Outcomes of a specialist Autism Spectrum Professional Development model for schools and students in South Australia

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Abstract

As increasing numbers of students with autism are being enrolled in mainstream classrooms, today's schools are required to address their preparedness to support the academic and social needs of this student group (Australian Advisory Board on Autism Spectrum Disorders [AABASD], 2012; Boyle et al., 2011; Morrier, Hess, & Heflin, 2011; Odom, Cox, & Brock, 2013; Pas, Johnson, Larson, Brandenburg, Church, & Bradshaw, 2016). In South Australia, the State Government recognised this need and provided 80 Graduate Certificate in Education (GCE) scholarships for teachers and leaders to increase their capacity for more effectively educating students with autism in mainstream schools. The year-long (part-time) post graduate level scholarship program was offered by Flinders University and involved a combination of university-based classes and on-site support. The thesis is the report of an interpretive case study which analysed secondary data generated from teachers' action plans, outcomes of action plans and students' reports to assess the outcomes of their participation in the GCE. The research examines how leaders' and teachers' participation in the GCE influenced outcomes for participating schools and students. The research identified multiple areas for teacher and school improvement to support the needs of students with autism in regular classrooms. For example, schools recognised the need to improve their processes for Individual Education Plan (IEP) development and data collection, teacher professional development (PD) and increased whole school awareness and social supports for students with autism. Overall, the research demonstrated that the GCE encouraged the implementation of practices and supports that promoted greater awareness of autism and inclusivity at both the individual and whole school level.

Keywords: autism, Autism Spectrum Disorders, Graduate Certificate in Education, ASD, generalist teachers, individual education plan (IEP), data collection, teacher professional development, learning environments, whole school awareness and social supports.

Declaration of Authorship

I certify that this work does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university and that, to the best of my knowledge and belief, it does not contain any material previously published or written by another person except where due reference is made in the text.

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CHAPTER ONE

Outcomes of a specialist Autism Spectrum Professional Development model for schools and students

Research has identified that classroom teachers require specific professional development (PD) to help them meet the unique needs of increasing numbers of students with autism spectrum disorder (ASD), who are entering today's mainstream classrooms (Marder & deBettencourt, 2015; Pas et al., 2016). ASD is described as a complex developmental disorder, in which the individual experiences difficulties in social communication and may exhibit restricted, or repetitive, behaviours and interests (American Psychiatric Association, APA, 2013). In the school context, a variety of support models are needed because autism is experienced in different ways across the population. This thesis investigates the impact of a postgraduate level teacher PD model on school programs for students with autism. It complements the evaluation phase of the PD program, conducted by Bissaker et al. (2013). For the purpose of this research, the researcher adopted a pragmatic approach and drew on a constructivist ontology to assess whether, as an outcome of the teachers' involvement in a specialist ASD PD course, the quality of school-based programs had improved for students with autism. The researcher analysed extensive data from secondary documents generated as an outcome of teachers' involvement in the specialist course, including teachers' school action plans, students' progress reports and evaluation of educator proposed action plans.

Background Information

The Autism Professional Learning Project (APLP) was commissioned in 2013 by the Hon. Ms Jennifer Rankine, the then Minister for Education and Child Development in South Australia. This phase of the research involved an extensive literature review of effective models of PD in the area of ASD and a survey of leaders, teachers and parents on teachers'

understanding of the needs of students with ASD, their confidence in teaching these students and perspectives on PD needs to improve confidence in teaching approaches to support improved outcomes for students diagnosed with autism. As an outcome of this research (Bissaker et.al., 2013), it was identified there were many introductory ASD courses available to teachers but few specialist courses to develop teachers' expertise to lead whole school approaches to more effectively support students with autism. First, the evaluation recognised the need for teachers to learn about students' communication, sensory and social needs, as well as their behavioural requirements. Second, it recommended that school leaders play an active role in contributing to the creation of a whole school approach towards supporting students with autism. Third, it suggested that teachers together with school leaders would benefit from completing specialist postgraduate studies in autism to act as leaders for their and other schools. The recommendation of this research resulted in phase 2 of the APLP in which 80 teachers and leaders (40 per year) were selected to complete a year-long (part-time) post-graduate level scholarship program specialising in ASD involving a combination of university-based classes and on-site support.

Staff from Flinders University designed the specialist program which on successful completion provided participants with a Graduate Certificate in Education (GCE) (Special Education). The course required the implementation of evidence-based practices (EBPs) for students in their schools. On-site learning was included in the research design given that 74.4% of teachers in phase 1 reported preferring to engage in on-site meetings with expert consultants to extend their learning (Bissaker et al., 2013). Data from phase 1 also revealed that teachers were only somewhat confident when attending to the social, emotional and behavioural needs of students with autism (Bissaker et al., 2013). They reported varied success with past PD opportunities and expressed a high preference for increased release time so that they could engage in school-based learning and PD training related to autism. There

was also a recommendation that both schools and their leaders adopt whole school approaches to autism inclusivity. This included engaging teachers in PD opportunities and capitalising on the support of parents because these factors were shown to make schools more autism-friendly (Bissaker et al., 2013). Schools selected to participate in phase 2 of the project were required to commit to two members of staff being involved, with one being at leadership level. This design feature was incorporated to provide maximum support for implementing site-based actions as an outcome of participating in the GCE Special Education (SE) ASD specialist course.

At each site teachers and leaders used their learning from, and experiences of, the GCE to create school action plans targeted at promoting a whole school approach towards more effective inclusion of students with autism. The GCE participants were provided with a range of assessment tools designed to determine high priority needs for whole school improvement. These tools included the Classroom Environment and Teaching Assessment (CETA) completed by teachers and the Universal Supports Assessment and Planning Tool (USAPT) completed by school leaders (START Resources, 2017). In addition, the Whole School ASD Profile (Griffith University, Autism Centre of Excellence [ACE], 2014) was used to assess parent and community involvement, levels of peer support and aspects involving behavioural support and the curriculum. Participants in phase 2 of the research used these tools for the purpose of developing a personalised school action plan. The GCE participants were required to highlight three key areas identified by completion of the assessment process for improvement, and undertake actions in these areas with a view to improved program quality for students with autism. The assignments which the participants submitted formed the data for analysis in this research. Subsequently, they provided the basis for evaluating whether the quality of site-based action plans resulted in improved program

quality. The research analysed secondary data drawn from participants' completed action plans and outcomes of the action plans across 10 sites.

