of the 41 teachers who had learners with CCN, it was reported that 88% (35 of 40; missing data for one) of teachers had at least one SLT based at their school; 100% (39 of 39; missing data for two) of teachers had at least one occupational therapist based at their school and 28% (10 of 36; missing data for five) of teachers had at least one physiotherapist based at their school. Furthermore, it was reported that 93% (38 of 41) of teachers had at least one teaching assistant in their classroom.

When inquiring about the therapeutic communication support provided for learners with CCN at special schools, the teachers were asked to indicate the number of learners with CCN in

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their classes who receive individual or small group therapy from SLTs to help them communicate better. These SLTs were described as school SLTs, which are therapists who are part of the school staff; other SLTs who come to school, such as district-based SLTs, SLTs from the Department of Health, or private SLTs; and other SLTs who see learners outside of the school. They were given the option to indicate the number or an estimation of the number of learners with CCN who receive therapy from each of these therapists. They could type 'U' if the amount was unknown to them.

When analysing the data in terms of the therapeutic communication support provided for learners with CCN at special educational needs schools by the three different types of SLTs, a total of 41 teachers reported on the provision of therapeutic communication support to learners with CCN. However, 10 teachers indicated illogical responses where the number of learners receiving therapeutic support from SLTs was reported to be higher than the number of learners indicated to have CCN in their class, and one respondent indicated 'unknown' for all three types of SLTs; these responses were omitted from the analysis. Therefore, only 30 responses were taken into account when accounting for the number and proportion of learners receiving support from school SLTs (from a total of 99 learners with CCN), and only 29 responses were taken into account when accounting for the number and proportion of learners receiving support from SLTs that come to the school or SLTs who see children outside of school (from a total of 95 learners with CCN), as one teacher indicated 'unknown' for these categories.

A total of 40 learners who received individual or small group therapy to help them communicate better received it from school SLTs. This means that 59 learners with CCN, as accounted for in the 30 responses, did not receive SLT support from school-based SLTs. Of these, 14 were at schools that did not have an SLT on staff. The lowest number of learners with CCN was six learners who received individual or small group therapy to help them communicate better from other SLTs who come to the school. A summary of these findings can be found in Table 10.

Table 10

Number of Learners with CCN Who Receive Therapeutic Support from SLTs

	No. of learners receiving this support	**Proportion of therapeutic support from this source**
School SLTs	40	40/99 = 40%
Other SLTs who come to the school	6	6/95 = 6%
Other SLTs who see learners outside of the school	14	14/95 = 14%

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Furthermore, the teachers were asked to indicate whether any learners with CCN in their class received therapy to help them communicate better from other therapists or professionals, such as occupational therapists. The teachers were asked to describe the type of support given and to add the number of learners who received such support. Although, teachers answered the question, it was not always answered in its entirety. A total of 33 responses were complete, reporting on a total of 93 learners with CCN. The findings indicated that 50 of these learners with CCN do not receive any other support, 12 learners with CCN receive other unknown (unspecified) support, and 31 learners with CCN receive occupational therapist support to help them communicate better.

3.3.4.3 Documentation of communication support in the IEDP and/or ISP for learners with CCN

The teachers were asked how many learners with CCN in their class have communication goals in their IEDP or ISP. However, there appeared to be some illogical responses, and 19 teachers indicated the number of learners with communication goals in their IEDP or ISP as higher than the number of learners indicated to have CCN in their class. Therefore, through a process of data cleaning, only plausible responses were accounted for. When capturing the results of the number of learners who have CCN and who have communication goals in their IEDP or ISP, only 22 entries were usable, resulting in reporting on 66 learners with CCN.

According to the findings, 50 learners out of a total of 66 learners (76%) had communication support mentioned in their IEDP or ISP. The percentage of learners with CCN according to geographic locations ranged from 72% in urban areas to 91% in the semi-rural or peri-urban areas. These findings are summarised in Table 11.

Table 11

Number of Learners with CCN (n = 66) By Geographic Area Who Have Communication Support Documented in Their IEDP or ISP

Areas	*n*	%
Urban area	36	72
Semi-rural or peri-urban or peri-urban area	10	91
Rural area	4	80
Overall (22 classrooms)	50	76

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3.3.5 Teacher training in augmentative and alternative communication

Teachers were asked whether they received any training on how to communicate with learners with CCN, and 37 participants (66%) indicated that they had received training. It follows that 34% of teachers had not received training.

According to the findings, 27 teachers (48%) had received training from an SLT. A total of 26 teachers (46%) had received AAC training by attending workshops or seminars. In-service training sessions at the school were also one of the more common AAC training activities attended (43% of the participants). The lowest number of teachers received training from their school principal or a parent of a learner or engaged in journals related to AAC. These findings are summarised in Table 12.

Table 12

Number of Teachers Who Received AAC Training from Various Sources

Type of AAC training received:	No. of teachers	%[a]
Speech therapist	27	48
Workshop/seminar	26	46
In-service training sessions at the school	24	43
Websites	14	25
Part of formal qualification	12	21
Other teacher	11	20
Books	9	16
Conferences	6	11
Journals	3	5
Parent of learner	3	5
Principal	1	2

Note. [a] Expressed as percentage of total number of participants

When asked whether or not teachers wanted to make any additional comments, some teachers commented on their dissatisfaction with the lack of training in AAC, the burden of having to pay for additional training in this regard, and disappointment in the lack of funding for teacher training from the DBE.

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4 DISCUSSION

4.1 Introduction

As previously stated, the main aim of the study was to identify the prevalence of learners with CCN at selected special schools in the WC and to describe the communication support afforded to them to identify potential gaps in service delivery in the WC. In this section, the results of the study are discussed in line with each sub-aim and in conjunction with relevant literature.

4.2 The prevalence of learners with complex communication needs in the foundation phase at selected special schools in the Western Cape

According to the results of the current prevalence study, a prevalence of 23% of learners with CCN between the ages of 5;0 and 13;11 was found in 17 selected special schools in the WC. When looking at the literature, a higher prevalence of learners with CCN was seen in two South African studies (McDowell & Bornman, 2022; Tönsing & Dada, 2016). Tönsing and Dada (2016) found that 45% of learners across eight special schools had limited speech. However, it is important to note that the inclusion criteria Tönsing and Dada (2016) used differed greatly from the criteria used in the current study. Their study aimed to determine the extent to which aided AAC was implemented to foster the expressive communication of learners in preschool to Grade 3 classrooms in special schools in Gauteng and to describe the teachers' perceptions of the process of AAC implementation, and therefore, the researchers only included schools where aided AAC was actually implemented in classrooms. Aided AAC implementation in classrooms was not an inclusion criterion for the current study.

Similarly, the McDowell and Bornman (2022) study at special schools in Gauteng also determined prevalence of learners with CCN but focused on exploring the perceptions of South African teachers of the use of keyword signing strategies in the educational context. The authors found a prevalence of 500 out of 1 015 (49%) learners taught with CCN. It is important to note that the sample was drawn from 10 public and independent schools for learners with special education needs in five urban school districts in Gauteng that accommodated students with a broad spectrum of disabilities and were likely to include learners with CCN. Schools that had been exposed to or had prior knowledge of keyword signing were identified and schools that did not use keyword signing were excluded. In the current study, knowledge and implementation of keyword signing was not an inclusion criterion. In addition, McDowell and Bornman (2022) only

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included participants who were employed as full-time teachers at a special education school and who had at least one year of experience teaching learners with CCN. Having prior experience teaching learners with CCN was not an inclusion criterion for the current study.

It is also notable that both the Tönsing and Dada (2016) and McDowell and Bornman (2022) studies differed from the current study in that it included only special schools in urban districts of Gauteng, whereas the current study included special schools from all areas. When looking at the prevalence of learners with CCN in the current study across various areas in the WC, it is evident that a higher prevalence of learners had CCN in urban areas than in peri-urban and rural areas. This finding contrasted expectations of a higher prevalence of children with CCN in rural areas, linked to poverty (Emmett, 2005). Since the SIAS policy (DBE, 2014) mandates that all vulnerable children be placed at special schools or schools equipped to support their educational needs, including CCN, it was expected that all learners with CCN would be placed and supported in special schools throughout the country.

However, it is possible that the low prevalence of learners with CCN in peri-urban and rural areas of the WC may be due to disparities linked to the lingering consequences of previous racial segregation in South Africa, which means peri-urban and rural areas have insufficient primary healthcare and education systems to identify, assess, diagnose, and support learners with CCN in local communities (Kathard & Pillay, 2013). Unaddressed historic inequalities in schools (HRW, 2015) could mean that special schools in peri-urban and rural areas are not well-equipped to provide support for children with CCN, possibly resulting in learners being referred to better equipped schools in urban areas.

The results of the current study also differs to the prevalence results found in international literature. For example, Binger and Light (2006) found that 12% of preschoolers between the ages of 3;0 and 5;11 in 10 different special education agencies in Pennsylvania required AAC, and Binger et al. (2021) demonstrated a prevalence of 1 in 89 school-aged students (1.1%) in K-12 in public schools having highly unintelligible speech in New Mexico. Both these studies were conducted in the USA and had a lower prevalence of learners with CCN. This could be because Binger et al. (2021) included all children in all public schools, not only children receiving special education support and in the Binger and Light (2006) study the authors looked at all preschoolers receiving special education services, and did not limit it by diagnosis, Therefore, children with other needs and disabilities, such as sensory disabilities, epilepsy, and learning difficulties, would have been included. On the contrary, a higher prevalence of learners with CCN was seen in both

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Israel (Weiss et al., 2005) and Hong Kong (Siu et al., 2010), with Weiss et al. (2005) indicating a prevalence of 40% of 5 430 learners aged 3–21 years enrolled in 183 special preschool and school settings with CCN, and Siu et al. (2010) indicating 30% of learners from preschool training centres under six years of age and learners from special schools between the ages of 6 and 16 as learners with CCN. The differences in prevalence, whether higher or lower, to international studies could be context dependent as all of the studies occur across high income versus low-and middle-income countries, occur in different special education systems, such as special schools, preschool training centres, special preschool, and school settings, have different placement requirements, such as age parameters and possible diagnosis of learners, and may have had different definitions of AAC.

It is unsurprising that the current study reported schools with a focus on learners with ASD to have the highest prevalence of learners with CCN. The number of reported children with autism has been increasing over the years, and many children with autism have CCN, with studies in the USA indicating 25–30% of children with ASD either failing to develop functional language or being minimally verbal (Brignell et al., 2018; Tager-Flusberg & Kasari, 2013). Binger and Light (2006) indicated a prevalence of 33% of learners with ASD and pervasive developmental delay and CCN in preschoolers who required AAC. In addition, special schools with a SPID focus had the second highest prevalence, which is in keeping with literature that suggested ASD, learning disabilities, and CP are one of nine medical conditions strongly linked to a need for AAC (Creer et al., 2016). Binger et al. (2021) also found the two most prevalent disabilities reported for the students with highly unintelligible speech were developmental delay and intellectual disability (34.5%; 609 students/1 764 total students for this category) and speech or language impairment (20%; 345/1 764), followed by ASD (14%; 251/1 764). However, it is important to note that learners with more severe disabilities in South Africa may not be enrolled in the schooling system as parents may fear children could face discriminatory practices in schools (HRW, 2015) and many learners are still on the waiting lists of special schools in South Africa (DBE, 2015). In particular, the DBE (2015) reported 58 017 learners with disabilities between the ages of 5 and 18 years of age in the WC who are out of school, and who would therefore, when accounting for prevalence, have likely been missed in this survey.

Thus, the prevalence of learners with CCN in special schools in the WC is substantial and a higher prevalence is indicated in urban areas and in schools with ASD and SPID as the disability focus. The findings linked to the disability focus are also reflected in other contexts such as the USA.

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4.3 The concomitant difficulties in other functional areas for learners with complex communication needs

The results of this study indicated a greater proportion of learners with CCN were also reported to have difficulties remembering or concentrating for the purpose of learning. Similar findings were indicated in a South African study conducted in Pretoria (Alant, 1999) in which the teachers rated 70% of the learners with little or no functional speech as having *almost no* or *poor* cognitive abilities, and the remaining 30% having *some*, *reasonable*, or *normal* cognitive abilities, as well as significant difficulties in their receptive language skills, which are the skills necessary for remembering or concentrating for the purpose of learning.

In addition, Alant (1999) indicated that learners with little or no functional speech also had significant difficulties in their motor skills, with lower proportions having difficulties with sensory skills. The current study found that 64% of learners with CCN were also reported to have difficulties with self-care activities such as washing and dressing themselves, with lower proportions of learners with CCN reported to have difficulties with seeing, hearing, and moving. These concomitant difficulties are important to note as it may affect the selection and use of certain AAC systems.

International literature, rather than focusing on functional difficulties of children with CCN, looked at specific diagnoses of children with CCN, such as seen in Binger et al. (2021), discussed in Section 4.2. Another study conducted in the USA found that 37% of students with significant cognitive disabilities were unable to use speech to communicate (Erickson & Geist, 2016). Establishing the diagnoses of children with CCN is challenging in South Africa because there are poor diagnostic processes, not all learners at special schools have received an official diagnosis, and learners' diagnoses are not always known by parents and teachers (HRW, 2015). Hence, a focus on functional skills is more appropriate.

In summary, the current study suggests that learners with CCN have a higher likelihood of experiencing concomitant difficulties in areas of cognition, receptive language skills, learning, and motor skills, with less likelihood of difficulties in areas linked to sensory skills. Similar trends were seen in another South African study (Alant, 1999) as well as in studies conducted in the USA (Binger et al., 2021; Erickson & Geist, 2016). These factors should be considered in the selection and implementation of AAC systems.

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4.4 The communication methods used by learners with complex communication needs in class

The most used method of communication for learners with CCN in special needs classrooms were informal methods, and the second most used method was using objects to communicate. It may be that the concomitant difficulties experienced by learners affected the lack of selection and use of certain AAC systems, such as complicated aided systems with many icons that require memory, reasoning, and receptive language skills to navigate and operate, and formal signs that require fine motor movements ((Beukelman & Light, 2020). Smith (2006) proposed that operational demands may lead AAC users to 'device abandonment' or may signal the need for the use of other systems that match the learner's capabilities and functions. Grove et al. (2019) suggested that difficulties with fine motor skills greatly affect teaching learners to sign, and therefore, more learners with difficulties with fine motor movements may approximate using informal signs (Walker et al., 2019).

The proportion of learners using AAC methods like keyword signing or aided AAC systems was considerably less than those using informal communication methods. The teachers commented that most learners with CCN struggle to sign and rely mainly on vocalisations, pointing, and simple gestures to communicate and that signs were only grasped after a long period of exposure to the signs, with findings showing that 31% (i.e., 29/94) of learners with CCN use specific hand signs when communicating. Although, McDowell and Bornman (2022) found that in South Africa the use of keyword signing inside the classrooms of both public and independent schools varied between seldom (9%) to always (50%), they only included schools where keyword signing was being used, and was thus not a fair representation of special schools in Gauteng. They also concluded that keyword signing is not always used in classrooms and that teachers experience various barriers such as lack of time and training to keyword signing implementation.