Purpose of the Research

The specific purpose of this research was to analyse secondary data generated from phase 2 of the APLP (Bissaker et al., 2013). The research aims to inform practice and policy, particularly in the area of PD design and content in the area of ASD so that teachers become increasingly efficacious in teaching students with autism in mainstream learning environments. The researcher examined teachers' action plans and outcomes to assess whether the quality of school-based programs improved for students with autism at participating schools, whereby teachers and leaders participated in the PD program. The research was also interested in whether, as an outcome of the teachers' and leaders' participation in the GCE, there was evidence of the ability to create more autism-friendly schools with confident teachers who could provide quality educational, social and behavioural experiences for students with autism.

Significance

Research indicates that the prevalence of autism is advancing at a faster rate than any other disability and today's schools need to address their preparedness to support the unique needs of this student group (Boyle et al., 2011). Statistics reveal that there was a significant (29%) increase in the number of students receiving school-based services from Autism South Australia (SA) between 2012 and 2015 (Ministerial Advisory Committee: Students with Disabilities [MAC: SWD], 2015). As increasing numbers of students with autism are being enrolled in mainstream classrooms, they are often being taught by classroom teachers who have insufficient training to meet their specialised needs (Australian Advisory Board on

Autism Spectrum Disorders [AABASD], 2012; Morrier, Hess, & Heflin, 2011; Odom et al., 2013; Pas et al., 2016). The literature demonstrates that pre-service training for classroom teachers does not focus on the specific social, academic or behavioural needs of students with autism, nor does it provide training in the implementation of EBPs (Holdheide & Reschly, 2008). Research also suggests that there are worldwide concerns that students with autism will begin leaving mainstream education if schools fail to become autism-friendly (Mavropoulou & Avramidis, 2012).

Busby, Ingram, Bowron, and Lyons (2012) highlight the limited research available on the readiness of generalist teachers to support the needs of students with autism in regular classrooms. This research contributes to this gap in the literature by examining whether the specific GCE model, described in the previous section, might contribute to creating improved quality in the whole-school programming for students with autism at participating schools (Hall, 2013; Pas et al., 2016). For instance, the research recognises that both teachers' knowledge and the school environment have an impact on students' abilities to achieve in a mainstream setting. Providing PD is critical because students with autism are currently achieving poorer outcomes than their typical peers and students with other developmental disabilities (Robert & Simpson, 2016). Consequently, there is an urgent need to address barriers in teacher practice so that students with autism can learn on the same basis as their peers. Further, there is a need to establish whole school systematic approaches that provide key stakeholders with a model of practice that provides them with the necessary confidence to implement quality learning programs for students with autism (Webster & Roberts, 2014).

Research Questions

How has leaders' and teachers' participation in a Graduate Certificate in Education course specialising in the area of ASD influenced outcomes for the school and students?

Sub-questions

1. What were the key areas for school improvement identified by teachers participating in the PD program?
2. In what ways did the PD program influence learning outcomes for the students with autism?
3. What barriers did teachers encounter, if any, towards establishing a whole school approach towards more inclusive practices for students with autism?
4. What changes were made at both the classroom level and whole school level to create a more autism-friendly school environment?

Thesis Structure

The thesis is presented in six chapters, including this introductory chapter. Chapter one highlighted the purpose of the research. It recognised that increasingly more students with autism are being enrolled in today's mainstream classrooms as the prevalence of autism escalates (Sansosti & Sansosti, 2012). As a result, today's classroom teachers require additional knowledge about the needs of students with autism so that they can provide for students' unique academic, social, sensory and behavioural requirements. The chapter also offered background information about the research, embedding it within the larger context of Bissaker et al.'s (2013) project. It revealed that there is a lack of research which provides a direct link between high school teachers' PD programs and outcomes for students with autism. In chapter two, the literature review addresses the aetiology of autism, gaps in teachers' knowledge about autism and the benefits of using teacher PD in response to those needs. It also addresses the importance of creating an inclusive environment, which meets the needs of students with autism, as well as whole school practices which support this goal.

Chapter three outlines the methodology, detailing the researcher's ontological and epistemological position, as well as her commitment to a qualitative research design using secondary document analysis and a constant comparative method of data analysis. Chapter four presents the research findings and provides a discussion of them in relationship to the research questions. The chapter reports on the findings, including outcomes from teachers' action plans and students' progress reports. In chapter five, the discussion addresses issues such as the implementation and benefits of supports at both the individual and whole school level. It provides an analysis of the importance of teachers' understandings about using data, the importance of PD, the adaption of learning environments and the outcomes of a whole school approach towards inclusive practice. In chapter six, the thesis examines the implications of the research. The final chapter provides a conclusion, with a focus on whether the research demonstrated that teachers' PD contributed to improving the quality of learning for students with autism.

CHAPTER TWO

LITERATURE REVIEW

Autism Spectrum Disorder Aetiology

Autism Spectrum Disorder (ASD) is described as a complex developmental disorder, which includes difficulties in social communication, and may involve restricted or repetitive behaviours and interests (APA, 2013; Barbaro & Dissanayake, 2012). Although the diagnostic label is Autism Spectrum Disorder (ASD), many persons with autism prefer the terms 'on the autism spectrum' or 'autism'. Therefore, ASD which includes the spectrum of autism will be referred to as 'autism' from herein. Research demonstrates that many children with autism lack the appropriate behavioural, social or communication skills required to thrive academically and socially in the mainstream school setting (Leblanc, Richardson, & Burns, 2009; Martinez, Werch, & Conroy, 2016). For instance, they may display 'higher order' cognitive behaviours that are exhibited through a need for routine and sameness (Boyd, McDonough, & Bodfish, 2012). Additionally, they may display 'lower order' motor actions, such as hand flapping and/or spinning, as well as other repetitious behaviours that may be interpreted by educators as challenging. Challenging behaviour, including disorderliness, inattentiveness or aggression can interfere with both the student's learning and/or social outcomes (Powell, Fixsen, Dunlap, Smith, & Fox, 2007).

In the mainstream classroom, students with autism require additional social support because they have an increased risk of negative outcomes (Leblanc et al., 2009; Symes & Humphrey, 2011). Many students exhibit sensory seeking behaviour and sensory defensiveness, as well as developmental delay (AABASD, 2012; Matson & Konst, 2014; Wilkinson, 2010). As a result, the noise and hectic atmosphere of the physical environment may cause them to suffer from sensory overload (Hume, Boyd, Hamm, & Kucharczyk, 2014). Students may also struggle in the areas of social and emotional understanding, which

can contribute to poor outcomes in collaborative learning contexts (Eman & Farrell, 2009; Keane, Aldridge, Costley, & Clark, 2012; Symes & Humphrey, 2011). This may result in some students with autism being bullied or failing to work co-operatively with others. In addition to these factors and the nature of the school setting, the teacher's knowledge has an impact upon the student's ability to successfully integrate (Keane et al, 2012). Because students with autism have varying needs, there is not a 'one-size-fits-all' solution to meet all students' requirements.