In addition, the current study found that a higher proportion of learners used unaided AAC than aided AAC. The least used method of communication for learners with CCN in special needs classrooms was an SGD, shared or used by a specific learner only. Similarly, Binger et al. (2021) discussed complex issues regarding the provision of aided AAC technologies as only 10% of students had access to low-tech AAC and 10% of students had access to high-tech AAC.

Although, the use of SGDs is promoted in literature because of its effect on increased peer interactions in classroom settings (Chung & Carter, 2013), it is also important to note that single - use AAC aids for both home and school use are preferred over shared-use AAC aids, as it fosters

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school-home collaboration for the long-term use of aided AAC in independently participating in activities in both contexts (Blake-Huer & Threats, 2016; Coburn et al., 2021). The findings from the current study are in line with previous literature in the field of AAC that suggested that learners with CCN mostly use unaided AAC to communicate rather than graphic symbol-based aided AAC, such as communication boards and books, and SGDs, because of some of the challenges faced when implementing and using aided AAC (Binger & Light, 2006; Gevarter et al., 2013; Smith, 2006; Tönsing & Dada, 2016; Wilkinson & Hennig, 2007). One of the greatest challenges with aided AAC is accessibility as it may not always be at hand to use. Other challenges with aided AAC systems such as SGDs include difficulties navigating the system and the operational demands placed on the AAC user due to difficulties experienced in the areas of cognition, linguistic skill, processing speed, and social skills (Batorowicz et al., 2016; Loncke, 2022; van Niekerk & Tönsing, 2015). Additional challenges, especially in the South Africa school context, are related to inadequate funding and the high cost of using aided AAC, breakage, malfunctioning, losing the aids, and challenges with limited or inappropriate vocabulary-use in a diverse linguistic and cultural context (Smith, 2006; Tönsing & Dada, 2016). Literature suggested that aided AAC, such as communication boards and books, may have less icons available for selection and use by the AAC user, which may result in 1) limited output, reduced communication partner feedback, and reduced participation in interactions, 2) increased time and effort to produce utterances when more creativity is demanded from the AAC user, 3) reduced motivation, and 4) ‘device abandonment’ (Loncke, 2022; Moorcroft et al., 2020; Smith, 2006).

4.5 Communication support

When implementing communication support for learners with CCN, funding, practice, and policy are essential. This section discusses 1) funding in relation to aided AAC provision at special schools, 2) practice in terms of the therapeutic support provided, and 3) the implementation of the SIAS policy in special schools in South Africa.

Besides the limited use of aided methods by learners with CCN discussed in the previous section, the findings also suggested that most aided systems were not provided by the DBE but by private individuals or outside institutions. Previous literature suggested that although a budget has been allocated to strengthening special schools in South Africa, the budget is not always appropriately monitored and managed (DBE, 2015; HRW, 2015). According to a DBE (2015) report, since 2002, the focus to strengthen special needs schools in South Africa has been on reducing the number of districts are without special schools, and in particular, the focus has been on catering

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for learners with ASD in rural areas. The DBE has increased special schools from 295 to 436 schools across South Africa. However, in the WC, only one school in a rural area was expanded to accommodate more learners using a budget of R70 000. The report indicated that the remainder of the R 1 042 812 budget allocated to strengthen special schools in the WC over the 2014/2015 period was aimed at schools with South African Sign Language as the medium of language of learning and teaching that received technology to facilitate South African Sign Language teaching; schools for the blind that received Apex Braille Reader laptops and the Eye Pal Solo; schools for ASD that received a reading and writing tool called Clicker 6; and full-service schools that received an allocation for specialised learning and teaching material (DBE, 2015). Amid the 93% expenditure, there are no exact figures mentioned regarding the provisions of aided AAC for children with CCN (DBE, 2015). This may be largely due to the fact that although the DBE has improved in terms of providing funding for improved education for learners at special schools, White Paper 6 does not give schools and teachers directives to appropriately use the funds to address needs such as the need for aided AAC for children with CCN (DBE, 2001, 2015).

Although 88% of teachers who answered this question indicated that they have an SLT based at their school, all teachers who answered this question indicated that they had an occupational therapist based at their school, and just over a quarter of teachers who answered this question indicated that they had a physiotherapist based at their school. Almost all teachers had a teaching assistant in their classroom. Similarly, Tönsing and Dada (2016) indicated that most schools had SLTs, all schools in their study had an occupational therapist employed through the education department and based at the school, and most teachers had a full-time or part-time teaching assistant helping in class.

Regarding therapeutic support, the findings in the current study indicated that less than half of the learners with CCN (in the subsample for whom this question was correctly answered) received individual or small group therapy from school SLTs, while more than half of learners with CCN did not receive any speech-language therapy. One-quarter of those that did not receive such support were at schools that did not have an SLT on staff. In comparison, according to Tönsing and Dada (2016), teacher ratings showed that SLTs provided the most communication support, they mention that the absence of SLT support was a barrier to AAC implementation. Teachers also perceived occupational therapists to offer less support than SLTs in aided AAC implementation in classrooms, and class assistants offering more support than occupational therapists in AAC implementation. It may be possible that the SLT potential for support in the current study was not fully reached due to factors such as SLT to learner ratios.

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This is in keeping with the findings from Kathard and Pillay (2013) that indicated a SLT to population ratio of 1:25 000 in South Africa. Even when SLTs are based at a school, high SLT to learner ratios may preclude learners with CCN receiving support. Research suggested that the lack of SLT communication support for learners with CCN can be attributed to a lack of planning, monitoring, and funding available for therapeutic support at special schools (Bornman & Donohue, 2014; DBE, 2015), as well as unevenly distributed therapeutic support as a consequence of previous racial disparities in South Africa (Kathard et al., 2011). In addition, although AAC training is essential for AAC implementation (Fallon, 2008) it is not clear whether all graduating rehabilitation professionals in South Africa, such as SLTs and occupational therapists receive adequate training in AAC implementation (Dada, Murphy, et al., 2017). When learners have no access to a school-based SLT, parents must try to access therapeutic support outside the school system. However, literature suggested that many are unable to because of the lack of affordable SLT communication support provided at private institutions outside of the special school system (Kathard et al., 2011). It must be noted that the questionnaire only asked teachers to report on individual or small group therapy and did not consider SLT support provided in other forms, for example, in the classroom context or provided indirectly through training teachers. Such other forms of support have been documented in international literature. (Brock et al., 2024) indicated that some SLTs provide classroom-based support and training to teachers in the classroom context, which is accompanied by modelled demonstrations of therapy techniques and intervention strategies. The authors suggested that these methods may have advantages over traditional pull-out methods. It is a limitation of the study that such methods of support were not investigated.

Based on the subsample of the current study of teachers who appropriately answered this question, it was clear that more than half of the learners with CCN did not receive any other therapeutic support for improving communication outside of SLT support. Some learners with CCN received occupational therapist support to help them communicate better while a few learners with CCN received other unspecified support. However, this is not ideal, and according to research, successful AAC implementation occurs through a team approach when the roles of team members are integrated into both assessment and intervention (Kent-Walsh & Binger, 2010). For example, the occupational therapist can assist with their expertise on positioning and the SLT with their expertise on the selection of an appropriate AAC system, relevant vocabulary, and accessible and meaningful icons, but intervention must be collaborative between all team

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members and especially involve the learner, the family, and the teachers in every step to ensure sustainable use (Binger et al., 2012).

Regarding policy support, the SIAS policy in South Africa encourages all schools, including special schools with learners with CCN, to assess learner difficulties and barriers to learning and to document strategies for support, assigning roles to individuals within the school-based support team (DBE, 2014). In a subsample of the current study, 76% of learners with CCN had communication support mentioned in their IEDP or ISP. However, according to the SIAS policy, all learners with CCN should have a support plan identifying five specific areas of provision, namely 1) specialist support staff, 2) assistive devices, specialised equipment, and teaching and learning support materials, 3) curriculum differentiation to meet the needs of learners, 4) initial and ongoing training, orientation, mentorship, and guidance, and 5) environmental access (once-off and not necessarily ongoing) as these areas help identify the specific needs of each learner with CCN and to continuously assess and monitor the progress of each learner according to the fulfilment of their needs (DBE, 2014).

The DBE (2014) in South Africa mandates that the SIAS policy should be implemented in all schools in South Africa as a guideline for inclusive education and a program to ensure the educational needs of learners with disabilities at special schools are met. However, Matolo and Rambuda (2022) suggested an inefficient rollout of the policy because of inadequate teacher training, poor monitoring of the SIAS process, and the lack of trained professionals involved in the identification, assessment, and intervention phases of the SIAS. Collaboration between teachers, parents, therapists, and all other role players is essential when looking at communication intervention in goal-setting and practical intervention (McSheehan et al., 2006). Breakdowns occur at the level of developing the ISP, through identification, screening and assessment but also in relaying the pertinent information regarding both learner and school needs for effective intervention to the district-based support teams when necessary (Matolo & Rambuda, 2022). In the current study, nearly a quarter of children with CCN did not have communication support mentioned in their ISP, which means that a breakdown occurred in the first step of communication support and intervention.

Further research, training, and monitoring regarding the effective implementation process of the IEDP and ISP documents in the SIAS process are essential to understand the breakdown in the documentation of communication support for 25% of learners with CCN.

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4.6 Teacher training in augmentative and alternative communication

According to Beukelman and Light (2020), the learner and their communication partners, such as the classroom teacher, AAC facilitator, and caregiver, typically require ongoing training and support to help develop communicative competence and facilitate the fluent and sustainable use of AAC in various natural contexts, such as the classroom or home environment. The current study demonstrated that two-thirds of the responding teachers had received AAC training. The results of the current study are in keeping with other local (Tönsing & Dada, 2016) and international studies (Andzik et al., 2019) in which teachers expressed a lack of adequate training. In the current study, training was primarily received from SLTs, by attending workshops or seminars, and by attending in-service training sessions at their schools, with relatively few teachers having received formal training as part of their qualification.

Although the current study did not inquire regarding teachers' perceptions of teacher training, when asked whether or not teachers wanted to make any additional comments, some teachers commented on their dissatisfaction with the lack of training in AAC, the burden of having to pay for additional training, and disappointment in the lack of funding given towards teacher training from the DBE. The finding regarding the lack of training for teachers in terms of AAC implementation and the dissatisfaction surrounding it was not unexpected as previous research indicated similar findings not just for teachers but also for professionals. Tönsing and Dada (2016) found that almost all teachers indicated that they would benefit from additional AAC training, and most teachers suggested that training should take place in their classrooms, while some teachers indicated that they wanted lectures and formal training.

Indeed, according to the research, teachers are now being exposed to classroom-based support and training by therapists in the classroom context, which is accompanied by modelled demonstrations of therapy techniques and intervention strategies (Brock et al., 2024).

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5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this study, the researcher aimed to determine the prevalence of learners with CCN in the foundation phase at selected special schools in the WC, and to describe their concomitant difficulties in other functional areas; the communication methods used in class; the communication support provided to them in terms of aided AAC provision, therapeutic support, the documentation of communication support in their IEDPs and/or ISPs; and teacher training in AAC. The following section presents a summary of the main findings.

5.2 Summary of main findings

At the 17 selected special schools in the WC, a prevalence of 23% of learners with CCN was reported. A higher prevalence of learners with CCN was found in urban areas and in special schools with an ASD or SPID focus. The most frequently reported concomitant difficulties that learners with CCN experienced were difficulties remembering or concentrating for the purpose of learning and difficulties with self-care activities such as washing and dressing themselves.

Based on a subsample of learners for whom this was accurately reported, a higher proportion of learners with CCN was reportedly using informal methods of communication as compared to those using AAC methods that are formally introduced and taught, such as keyword signing or SGDs. The most frequently reported method of communication for learners with CCN in special needs classrooms was informal methods, and the second most used method was using objects to communicate. In addition, a higher proportion of learners used unaided AAC as compared to those who used aided AAC.

A total of 100% of teachers who answered this question had an occupational therapist based at their school, 88% who answered this question had a SLT, and 28% who answered this question had a physiotherapist, and 93% had a teaching assistant who might aid in the carry-over of therapeutic targets in the classroom environment. Although, it is not clear whether these professionals receive adequate training for AAC implementation, these findings are significant as it suggests potential multidisciplinary communication support for teachers and team collaboration in AAC implementation. In terms of communication support, a higher proportion of aided AAC communication boards/books and SGDs was provided for by private individuals or outside institutions than by the DBE. Based on a subsample of learners for whom this was accurately

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reported, 40–60% of learners received some kind of SLT support, mainly individual or small group therapy from school SLTs, whereas at least 40% received no SLT support. Furthermore, based on a subsample of learners for whom this was accurately reported, half of the learners did not receive any other support outside of SLT support, and some received other unknown (unspecified) support and occupational therapist support to help them communicate better. Furthermore, based on a subsample of learners for whom this was accurately reported, 76% of learners with CCN had communication support mentioned in their IEDP or ISP.

The current study demonstrated that 66% of teachers had received AAC training and 34% had not received training. Teachers received training mostly from an SLT, by attending workshops or seminars, and by attending in-service training sessions at their schools. Fewer teachers received training through conferences, journals, and as part of a qualification, and fewer teachers received training through websites, other teachers, by their school principal, and through a parent of a learner with CCN.

5.3 Implications for practice

According to the literature, AAC implementation must be supported by impactful policy (Kent-Walsh et al., 2008), effective practice (Brock et al., 2024), and sufficient and appropriate funding (Harris, 2015). The findings of the current study suggested that a sizeable proportion (nearly a quarter) of leaners at the included schools had CCN and were therefore in need of AAC. Findings from the study suggested that some AAC supports is indeed in place for these learners; for example, teachers at many schools reported that SLTs, occupational therapists, and teaching assistants were employed at the schools. Furthermore, some learners used AAC methods that are typically formally introduced and taught, such as keyword signing or SGDs, to communicate in the classroom, suggesting there was opportunity and support for using these methods in the school context for these learners. However, there were also findings that suggested that the multi-faceted implementation of AAC could be improved in WC schools. Specifically, procurement of single-use aided AAC systems via the DBE could be increased, and the therapeutic support provided to learners with CCN may also be improved. In addition, all learners with CCN should have the need for communication support officially documented in their IEDP or ISP plan, and all teachers teaching at schools for learners with special educational needs should be trained in AAC.

The fact that most aided AAC systems were provided by individuals and/or organisations outside the DBE suggests that procurement processes may not be optimised. Better funding directives should be given to schools, with an indication of how the allocated budget should be

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spent to address the aided AAC needs of learners with CCN, with proper fiscal oversight to enable the timely procurement of devices. Even though policy strongly advocates for the provision of aided AAC in the DBE (HRW, 2015), and funding, although limited, exists, the budget received may be spent on other needs in the special schools. In order to ensure the DBE reaches its goal of a quality education for all, funding must be allocated towards ensuring the accessibility of AAC aids.