Each student with autism has a unique set of needs and not all approaches work for all students (Florian, 2012). Today's teachers are faced with the difficulties of managing a heterogeneous population of learners, which makes it more challenging to choose suitable interventions or models of support (Morrier et al., 2012). The literature is also conflicting with some educators advocating that there is no need for specific specialist approaches towards teaching students with autism (Lewis & Norwich, 2005). Whilst special education and mainstream teaching share many of the same pedagogies, the literature also suggests that the classroom experiences of students with autism should be specifically tailored to promote inclusivity (Denning & Moody, 2013; Sansosti & Sansosti, 2012). For example, students with autism require additional supports to prevent isolation and/or support them to tolerate transitions across the day. Additionally, the literature indicates that many classroom teachers have insufficient knowledge about autism and/or fail to transfer their theoretical knowledge into practice (Holdheide & Reschly, 2008; Morrier et al, 2011; Odom et al., 2013).

Gap in Teacher Knowledge

Over the last decade, there has been an increase in the number of students with autism attending mainstream schools (Keane et al., 2012; Martinez et al., 2016; Schultz, Sreckovic, Able, & White, 2016). This has resulted in increased pressure on teachers, who have limited

knowledge and training in accommodating the needs of this group of students (Morrier et al, 2011; Odom et al., 2013). To ensure positive outcomes for students, teachers need to identify which EBPs to implement in a range of everyday circumstances. This involves identifying whether to use focused intervention practices such as visual aids, prompting or reinforcement, or comprehensive treatment models such as 'Training and Education of Autistic and Related Communication Handicapped Children' [TEACCH] (Mesibov, Thomas, Chapman, & Schopter, 2012). Without additional postgraduate training, classroom teachers do not have the necessary teaching techniques to support students with quality learning (Pas et al., 2016). Research also indicates that teachers lack the confidence needed to successfully support students with autism (Emam & Farrell, 2009; Marder & deBettencourt, 2012; Soto-Chodiman, Pooley, Cohen, & Taylor, 2012; Teffs & Whitbread, 2009).

According to Soto-Chodiman et al.'s (2012) study, teacher participants lacked knowledge about individualised instructional methods and modification of the curriculum. Participants in the study felt emotionally overwhelmed, concerned about their increased workload and unsure about making instructional decisions (Soto-Chodiman et al., 2012). This was further exacerbated by their reliance on trial and error, or prior experience, as a means of informing their instructional decisions. Soto-Chodiman et al. (2012) noted that participants rarely drew on information from outside sources, such as PD. As a result, they lacked the training that would help them deal with students' communication differences, such as their pragmatic understanding of language (Soto-Chodiman et al., 2012; Stephenson, Carter, & Arthur-Kelly, 2011). The research further indicated that few teachers understood or were prepared to deal with students' problematic behaviours. This included students' increased mobility and displays of interfering and/or stereotypical behaviour. Managing students' behaviours is essential because they often interfere with the learning of both the students with autism and their peers (Boyd et al., 2012; Soto-Chodiman et al., 2012).

The literature reveals that many teachers lack basic classroom and behavioural support training for managing the behaviours of students with autism (Pas et al., 2016; Reinke, Herman, & Stormont, 2013). As a result, teachers may experience difficulties when students' behaviours interfere with daily activities and academic instruction (Boyd et al., 2012). To manage the behavioural concerns of students with autism, teachers need to be able to identify and apply appropriate EBPs (Hume, 2014; Odom et al., 2013). This requires a fundamental understanding about behavioural teaching strategies such as Functional behaviour assessment (FBA) or Response interruption/redirection (RIR). Teachers also need an awareness of the appropriate sensory sensitivities and/or interests of students because different techniques are effective for different individuals. For there to be a whole school approach, there needs to be a consensus on the practices that work for each individual with autism (Horner, Sugai, & Anderson, 2010).

Teacher Professional Development

Increasingly, research has highlighted the usefulness of embedding active learning for teachers within the classroom context (Kretlow & Bartholomew, 2010). Professional development offers teachers the opportunity to learn how to administer EBPs with greater skill and fidelity (Fixsen, Naoom, Blasé, Friedman, & Wallace, 2005; Hall, 2013). For example, today's teachers need understandings about interventions, which are supported by high-quality research, so that they can support students with autism (Marder & deBettencourt, 2015). Whilst teachers may have knowledge of a variety of interventions, they need to be taught how to match the practice with the student's needs in a range of contexts (Cook & Cook, 2013; Mesibov & Shea, 2010). One of the key features of EBPs, is that they are only valuable when they are used purposefully (Odom, Collet-Klingenberg, Rogers, & Hatton, 2010). Whilst PD workshops provide teachers with opportunities to engage in learning, they

do not always result in them being able to transfer their theory learning into practice (Brock & Carter, 2015; Fixsen et al., 2005; Hall, 2013).

Research indicates that teachers do not always implement EBPs with fidelity, which impacts upon the quality of the implementation (Stahmer et al., 2015). Implementation fidelity involves implementing the EBP so that it is administered as intended with adherence to a designated program (Odom et al., 2010). This factor is important because the higher the fidelity, the better the students' outcomes (Durlak & DuPre, 2008). Barriers occur on occasions when teachers receive insufficient training, which fails to provide them with ongoing feedback (Cornett & Knight, 2009). In addition, many EBPs were not originally created for use in the school context and require modification to fit the classroom setting (Stahmer et al., 2015). The GCE was designed to provide both theoretical and practical training within the teachers' everyday context. In particular, the opportunity for hands-on learning offered teachers an opportunity to access a range of EBPs in situ with guidance and support.

Recent data suggests that teachers require further PD in the implementation of EBPs (Bissaker et al., 2013; Kucharczyk et al. 2012; Teffs & Whitbread, 2009). Site-based PD is useful because it provides educators with ongoing feedback and opportunities to generalise their learning in a collegial-based environment (Fixsen et al., 2005; Foreman, Arthur-Kelly, & Pascoe, 2007; Postholm, 2012). For example, it offers teachers opportunities to learn from both mentors and colleagues in their everyday context. In Maddox and Marvin's (2012) study, 28 teachers participated in an 18-month PD program, implemented by the Autism Spectrum Disorders Network (ASDN). The PD program provided one-on-one learning experiences and group workshops that cultivated a community of practice with the aim of increasing teachers' knowledge and skills related to administering autism-related intervention. Similar to the current research, the participating teachers in the study created

portfolios, which included findings from evaluation instruments, action plans and student data (Maddox & Marvin, 2012). Maddox and Marvin's (2012) results demonstrated that the PD program successfully increased teachers' knowledge and skills related to using EBPs.