The findings also suggested that a sizeable proportion of learners do not receive individual or group-based speech-language therapy by SLTs based at the schools. Challenges with AAC implementation may be experienced with the high demand of AAC users in the school context in relation to the limited amount of school-based SLTs, and it may be related to a lack of prioritising learners with CCN for SLT support (Kent-Walsh et al., 2008). Therefore, improving therapeutic outcomes are dependent upon ensuring there are enough SLTs based at all schools and that the needs of learners with CCN for SLT support are prioritised. While the current survey only enquired about pull-out services, other methods of support, such as classroom-based intervention and in-service training of teachers, class assistants, and other professionals, such as occupational therapists and physiotherapists in the classroom context and in joint therapy sessions, should be investigated in the future (Brock et al. (2024).

The need for communication support should be documented in the IEDP or ISP documents for all learners with CCN. Only when a support need is documented, can the implementation of support be effectively mandated and monitored. Therefore, a lack of such documentation means that even the most basic initial step in implementing a support plan is missing. Matolo and Rambuda (2022) suggested that the inefficient rollout of the SIAS policy may be due to issues such as inadequate teacher training, poor monitoring of the SIAS process, and the lack of trained professionals involved in the identification, assessment, and intervention phases of the process. In order to ensure the effective rollout of the policy, regular training of the SIAS process should occur with teachers. The SIAS policy can only be impactful with effective collaboration of all stakeholders involved and meticulous monitoring to ensure communication support for learners with CCN at all special schools in the WC. Collaboration between teachers, parents, therapists, and all other role players is essential when setting goals and implementing interventions to improve communication through AAC (McSheehan et al., 2006).

Research also suggested that effective AAC service delivery and collaboration by professionals and educators working at schools may be affected by low levels of confidence and

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training in AAC (Kent-Walsh et al., 2008; Tönsing & Dada, 2016). Therefore, in addition to collaborative goal-setting and appropriate documentation of support needs related to communication, ensuring that enough SLTs are employed at schools and adjusting current models of service delivery, all teachers and professionals working at special schools should be trained in AAC. Such training may be implemented using various formal or less formal methods but a method to ensure that relevant skills are obtained and applied by role players should be put in place.

In order to put these measures in place, the DBE would need to allocate budgets appropriately to ensure not only the procurement of aided AAC systems but also the employment of support personnel such as SLTs, occupational therapists, and teaching assistants. Funding must also be allocated to teacher training. Lastly, the process of implementing AAC support should have oversight to monitor whether teachers and professionals are able to adequately document assessment findings and intervention strategies and make the necessary referrals and recommendations for learner support in the IEDP or ISP, and to ensure the support plan is implemented.

5.4 Critical evaluation of the study

5.4.1 Strengths

This study included teachers from both urban, peri-urban and rural areas in the WC, which was representative of the population. Previous studies in South Africa only focused on special schools in urban areas or schools that were already practicing AAC, such as keyword signing. In the recruitment process, the researcher obtained permission from 52% of the schools approached for the study through regular telephonic and email contact. Literature suggested that surveys via email could have a response rate of 20–80% but that non-responsive participants and response rate of less than 50% is most likely to be seen in studies with no follow-up (Fowler, 2009). Follow-up procedures, such as the telephonic and email reminders, sent to liaisons ensured a response rate of over 50% in this study. An opportunity to win a voucher was offered to increase the response rate, which may have helped.

The development of the questionnaire was a rigorous process that used multiple sources of information, including previous literature, the perspectives of professionals exposed to AAC and the education sector, and the perspectives of ex-teachers who have worked at special schools. Developing a comprehensive questionnaire also consisted of taking action on the expert feedback

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given and conducting a pilot study. The purpose of the pilot study was to test the ease of access to complete the survey on Qualtrics[XM], to assess the clarity, appropriateness, and relevance of the questions posed in the questionnaire, and to obtain an estimate of how long the online questionnaire may take to complete from the perspective of the teachers. The researcher had no contact with the teachers, reducing the occurrence of bias. Thorough data cleaning was done to ensure all inclusion criteria were reached and no illogical responses were included in the data analysis process.

5.4.2 Limitations

Not all principals from special schools in the WC granted permission to participate in the study, with some stating that their staff did not have time to participate while others did not give any reason. Of the 33 permission forms electronically sent out, four schools did not grant permission to do the study at their schools and 12 schools did not respond. Permission was received from 52% of schools. In addition, one school communicated that there were 10 teachers from their school that were not able to do the survey because of workload pressures, and therefore, these teachers were excluded from the study. In order to accommodate their request to do the survey when they had more time, the time period allocated to complete the survey could have been extended to ensure more responses from the schools that granted permission. A larger sample size would have improved the external validity of the study.

Some questions, even though very carefully worded, were still misunderstood by respondents, who perhaps would have understood the questions better if they had been presented verbally in a discussion or interview format, with more time to answer it, or if they had been presented in their first language. As a result, some teachers did not answer some of the questions in terms of learners with CCN but answered in terms of their entire class. The confusion meant that some entries had to be excluded during data analysis. Certain comments regarding AAC implementation, and especially, therapeutic support made by teachers in response to open-ended questions, though seemingly valuable in terms of AAC service models, were very unclear in terms of the specific professionals to whom they were referring. The question was perhaps too long-winded, or, as it was the last question, teachers were perhaps tired and thus answered it partially and/or imprecisely. In addition, the survey only asked about the traditional pull-out therapeutic support and not about other models of SLT support.

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5.5 Recommendations for further studies

It is recommended to replicate this study in other provinces of South Africa to determine the prevalence of learners with CCN in other parts of the country, with the possibility of compiling more accurate national statistics. Future studies could consider interviews with teachers as it would allow asking clarifying questions. It is also recommended that further mixed-methods studies be conducted regarding the therapeutic AAC support offered to learners with CCN from an SLT perspective. Such studies could, for example, explore the ratio of SLTs to learners with CCN in special schools and its perceived efficacy in comparison to the suggested Personnel Administrative Measures norms for education therapists. Furthermore, the current practices, and the service models followed by SLTs in South Africa with regards to AAC implementation and their perspective on training teachers and other professionals in terms of AAC could be explored.

Future studies should also be conducted in order to:

- Observe actual AAC implementation in classrooms;
- Develop end test effective methods by which teachers can be supported to implement AAC in the classroom; and
- Determine the funding allocated to AAC and communication support for learners with CCN in special schools in the WC and South Africa
- Determine the monitoring process and policies involved in ensuring the implementation of AAC at all special schools in South Africa.

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Appendix A

Ethical Approval

UNIVERSITEIT VAN PRETORIA
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Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho

Humanities 100
Since 1919

25 June 2024

Dear Mrs CE Gill

Project Title:	A survey of learners with complex communication needs (CCN) in the foundation phase of selected special schools in the Western Cape province of South Africa
Researcher:	Mrs CE Gill
Supervisor(s):	Prof KM Tönsing
Department:	Centre for Augmentative and Alternative Communication
Reference number:	22960393 (HUM017/0723)
Degree:	Masters

I have pleasure in informing you that the above application was **approved** by the Research Ethics Committee on 25 June 2024. Please note that before research can commence all other approvals must have been received.

Please note that this approval is based on the assumption that the research will be carried out along the lines laid out in the proposal. Should the actual research depart significantly from the proposed research, it will be necessary to apply for a new research approval and ethical clearance.

We wish you success with the project.

Sincerely,

Prof Karen Harris
Chair: Research Ethics Committee
Faculty of Humanities
UNIVERSITY OF PRETORIA
e-mail: tracey.andrew@up.ac.za

Room 7-27, Humanities Building, University of Pretoria, Private Bag X20, Hatfield 0028, South Africa
Tel: +27 (0)12 420 4853 | Fax +27 (0)12 420 4501 | Email: pghumanities@up.ac.za | www.up.ac.za/faculty-of-humanities

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Appendix B

Western Cape Education Department Research Directorate Permission

UNIVERSITEIT VAN PRETORIA
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Western Cape Government
Education

Directorate: Research

meshack.kanzi@westerncape.gov.za
Tel: +27 021 467 2350
Fax: 086 590 2282
Private Bag x9114, Cape Town, 8000
wced.wcape.gov.za

REFERENCE: 164E0FAF000002D-20230927
ENQUIRIES: Mr M Kanzi

Mrs Charne' Gill
43 Broadway Crescent
Cape Town
7570

Dear Charne' Gill,

RESEARCH PROPOSAL: A SURVEY OF LEARNERS WITH COMPLEX COMMUNICATION NEEDS (CCN) IN THE FOUNDATION PHASE OF SELECTED SPECIAL SCHOOLS IN THE WESTERN CAPE PROVINCE OF SOUTH AFRICA.

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

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Educators' programmes are not to be interrupted.
5. The Study is to be conducted from **31 October 2023 till 30 September 2024.**
6. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
7. Should you wish to extend the period of your survey, please contact Mr M Kanzi at the contact numbers above quoting the reference number.
8. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
9. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
10. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
11. The Department receives a copy of the completed report/dissertation/thesis addressed to:

The Director: Research Services
Western Cape Education Department
Private Bag X9114
CAPE TOWN
8000

We wish you success in your research.

Kind regards,
Meshack Kanzi
Directorate: Research
DATE: 31 October 2023

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Appendix C

Principal's Letter

Appendix A: Principal permission letter

Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho

Centre for Augmentative and Alternative Communication

Humanities 100 Since 1919

Date: 08/02/2024

Dear Principal

Re: Permission to involve teachers from your school in a research study

My name is Charne' Gill. I am a Master's student at the Center for Augmentative and Alternative Communication (AAC) at the University of Pretoria. As part of my studies, I am completing a small-scale research project. My research study aims to determine the number of children with severe communication difficulties at special schools in the Western Cape and to describe some of the communication support provided for them. The title of my study is: *"A survey of learners with complex communication needs (CCN) in the foundation phase of selected special schools in the Western Cape province of South Africa."*

I would like to request your permission to recruit foundation phase teachers from your school as participants for this study. I have obtained ethics approval from the Western Cape Education Department (WCED) ethics board to conduct this study (please see attached).

Reason for the study:
Learners who may have difficulties communicating may experience challenges in their ability to express themselves, learn and interact with their peers and teachers in the classroom. These learners may require support to overcome any barriers to communication and participating in the classroom. By identifying how many learners experience these difficulties and what support they currently receive, the situation for these learners at special schools in the Western Cape can be described. This will highlight provisions already in place, and also possible gaps.

What will be expected of your school?
Should you give permission, an information letter for teachers will be sent to the school electronically (PdF format). We would kindly request that you distribute the letter via email or WhatsApp (or other electronic medium) to all foundation phase teachers at their school. The letter will contain a link to a consent form and online survey. We would also like to request that you send reminders to teachers to remind them to respond. All teachers who have completed the survey will have the opportunity to enter their names into a drawing to win a courtesy voucher.

What will be expected of the participants during the study?
The teachers will be required to click on an embedded link in the information letter, which will give them access to a consent form. Once they have given consent electronically, they will be given access to the online questionnaire. The questionnaire will consist of short background questions and questions about the communication and support needs of learners in their classes who struggle to communicate. They will not be asked to provide any identifying biographical information such as their name, the name of their school, their date of birth or gender. The questionnaire should take them no longer than 15-20 minutes to complete. The questionnaire will be available for completion for a period of 6 weeks. The teachers must complete the survey in order to participate in the courtesy voucher drawing.

The following ethical principles will be upheld within this study:

- Approval for the study has been obtained from the Western Cape Education Department (WCED) ethics board.
- Participation is voluntary. Letters will only be distributed to teachers where principals have given permission to do so. Electronic consent from all participants will be obtained

Centre for Augmentative and Alternative Communication
Communication Pathology Building
Lynwood Road, Hatfield
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 2001 | Fax +27 086 510 0841
Email: saak@up.ac.za | Web address: www.caac.up.ac.za

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prior to conducting the study. All participants will be made aware of their right to withdraw from the study at any point in time without any negative consequences to themselves.

- The responses to questions will be kept confidential and no identifying information (school name, individual name, date of birth, gender, IP address) will be collected or mentioned in any published data.

Who will have access to the results of the study?

All data will be collected electronically in this study. All responses will be downloaded from the survey platform and stored on a password protected USB stick. This USB will be stored in a locked cabinet at the Centre for AAC at the University of Pretoria for a minimum of 15 years. The data collected from this study will be used to write a master's dissertation and may also be used for writing a scientific article and for presentation at conferences. The data may also be used for future analysis. The response data (without biographical details) will be made publicly available on the University of Pretoria's online database. Other researchers may access this database and reuse the data for analysis. The thesis and any other publications from the study will be made available to any participant who expresses interest.

What are the risks and the benefits?

Please note that the survey used in this study does not contain any personal or sensitive questions. The study is not aimed at testing the teacher's knowledge, but aims to describe the support available for learners who have difficulties with communication. The study does not pose any potential harm or threat to the teachers or schools. With a dearth of information on the number of learners who have communication difficulties, as well as information regarding how they are supported at special schools, the teachers' contributions will assist in broadening the knowledge base in this area to make communication support more accessible for all learners with functional communication difficulties at special schools in South Africa.

Kindly complete the attached form to indicate whether you give permission to include participants from your school in the study. If you prefer, you may reply on your own letterhead instead to indicate whether or not you give permission. Kindly email the form or your letter to me at Charnegill09@gmail.com. If you have any questions, do not hesitate to contact me.

Kind regards,

08/02/2024
Date

Charne' Gill
Charnegill09@gmail.com
+1 (437) 937-0903 (Available on WhatsApp)

08/02/2024
Date

Professor Kerstin Tönsing
Kerstin.tonsing@up.ac.za
Tel: (012) 420-4729,
Centre for Augmentative and Alternative Communication

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Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho
Centre for Augmentative and Alternative Communication

Humanities 100

Principal permission form

Principal's name: _____

School's name: _____

Title of study: **A survey of learners with complex communication needs (CCN) in the foundation phase of selected special schools in the Western Cape province of South Africa**

Researcher: Charne' Gill
Master's Student
Centre for AAC
University of Pretoria
Cell: +1 (437) 937-0903
Charnegill09@gmail.com

Supervisor: Kerstin Tönsing
Associate Professor
Centre for AAC
University of Pretoria
Cell: 082 661 6007
kerstin.tonsing@up.ac.za

I _____(Name and surname)

(please tick box that applies)

☐ give permission to the researcher to recruit teachers from the school named above for possible participation in the study entitled: **A survey of learners with complex communication needs (CCN) in the foundation phase of selected special schools in the Western Cape province of South Africa**, conducted by Charne' Gill under the supervision of Kerstin Tönsing. This permission is voluntary and I understand that I may withdraw at any time. I understand that participating teachers will be requested to give consent and complete an online survey. I understand that the data from the survey (without biographical details) will be made publicly available on the University of Pretoria's online database. I understand that the data may be used for a scientific article, research reports or presentations and that the data may be re-used for analysis. I understand that the data collected will be stored for 15 years at the CAAC and that all data will be treated confidentially.