In another recent study, the researchers suggested using an implementation science model to assist teachers with the use of EBPs in their classroom practice (Odom et al., 2013). Odom et al.'s (2013) study proposed that when PD is built on the principles of implementation science, teachers are more likely to use EBPs to effectively improve the quality of services provided for students with autism. A key part of the model involves coaching and technical assistance, which helps to bridge the gap between practice and science so that teachers can produce positive outcomes in authentic classroom contexts. Odom et al.'s (2013) PD program involved on-site visits and checklists, which allowed the researchers to monitor both the teacher's professional growth and the students' progress. The quality of the program was further assessed with questions that examined the nature of students' progress, how EBPs were implemented, and whether the teachers' efforts were being sustained. The PD program produced positive outcomes and the model was useful for evaluating the current research (Odom et al., 2013).

Hall (2015) researched a site-based PD model and how it contributed to participants' sustained use of EBPs. Hall's (2015) study adopted an implementation science model, which focused not only on direct training for participants, but also on technical assistance and ongoing support. The study was a useful point of reference for the GCE due to its currency, and acknowledgement of the importance of direct training, as well as ongoing coaching and whole school approaches to inclusivity (Hall, 2015). The study also offered participating teachers opportunities to experience informal PD opportunities, which are an often undervalued or unrecognised part of learning (Bissaker et al., 2013; Hall, 2015). To help guarantee more teachers an opportunity to engage in informal PD opportunities, research

indicates the benefits of developing teachers' abilities to act as mentors (Bissaker et al., 2013). In Webster's (2014) study an action-planning and mentoring process, based on the Cycle of Learning Pedagogical Framework, was trialled for teachers of students with diverse needs. The findings demonstrated that the process resulted in increased teacher confidence in meeting their students' varied requirements.

According to Smit and Humpert (2012) teachers of students with diverse needs benefit when they engage in professional learning communities. Webster (2014) reported the usefulness of coaching and mentoring in helping teachers to acquire knowledge and apply skills in their everyday practice. For example, Webster's (2014) research indicated that peer mentoring and coaching resulted in the use of more inclusive practices and increased achievement levels for students with diverse needs. During Webster's (2014) study, the teachers used an action planning document, which encouraged them to identify students' needs and plan targets. Following the planning stage, they implemented instruction and finalised assessment paths. The final stage involved them assessing their own needs and the levels of mentorship, which would be required to put their plans into action. Overall, teacher participants found the process beneficial because it encouraged new ways of thinking and the development of deeper understandings about students' needs (Webster, 2014). Additionally, the process promoted the use of strategies such as differentiation, which fostered students' increased confidence, engagement and motivation.

The Inclusive School Environment

In Australia, there has been a major shift towards the inclusion of students with disabilities in the mainstream setting (Shaddock et al., 2007). In this study, 'inclusion' describes the specific inclusion of students with autism in age-appropriate mainstream classes, where they are supported in ways that allow them to learn on the same basis as their

peers (Australian Curriculum Assessment and Reporting Authority, ACARA, n.d; Commonwealth of Australia, 2006). For example, it supports the notion that schools need to make accommodations for students with autism, rather than the other way around (UN General Assembly, 2006). The study also draws on a social model of disability, which examines aspects, such as education, from a child-centred perspective (Bronfenbrenner, 1979; Terzi, 2004). In doing so, it suggests that inclusive options are always possible when delivered in the right circumstances (Forlin, 2006). Further, it examines the pivotal role played by teachers and school leaders in creating a whole school approach that raises school members' awareness of autism (Bissaker et al., 2013; Humphrey, 2008; Marshall & Goodall, 2015; Webster, 2014).

Raising peer awareness about autism is important because peer support can lead to increased social inclusion, decreased numbers of behavioural issues and improved academic outcomes for students with autism (Olson, Roberts, & Leko, 2015; Spooner, Dymond, Smith, & Kennedy, 2006). Currently, there is a paucity of research regarding autism awareness in school-aged students (Dillenburger, Jordan, McKerr, Lloyd, & Schubotz, 2017; Kasari & Smith, 2013). Increased research in this area is needed because peer education can reduce bullying, promote the development of friendships and improve the quality of school experiences for students with autism. Dillenger et al.'s (2017) study examined levels of autism awareness in students across the UK. Students completed surveys, which examined their attitudes and understandings about autism. The results showed that only 50% of students (under 16) had knowledge of autism, thereby confirming the important role of peer education. Recommendations included the need for schools to address positive peer attitudes, students' knowledge of autism and the provision of additional supports for students with autism (Dillenburger et al., 2017).

Social skill supports are useful for students with autism because they help to address students' issues with social impairment (Kretzmann, Shih, & Kasari, 2015). To date, most studies about children's social skills have been observed in clinical settings (Frankel et al., 2011). As a result, few studies have offered researchers opportunities to observe social skills being taught and applied in a real-world context. Kretzmann et al.'s (2015) study highlighted the importance of teaching and applying peer, and social support, in authentic settings. Data demonstrated that students' social engagement improved when it was taught in the context where it would be used. The study also examined the usefulness of providing adult social support to students with autism, in the school yard, in comparison with peer support (Kretzmann et al., 2015). Data revealed that the student's peers were more likely to maintain their use of strategies over time. This study was useful for analysing the current research because it highlighted the benefits of peer and adult awareness to support the inclusion of students with autism.

The Australian Autism Educational Needs Analysis (Saggers et al., 2015) also reported on the value of educating all students in the school about autism. Parent responses in the survey indicated that parents rated their child's sense of belonging, or connectedness, in the school, as very low. For example, they reported that teachers demonstrated a lack of interest in the child with autism, and that other children failed to take the ideas of the child with autism seriously. The study emphasised the importance of creating school connectedness and inclusivity so that all students feel a sense of belonging. It reported that teacher participants (102 general educators and 93 specialist educators) defined connectedness using descriptions such as good communication, feeling valued, feeling safe, a sense of community and connection, and a feeling of belonging. The study also demonstrated that teachers required assistance from specialist staff, in addition to PD on autism. Overall, the school's

teachers needed to feel supported to meet the needs of students with autism, and this support needed to be ongoing.

Whole School Approach

A whole school approach is strengthened when staff promote shared expectations about how inclusion should look, feel and sound in the school context (Symes & Humphrey, 2011). From the outset, the school's management team needs to strongly support the same inclusive vision because their attitudes help to shape the beliefs of the school's teachers (Goodall, 2015; Opfer, Pedder, & Lavicza, 2011). For instance, schools need to communicate a well-defined vision, promote teacher PD, and value the importance of supportive networks. In Bissaker et al.'s (2013) study, 45% of educators and 68% of parents reported that school leaders 'either sometimes, occasionally or hardly ever' contributed to creating and maintaining a whole school approach, which supported students with autism (p. 4). These responses are concerning because they show that school leaders are not meeting the expectations of school staff or the parent cohort. To ensure the participation of the school's leaders and provide opportunities for the mentoring of the school's other teachers, the GCE ensured the participation of at least one school member at leadership level.