OR

☐ do not give permission to Charne' Gill to recruit teachers from the school named above for possible participation in the study entitled **A survey of learners with complex communication needs (CCN) in the foundation phase of selected special schools in the Western Cape province of South Africa.**

_____
Principal Signature

_____
Date

School stamp

Centre for Augmentative and Alternative Communication
Communication Pathology Building
Lynwood Road, Hatfield
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 2001 | Fax +27 086 510 0641
Email: saalk@up.ac.za | Web address: www.caac.up.ac.za

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Appendix D

Information and Consent Letter

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Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho

Centre for Augmentative and Alternative Communication

Humanities 100

15/02/2024

Dear Educator

Re: Participation in a survey of learners who have severe communication difficulties

My name is Charne' Gill, and I am currently enrolled for a Master's degree in augmentative and alternative communication (AAC) at the University of Pretoria. I would like to invite you, as an educator working in a Grade R classroom or in any of the foundation phase classrooms in a Special Needs School, to participate in a research project as part of the requirements for my degree.

The title of my study is:
A survey of learners with complex communication needs (CCN) in the foundation phase of selected special schools in the Western Cape province of South Africa

The aim of my study is to determine the number of children with severe communication difficulties at special schools in the Western Cape and to describe some of the communication support provided for them.

I have been granted approval by the Research Ethics Committee of Humanities, University of Pretoria and the Western Cape Department of Education ethics board to conduct this study.

Who can participate?
The study is aimed at qualified (SACE registered) educators who:
- Teach Grade R or any other foundation phase class in a special needs school in the Western Cape Province;
- Have an understanding of the English language; and
- Have access to the internet and are able to complete an online questionnaire.

Reason for the study:
Learners who may have difficulties communicating may experience challenges to interact with their peers and teachers in the classroom. These learners may require support to overcome any barriers to communication and participating in the classroom. By identifying how many learners experience these difficulties and what support they currently receive at special schools in the Western Cape, we can better understand their situation. This will highlight provisions already in place, and also possible gaps.

If I choose participate, what will be required of me?
Should you consent to participate in this study, you will be asked to complete an online questionnaire. The questionnaire will consist of short background questions and questions about the communication and support needs of learners in your class who struggle to communicate. You will not be asked to provide me with any identifying information such as your name, date of birth or gender. This survey should take no longer than 15-20 minutes to complete.

What are my rights as a participant?
Participation in this study is voluntary. If you decide not to take part, there will be no negative consequences to you. If you complete the questionnaire and would like to withdraw from the study for any reason, you are free to do so and your responses with be discarded. You do not need to provide a reason for withdrawing. The responses to questions will be kept confidential and no identifying information (name, date of birth, gender, IP address) will be collected. Upon completion

Centre for Augmentative and Alternative Communication
Communication Pathology Building
Lynwood Road, Hatfield
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 2001 | Fax +27 086 510 0841
Email: saalt@up.ac.za | Web address: www.caac.up.ac.za

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of the survey, a summary of your responses will be displayed which may be downloaded as a PDF document or printed if you wish to do so.

Who will have access to the results of the study?
In this study all data will be collected electronically. All responses will be downloaded from the survey platform and stored on a password protected USB stick. This USB will be stored in a locked cabinet at the Centre for AAC at the University of Pretoria for a minimum of 15 years. The data collected from this study will be used to write a master's dissertation and may also be used for writing a scientific article and for presentation at conferences. The data may also be used for future analysis. The survey data (without biographical details) will be made publicly available on the University of Pretoria's online database. Other researchers may access this database and reuse the data for analysis. The thesis and any other publications from the study will be made available to any participant who expresses interest.

What are the risks and the benefits?
Please note that the survey used in this study does not contain any personal or sensitive questions. The study is not aimed at testing your knowledge but aims to describe the support available for learners who have difficulties with communication. The study does not pose any potential harm or threat to you. With a dearth of information on the number of learners who have communication difficulties, as well as information regarding how they are supported at special schools, your contributions will assist in broadening the knowledge base in this area to make communication support more accessible for all learners with functional communication difficulties at special schools in South Africa.

Voucher drawing
All participants who have completed the survey have the opportunity to enter their names into a drawing to win a R500 Takealot voucher in return for their participation. You must complete the survey to participate in the drawing.

Should you be willing to participate in this study, please complete the online consent form by clicking here: https://pretoria.eu.qualtrics.com/jfe/form/SV_4VLvlCXbmZMdkt8

You will then automatically be directed further to the online survey.

Please note that should you wish to begin the survey and resume later, your survey responses will be automatically recorded using website cookies. However, your responses will only be accessible again if you use the same browser/computer/phone and will remain saved for one week. Thereafter, your incomplete form will be submitted automatically.

If you have any questions, do not hesitate to contact me via WhatsApp or via email.

Kind regards,

Charne' Gill
Charnegill09@gmail.com
WhatsApp: +1 (437) 937-0903

15/02/2024
Date

Professor Kerstin Tönsing
Kerstin.tonsing@up.ac.za
Tel: (012) 420-4729
Centre for Augmentative and Alternative communication

15/02/2024
Date

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Participant Informed Consent reply
(This form will be provided on Qualtrics prior to presentation of the survey)

Project title: A survey of learners with complex communication needs (CCN) in the foundation phase of selected special schools in the Western Cape province of South Africa

Researcher:
Charne' Gill
Master's student
Centre for AAC, University of Pretoria
Email: charnegill09@gmail.com

Supervisor:
Kerstin Tönsing
Associate Professor
Centre for AAC, University of Pretoria
Cell: 082 661 6007
Email: kerstin.tonsing@up.ac.za

I confirm that I have read the information letter regarding this study.

☐ Yes

☐ No

I confirm that I am eligible to participate in the study and fit the inclusion criteria.

☐ Yes

☐ No

Please tick one of the options below:

☐ I consent to participate in the study; **"A** survey of learners with complex communication needs (CCN) in the foundation phase of selected special schools in the Western Cape province of South **Africa."** This consent is voluntary, and I understand that I may withdraw from the study at any time with no consequences to me. I understand that the data will be used to write a **Master's** dissertation and scientific articles, as well as for conference presentations. I understand that all data will be stored for 15 years at the CAAC and that all data will be treated confidentially. I understand that the data from the survey (without biographical details) will be made publicly available on the University of **Pretoria's** online database. I understand that the data may be re-used for analysis. I understand that all biographical details will be treated as confidential.

☐ I do not give consent to participate in the abovementioned study.

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Appendix E

Survey Questionnaire

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Thank you for your participation in this survey.

You have been specifically selected to participate in this study. It is advised to complete the survey in one-sitting. Your responses will be kept confidential and no identifying information (such as your name, date of birth, gender or IP address) will be collected.

Let's explain some of the terms used in this study.

Severe communication difficulties:
Some learners have severe communication difficulties. This means that the learner cannot rely on speech to communicate with others functionally. Some learners cannot produce any speech. Some learners can produce some speech, but it is not clear and hard to understand. Some learners speak clearly, but their speech does not make sense. For example, they may only repeat the same lines heard on TV.

In all these cases, we would say the learner has severe communication difficulties and struggles to communicate effectively. Learners who have communication difficulties often use different methods of communication. These methods are known as Augmentative and Alternative Communication (AAC).

For example:

- They may use sounds, cry or smile.
- They may also take you by the hand to lead you somewhere, move their hands to try to explain something or use objects and toys to try and explain something.
- Sometimes a therapist may give the learner a board or book with picture symbols.
- The therapist teaches the learner to point to these picture symbols to communicate a message.
  Here are some examples of such boards and books:

Communication file with Picture Communication Symbols (PCS)™

Communication board with Picture Communication Symbols (PCS)™

Booklet with removable Picture Communication Symbols (PCS)™

Alphabet board

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A learner may also get a device to help them to communicate. When you press a button on such a device, the device 'speaks' a message. Such devices are called 'speech-generating devices.'