The participation of school leaders and a transdisciplinary approach is essential in creating a whole school approach to supporting the needs of students with autism (Postholm, 2012). The literature shows that school leaders play a pivotal role in motivating teachers to acquire new pedagogical knowledge (Bays & Crockett, 2007; Desimone, 2009; Postholm, 2012). For instance, McCabe's (2008) study reported that when mentorship was provided by experienced teachers, it resulted in new teachers being provided with ongoing guidance and support. In another study by Taylor, Yates, Meyer, and Kinsella (2011), secondary teachers were provided with opportunities to become leaders of other teachers in their PD journey.

The findings revealed that leaders had a level of credibility, which encouraged other teachers to participate in the processes needed to implement whole school change (Taylor et al., 2011). In addition, it recognised that teacher leadership may be informal and result in teacher leaders mentoring or coaching peers.

Bissaker et al. (2013) recommended that school leaders accept that their role is pivotal in supporting whole-school approaches to PD and that whole-school approaches are impeded on occasions when school leaders fail to provide support. Similarly, research conducted by McDougall, Servais, Meyer, Case, and Dannenhold (2009) found that the support of school leaders was fundamental for the PD of teachers, especially in the areas of setting the learning content and co-ordinating PD session times. The study found that barriers to teacher PD occurred on occasions when leaders failed to successfully address administrative outcomes. For example, leaders were instrumental in co-ordinating sessions with external PD agencies and organising teacher team meetings for both classroom and specialist teachers (McDougall et al., 2009). Additionally, leaders played an important role in the provision of system-level support that promoted a whole school culture, which was supportive of the needs of students with autism (McDougall et al., 2009).

Whole school approaches to PD are essential because all staff need to be equally committed to ongoing PD (Timperley et al., 2007). A transdisciplinary approach is recommended because students with autism are often taught by several teachers and external professionals across the school day (Gavaldá & Qinyi, 2012; MAC: SWD, 2010; Postholm, 2012). For instance, continuity of approach is achieved more easily when staff work together, share students' ongoing progress and practice the same EBPs with consistency. When classroom teachers, inclusive support teams and external professionals combine their knowledge and skills, it helps them to create a community of learners, which is better equipped to plan instructional practices for all students in the classroom. Further, when

learning occurs in co-operation with other teachers, as well as with the support of the school administration, research suggests that both teachers and students benefit (Postholm, 2012; York-Barr & Duke, 2004).

A pilot project, conducted by Webster and Roberts (2014), reported on the important role played by school principals in the implementation of a whole school model towards inclusive and effective practice for students with autism. The findings indicated that school principals played a key role in providing the supports and processes necessary to implement school programs for students with autism. The data revealed that the greater the principal's involvement in the program, the more likely it was for there to be systematic change at the whole school level with improved outcomes for students with autism. Webster and Roberts (2014) also found that the greater the principal's levels of engagement with staff, the higher the implementation of strategies at the whole school level and the greater the level of staff involvement. The data further indicated the importance of ongoing coaching because frequent mentor contact provided the school's special education leaders with a level of support and encouragement that kept them focused on the program (Webster & Roberts, 2014).

Similar findings were reported in Webster and Wilkinson's (2015) project, which was conducted across three government schools in Queensland. The aim of the project was to test a whole school approach towards improving outcomes for students with autism and developing the capacity of the school's leaders. First, the data indicated the importance of having an external expert involved on an ongoing basis to support the school's teachers and leaders with both practical and research-based knowledge of autism. Second, the data revealed a direct correlation between the principal's active engagement in the project and the school's success in implementing practices for students with autism. Third, the data showed that the leaders of the ASD team need to engage in partnerships to implement the model and practices needed at both the whole school and individual level. Finally, Webster and

Wilkinson (2015) reported that schools were more successful in implementing changes that improved outcomes for students with autism when school principals empowered their special education staff with leadership roles.

Summary

Chapter two provided the literature review, which addressed the need for classroom teachers to acquire additional knowledge and skills about autism and EBPs to support the growing numbers of students with autism in the mainstream classroom. Firstly, the review discussed the aetiology of autism and the types of gaps in teachers' knowledge about the needs of students with autism. For example, the research identified that teachers lack knowledge about individualised instructional methods and ways to support students' social, communication, behavioural, sensory and learning needs. Teachers require understanding about EBPs so that they can support their students' needs with fidelity in a range of classroom scenarios. In particular, different techniques and supports are needed due to the heterogeneous nature of autism. The literature suggested that site-based PD offers teachers an opportunity to implement EBPs in their school context with the provision of immediate feedback and ongoing support.

The inclusive learning environment was discussed as a platform for providing all students with opportunities to learn on an equal basis. To promote inclusivity towards students with autism, the literature revealed the benefits of creating positive peer attitudes, and an increase in students' knowledge of autism. It suggested that there was also a need to address the quality of students' social relationships in contexts such as the school playground. Finally, the literature indicated that leaders play a pivotal role in supporting the administrative processes needed to provide classroom teachers with ongoing PD opportunities. This involved supporting both the attitudinal and organisational changes

needed to promote inclusion at the whole school level. The following chapter examines the methodology used for the research. The research adopted a qualitative paradigm and used secondary data from teachers' action plans and documents. The aim was to develop deeper understandings about how the GCE teacher PD program influenced the confidence levels of classroom teachers in ways that enhanced their practices to bring about positive school programs for students with autism.

CHAPTER THREE

METHODOLOGY

Introduction

This thesis is the report of an interpretive case study, which analysed documents to assess the outcomes of a PD model for teachers of students with autism. The research uses a qualitative paradigm, which involves interpreting evidence to develop deeper understandings about phenomena (Glesne, 2006; Punch & Oancea, 2014). This chapter describes the researcher's ontological and epistemological position, and provides a framework to address reflexivity. The researcher adopted Alvesson and Skolberg's (2009) model of critical thinking to increase transparency during the research process. Strauss' (1967) constant comparative method (CCM) was used to identify themes reported in the outcomes. The CCM was used to develop codes and categories from secondary documents including teachers' action plans and implementation plans, and students' progress reports (Bowen, 2009; Glaser & Strauss, 1967).

Ontological and Epistemological Position

The researcher's own experiences and beliefs as a teacher have shaped the ontological position. She is committed to a view that is consistent with functional pragmatism and underpinned by values of social inquiry (Goldkuhl, 2004; Van de Ven, 2007). For example, she believes that the inquirer is inextricably bound to the phenomena of inquiry via interactive, iterative processes that serve to generate knowledge. The researcher describes herself as a teacher, who is passionate about developing knowledge and continually testing it against her own real-world experiences. The aim of the study was not only to describe the actions of the educators, but to respond to an increasingly urgent need to create change for students with autism in the school environment. Teachers are a key source of information

about what works, and what does not work because they are active participants in teacher PD. By analysing teachers' action and implementation plans, the researcher gained first-hand information about what teachers needed to learn and do in order to provide students with autism with quality learning experiences within a setting that was autism-friendly.

The research has a constructivist focus, which emphasises inquiry driven by purpose and knowledge (Goldkuhl, 2012). According to constructivism, humans construct knowledge through social experiences and interactions and their perception of these can be shared through interview or writing (Creswell, 2013). Constructivism as the epistemological stance in this research involved the researcher as interpreter of the participants' written contributions. During the research process, the researcher systematically evaluated secondary documents (teachers' whole-school action plans, their evaluation of implementation and students' progress reports) as both a descriptive and interpretive source of data (Bowen, 2009). This resulted in the researcher assuming the dual role of both reader and interpreter. The researcher engaged in reflexive processes using Alvesson and Skolberg's (2009) model of critical thinking to help her assess her underlying assumptions. For instance, the researcher is passionate about equality in education and this made her aware of an inclination to seek out positive data that was reflective of inclusive practice at the whole school level. In addition, the document analysis aims to contribute to change and improvement in both practice and policy, and support other sources of data within Bissaker et al.'s (2013) larger scale project (Goldkuhl, 2012).

Qualitative Analysis

Qualitative research enables the researcher to analyse experiences from the perspectives of the participants or informants (Bogdan & Biklen, 2003). However, in this research, the researcher analysed secondary data as there was no direct contact with

participants. Walliman (2011) suggests the analysis of secondary data is similar to the analysis of primary data seeking patterns, trends, changes or repetition to build a case. He also suggests there are three methods suitable for analysing secondary sources which commence with content analysis followed by data-mining and finally arriving at a meta-analysis to generate outcomes. The analytical processes in this research drew on both deductive and inductive reasoning (Olson, Allister, Grinnell, Walters, & Appunn, 2016). The use of deductive thinking and reasoning is evident in the preliminary stages of the research, in particular in generating the research questions and initial content analysis. This ensures the research questions remain central to the analysis process. The process of data-mining and meta-analysis requires an inductive analytical approach whereby the researcher looks for patterns and trends which are then interpreted as codes and categories (see explanation p. 25).

An Interpretive Case Study Design

The researcher adopted an interpretive case study design for this qualitative research, which examined teachers' whole-school action plans, their evaluation of implementation and students' progress reports. The case study design provided a description and analysis of the reported school outcomes of the teachers who participated in the GCE with the aim of developing understandings about improving the quality of learning experiences for students with autism (Ponelis, 2015). The analysis process involved an open-ended and interactive process of data analysis using Strauss' (1967) CCM (Boeije, 2002; Bogdan & Biklen, 2007; Glaser & Strauss, 1967). For instance, emerging themes reflected the theorising process which then led to additional investigations of the literature. The researcher interacted with and interpreted the emerging data to identify and categorise key themes and categories (Charmaz, 2006). Initially, the data were organised into open codes, from which axial codes were created, and then core themes emerged (Olson et al., 2016).

Constant Comparative Method (CCM)

CCM involves the development of codes and categories, that lead towards the discovery of common core categories (Kuckartz & McWhertor, 2014). The method allowed the researcher to identify relevant concepts and code key themes, whilst constantly comparing the data, and making new interpretations (Boeje, 2002; Bowen, 2009). For instance, when the data suggested a new theme, a new category was created, before the documents were re-analysed to search for similarly linked content. The researcher used the process of thematic analysis as a type of pattern recognition within the data, to identify frequently occurring themes (Fereday & Muir-Cochrane, 2006). The process began with the initial sampling and open process of coding, and ended with the discriminate sampling phase in which saturation of the categories occurred (Strauss & Corbin, 1998, p. 212). Bowen (2009) describes it as an ongoing filtering process, in which the researcher gradually reduces excess categories and fills undersized ones to create core categories (Kuckartz & McWhertor, 2014).

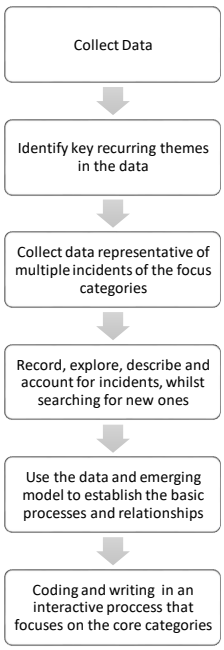

Figure 3.1 Stages in the Constant Comparative Method

(Adapted from Glaser, 1978, as cited in Bogdan & Biklen, 2007)

Data Analysis

The researcher used the qualitative data analysis software tool NVivo (version 11.4.1) to manage and organise the data (Kuckartz & McWhertor, 2014; QSR International Pty Ltd, 2016). The tool allowed the researcher to code and present thematic text analysis in ways that made accessing the original data simple. For instance, NVivo offered the researcher charts and matrices that helped her to determine the ways that the themes connected with one another (Bazeley & Jackson, 2013). By engaging in inductive analysis, the researcher was able to develop understandings about the experiences of the teachers in the GCE course and whether this resulted in improved learning outcomes for the schools' students with autism. The aim was to develop the codes with the intention of gradually replacing the data with a comprehensive synthesis of research findings (Kuckartz & McWhertor, 2014).

Document Analysis

The researcher examined the school action plans, which were completed by experienced teachers who undertook the GCE in 2016. As part of the assessment process, teachers were required to identify areas of program strength and areas in need of improvement to support students with autism at their schools. This involved the identification of three priority areas in which both learning and support could be improved for students with autism. Additionally, it required the provision of students' progress reports, IEPs and Goal Attainment Scales [GAS] to determine the extent to which students' learning outcomes improved. The researcher analysed the data, which included the teachers' action plans, and their follow-up evaluation reports with recommendations for future priorities. This provided both descriptive and evaluative text, as well as survey data and descriptive statistics, which were used as the source for qualitative content analysis. The researcher was guided by the

research questions in analysing the documents, whilst continually maintaining a focus on reflexivity (Altheide, Coyle, DeVriese & Schneider, 2008).

Ethics Approval

The study complies with the National Statement and Human Research Ethics Committee (National Health and Medical Research Council, NHMRC, 2007, 2014). Ethical issues include maintaining the balance of harm and benefits, confidentiality and issues of informed consent, regarding the documents being analysed. During attendance at the GCE course, teachers were provided with an information sheet about the research. They voluntarily signed a consent form, which explained their rights, issues of confidentiality and voluntary participation, the purpose of the research and how their data/information would be used (Appendix A; Appendix B; Appendix C; Punch & Oancea, 2014). A file containing teachers' action plans and follow-up evaluation reports was stored digitally on a password protected device (NHMRC, 2014; Stringer, 2014). Ethics approval for the study was gained from the Social and Behavioural Research Ethics Committee, at Flinders University, as well as the educational bodies responsible for managing the participating schools (Department for Education and Child Development; Catholic Education, South Australia).