Here are some examples of such devices:

Lightwriter ®SLP40 ™

GoTalk9+ ™ with Picture Communication Symbols (PCS) ™

BIGmack ™

iPad ™ with GoTalkNow communication App ™

Questions

1. Where is your school situated?
   - ☐ Rural area (Example: Overberg, Eden and Central Karoo Education Districts)
   - ☐ Semirural/peri-urban area (Example: Cape Winelands and West Coast Education Districts)
   - ☐ Urban area (Example: Metro Central, Metro East, Metro North and Metro South Education Districts)
2. Does your school have a specific disability focus? Please tick ALL that apply:
   - ☐ Severe to Profound Intellectual Disability
   - ☐ Cerebral Palsy or Physical Disability
   - ☐ Autism Spectrum Disorders
   - ☐ Other (Please specify): _____
3. How many of these professionals are based at your school? Please indicate the number. If none please type 0.
   - Occupational Therapist ☐
   - Speech Therapist ☐
   - Physiotherapist ☐

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4. How many teaching assistants do you have in your class? Please indicate the number. If none please type 0.

   Number ☐

5. What is your age? ☐ Years

6. What is your highest academic qualification?

Matric	Teaching Diploma	Bachelor's Degree	Honour's Degree	Master's Degree	Doctoral Degree
☐	☐	☐	☐	☐	☐

7. For how many years have you been teaching? Years ☐ Months ☐

8. For how many years have you taught learners with special educational needs?

   Years ☐ Months ☐

9. How old is the **youngest** learner in your class? ☐

10. How old is the **oldest** learner in your class? ☐

11. How many learners are in your class? Learners ☐

12a. Do you have learners with **severe communication difficulties** (i.e., learners that cannot communicate without support or learners that cannot rely on speech to communicate with others functionally) in your class?

☐ Yes

☐ No

12b. How many learners in your class have **severe communication difficulties** (i.e., learners that cannot rely on speech to communicate with others functionally)? ☐

13. Please indicate how many learners **who have severe communication difficulties** in your class ALSO have difficulties seeing, hearing, moving, learning and taking care of themselves. If none please type 0.

   Seeing, even if wearing glasses ☐

   Hearing, even if using hearing aids ☐

   Walking or climbing steps ☐

   Remembering or concentrating for the purpose of learning ☐

   Self-care in activities such as washing or dressing themselves ☐

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4. How many learners with **severe communication difficulties** in your class use these methods of communication? (One learner may use more than one method). If none please type 0.

Informal methods Informal methods such as making sounds, crying and using body language (i.e., body language includes using facial expression, gestures, head nodding, head shaking and pointing)	
Specific hand signs Specific hand signs (i.e., Makaton, Tiny Hands or South African Sign Language - SASL)	
Using objects Using objects (e.g., holding out an empty cup when asking for a drink; pointing to the door to ask to go out)	
Single use communication board or book Communication board or book that is ONLY used by a specific learner	
Shared communication board or book Communication board or book that is SHARED amongst different learners	
Single use speech generating device Speech generating device (device that 'speaks out loud') that is ONLY used by a specific learner	
Please write names of devices here:	
Shared speech generating device Speech generating device (device that 'speaks out loud') that is SHARED across learners	
Please write names of devices here:	

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15. **How many of the communication boards or books** used by learners in your class are provided by the Department of Education or people and/or institutions outside of the school? **If there are no learners who use communication boards or books, please skip this question.**

Provided by Western Cape Education Department	
Provided privately	
Unsure who provided it	

16. **How many of the speech-generating devices** (devices that 'speaks out loud') used by learners in your class are provided by the Department of Education or people and/or institutions outside of the school? **If there are no learners who use communication boards or books, please skip this question.**

Provided by Western Cape Education Department	
Provided privately	
Unsure who provided it	

The next two questions are about **learners with severe communication difficulties** in your class who receive **individual or small group therapy** to help them communicate better.

17. Please fill in the number of **learners with severe communication difficulties** in your class who receive such therapy from the following speech therapists. If you are unsure, you may provide an estimate. If you do not know please type U to indicate 'unknown'.

School speech therapists (i.e., therapists who are part of the school staff)	
Other speech therapists who come to the school (i.e., district-based speech therapists, speech therapists from the Department of Health or private speech therapists)	
Other speech therapists who see learners outside of the school	

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18. Do any **learners with severe communication difficulties** in your class get therapy to help them communicate better from any OTHER therapists or professionals (e.g. occupational therapist) – please describe and add the number of learners who receive such support.

19. How many learners with severe communication difficulties in your class have communication goals in their IEDP (Individualized Education Development Plan) or ISP (Individual Support Plan)?

Number ☐

20. Have you received any formal or informal training on how to communicate with learners with severe communication difficulties? This could include training to use signs from sign language, training on how to use a communication book or board or training on using a speech-generating device.

Yes ☐

No ☐

21. Please indicate what type of training you have received by selecting the relevant option. You may select more than one option. *(This question was not compulsory)*

For the options selected, please fill in any details you can remember in the space provided under the description, for example: the topic or title of the course and the date; or the title of the book/journals etc.

	Part of your formal qualification	
	Workshop / seminar	
	Journals	
	Books	
	Conferences	
	Other teacher	
	Speech therapist	

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	Principal	
	Parent of learner	
	In service training sessions at the school	
	Websites	
	Other (please specify)	

22. Final Question:

Are there any other comments you would like to make regarding learners with severe communication difficulties, how they communicate in class and the support that is provided to them to help them communicate better?

If you do not have any other comments you would like to make and do not need to go back to change or adjust any of your previous responses, please proceed to the next page.

Thank you for your participation! If you want to be entered into a draw to win a R500 Takealot voucher, please provide your email address below. **Please note that this is optional** and that your email address will be kept confidential and will not be linked to your answers during data analysis.

If you do not wish to enter into the draw, leave the address blank.

Email address:

End of Survey
Thank you for your time

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Appendix F

Turnitin Submission Report

turnitin

Digital Receipt

This receipt acknowledges that Turnitin received your paper. Below you will find the receipt information regarding your submission.

The first page of your submissions is displayed below.

Submission author:	CE (Charne') Gill
Assignment title:	AAK 895 Year 2 Full mini-dissertation
Submission title:	Pdf COPY of CGILL Mini-dissertation without plagiarism decl...
File name:	Turnitin_COPY_Gill_FULL_Mini-dissertation_2024-08-12_CG.pdf
File size:	1.66M
Page count:	103
Word count:	26,119
Character count:	149,032
Submission date:	13-Aug-2024 06:38AM (UTC+0200)
Submission ID:	2431364699

A survey of learners with complex communication needs (CCN) in the foundation phase of selected special schools in the Western Cape province of South Africa

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Appendix G

Declaration of the Language Editor

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Karien Hurter
LANGUAGE EDITOR

KARIEN HURTER
Copy Editor and Proofreader
Email: karien.hurter@gmail.com
Tel: 071 104 9484

Certificate of Editing

This serves to confirm that copy-editing and proofreading services were rendered to *A Survey of Learners with Complex Communication Needs (CCN) in the Foundation Phase of Selected Special Schools in the Western Cape Province of South Africa* by Charne' Gill on 23 July 2024

I confirm that I have met the following standards of editing and professional ethical practice.

- I have completed the work independently and did not sub-contract it out
- I kept to the agreed deadlines and/or communicated changes within reasonable time frames
- I treated all work as confidential and maintained objectivity in editing
- I did not accept work that could be considered unlawful, dishonest or contrary to public interest

The document requires further work by the author in response to my suggested edits. I cannot be held responsible for what the author does from this point onward.

Regards,

Karien Hurter
Professional Editors' Guild member number: HUR003