Summary

The researcher adopted an interpretive case study design for this qualitative research, and used both deductive and inductive reasoning to interpret evidence from documents including teachers' action plans and evaluation reports, and students' progress reports. She used the CCM to develop codes and categories from these secondary documents. This resulted in the researcher engaging in an iterative process through which codes and eventually key themes were identified. The data analysis software tool NVivo was used to

organise the data and code it into categories. The researcher discussed her ontological and epistemological position, and the usefulness of applying Alvesson and Skolberg's (2009) model of critical thinking to promote reflexivity in the research process. The following chapter addresses the research findings.

CHAPTER FOUR

FINDINGS

Introduction

This chapter describes the site, individuals and use of document-derived data from teachers' action plans and evaluation reports, and students' progress reports. It outlines the top priority areas for improvement, identified by groups for improving the quality of learning for students with autism. During the data analysis stage a number of key categories emerged. These categories have been identified as: IEP planning, programming and data collection; professional development; learning environments; whole school awareness and social supports; barriers. The results from the research are described within these categories.

Description of Site, Individuals, Data

Data were derived from 10 different school sites which participated in the GCE course. Sixty percent of the schools were described as mainstream K to 12 schools, 30% were described as mainstream senior schools, and a further 10% were identified as special schools. Special schools were described as schools designed to support the needs of students with physical and intellectual disabilities. School sizes varied, with 30% of schools accommodating 312 to 500 students, and the remaining schools accommodating 1000 to 1400 students. Whilst the numbers of students diagnosed with autism in each school varied, from 3% to 10%, all schools reported a recent increase in the enrolment numbers of students with autism. All schools accommodated students from diverse cultural and socio-economic backgrounds, and 30% of schools were equipped with special learning units. Although the schools were not randomly selected, it is suggested that their diversity reflects the diversity which might be expected within the broader student population of South Australia (Franklin, 2013).

School-based research was collected by 33 teachers, of whom 29 (88%) were female and 4 (12%) were male. All teachers were required to have experience in the education of students with autism. It was also recommended that at least two teachers, with one being in a leadership position, participate from each site so that they could mentor others at their school (Bissaker et al., 2013). Data revealed that one school had five teacher participants; another had four; and the remainder had between one and two. Participating teachers worked in different school sectors. Thirteen teachers (39.5%) worked in the government sector, 14 teachers (42.5%) worked in the Catholic sector and a further six teachers (18%) worked in the independent sector (Figure 4.1). Following a survey of 23 teacher participants, it was identified that 16 teachers (70%) worked in urban areas, whilst 7 teachers (30%) worked in rural settings. Additionally, thirty percent (30%) of teachers worked as classroom teachers, thirty percent (30%) worked in roles specific to special educational needs, and forty (40%) percent worked as leaders or special educators.

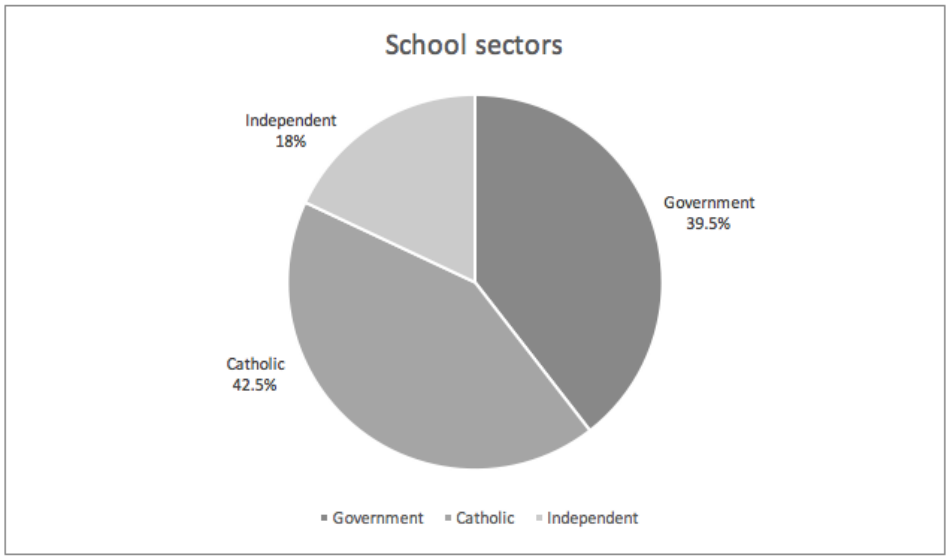

Figure 4.1 Percentage of teachers working in various school sectors

The teachers worked in groups to collect data, which were organised into documents that included school action plans, outcomes and recommendations. The use of document analysis has increased significantly during the past 10 years and it was used in this research to assess whether the quality of school-based programs improved for students with autism at participating schools (Bowen, 2009). For example, the documents revealed three key areas of foci including the improvement of assessment processes, the implementation of on-site PD and the creation of an autism-friendly learning environment. The groups used a range of tools to identify their school's strengths and areas for improvement. *The Universal Supports Assessment and Planning Tool* (USAPT) was used to analyse whole school data, whilst *The Classroom Environment and Teaching Assessment* (CETA) was used to collect data about the teaching environment (START Resources, 2017). Each group was required to target three priority areas for improvement within their school setting.

Each of the 10 groups gathered data on quality programming and whole school supports, so that they could identify the strengths and areas in need of improvement within their school. Using the collected data, each group selected three priority areas, which best reflected the needs of their school. Figure 4.2 illustrates the top three priorities identified by the groups. First, 30% of the groups recognised the need to improve teachers' data collection methods and IEP planning as a top priority. Second, 20% of the groups suggested a need for improvement in the area of PD for teachers of students with autism. Third, 17% of the groups recommended the improvement of students' learning environments. This involved changes and accommodations such as increasing visual supports and the accessibility of materials for students with autism. Other priorities included the establishment of guiding principles (10%) and the need to increase peer awareness about autism (14%). Areas requiring attention from fewer numbers of groups included improving students' individualised communication

methods (10%), increasing family involvement (10%) and improving students' literacy (10%).

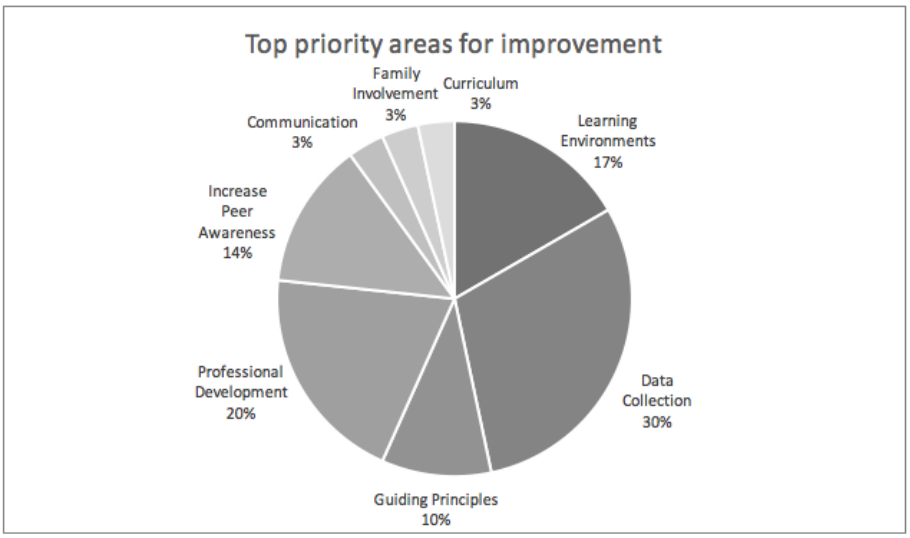

Figure 4.2. Top three priority areas for improvement

IEP Planning, Programming and Data Collection

Few schools had a systematic approach to collecting data on IEP goal progress and students' behaviour. Eighty percent of the groups identified the need to create a systematic data collection process as a key priority. For example, groups described their data collection processes using terms such as 'inconsistent', 'weak' and 'rarely evident'. As a result, they adopted a range of approaches to improve their data collection processes. One group created a spreadsheet, which enabled staff to continually update information on a shared drive, whilst another group created student profiles, which included students' input and reflections, as well as a planning matrix to be completed by parents. Other groups implemented electronic systems of storage, which contained learner profiles, transition documentation, learning objectives and data collection checklists. Fifty percent of the groups recommended that staff training in data collection processes be increased to improve the levels of accountability provided by both classroom teachers and school leaders.

The research revealed that classroom teachers had received little training regarding the collection and analysis of data about students' goals and behaviours. Inconsistency was linked to the inadequate progress tracking of students' IEPs. Forty percent of groups recognised that PD was essential for staff in this area. One group employed an expert lecturer from Flinders University to deliver explicit and intensive training. A key part of the training involved the assessment of a student with autism followed by explicit training in how to tailor the IEP and write IEP objectives. Professional development was also recommended to support the school's classroom teachers with ways to analyse and evaluate data. In order to support the school's classroom teachers, some schools provided in-house staff training. Sessions were conducted by each school's special education teachers, who focused their training sessions on ways to collect, report and evaluate data. In addition, groups suggested that teachers team together to share their knowledge.

Groups reported that teaming offered teachers an opportunity to share students' data and progress. It encouraged collaboration and provided opportunities for them to discuss their use of EBPs. One group reported that it increased teachers' reflection, professional dialogue and their 'desire to seek more knowledge'. Teaming also provided groups with occasion to discuss students' communication needs. For instance, one group met to discuss their students' preferred communication modes and discovered that less than 50% of the students had a documented preferred communication mode. After the implementation of the PD program, the data demonstrated that the number of students with a documented communication mode had increased to 80%. The group found that 'having a clear preferred [communication] mode designated reduce[d] student frustrations, demonstrations of challenging behaviour and other behaviours of concern'. The group also found that these changes directly impacted students, by increasing their 'confidence, relationships with peers and staff, wellbeing and engagement in learning activities'.

Thirty percent of groups also recommended that students be provided with a greater voice in the IEP planning process. To achieve this aim, groups encouraged classroom teachers to meet with their students prior to stakeholder meetings. This opportunity provided students with the occasion to set their own learning goals and develop understandings about their own progress. It also encouraged classroom teachers to have greater input towards setting and monitoring students' IEP goals. The research further indicated that such meetings encouraged teachers to revise and rewrite students' goals. One group reported that this 'led to the provision of more reflective and appropriate learning goals, and increased consistency in the successful accomplishment of set goals'. Another group introduced a *Student responsibility form* as a method for tracking students' behaviours and levels of academic engagement. The introduction of the form resulted in visible improvements in students' abilities to self-manage and their increased involvement in both curricular and extra-curricular activities.

Professional Development

Groups recognised that classroom teachers required ongoing PD so that they could provide the appropriate supports and resources for students with autism. Data indicated that teachers required training in areas that included: collecting and analysing data; planning IEPs; using EBPs; implementing visual supports; understanding ways to promote social skills; increasing student autism awareness. For example, 80% of the groups recommended that teachers receive PD in the area of data collection and IEP planning, with a focus on writing students' learning objectives. One group reported that the ability to set learning objectives was essential because it allowed 'more students to achieve their goals'. The group also suggested that special education teachers should assist classroom teachers with the collection of data specific to students' objectives. Further, the group noted that PD opportunities

included school-based training provided by guest presenters, such as a speech specialist, and occupational therapist, or the school's special education coordinator.

The data revealed that on-site PD was the most popular choice. Forty percent of the schools chose to engage the services of Autism SA, whilst 30% chose to participate in the Positive Partnerships workshops (national autism professional learning). A further 20% of schools did not specify their source of PD and 10% relied on in-house training from special education teachers. The research indicated that 60% of the groups recommended teacher training about autism and the types of sensory needs of students with autism. This was important for one group who reported that 14 of their 17 teachers had declared only partial competency, and three had claimed zero competency, regarding their knowledge of the characteristics of autism. Groups also recognised the need for teachers to develop a whole school plan that addressed professional learning, based on EBPs. This need was driven by results which demonstrated that most teachers were only addressing academic and behavioural concerns, and questioning the use of reinforcement and rewards.

Sixty percent of groups recommended teacher training about autism and the types of sensory needs of students with autism. After implementing the teacher PD program, the groups reported increased levels of teacher competency. This was evidenced by surveys in which teachers rated their competency regarding knowledge of the characteristics of autism. One group reported that the PD program responded well to the needs of its teachers who 'were beginning to voice their concerns on how best to cater for the individual needs of these children'. In particular, the group's teachers reported a lack of confidence in addressing the biological and sensory needs of their students with autism. Finally, groups recognised the need to provide teachers with access to online learning and relevant support contacts. As a result of the GCE, one group reported a significant increase in the number of teachers accessing individual online training via the Department of Education. Another group reported

that PD was important because it helped classroom teachers 'support students across the school in a variety of capacities (sports, playground duties, and extra-curricular)'.

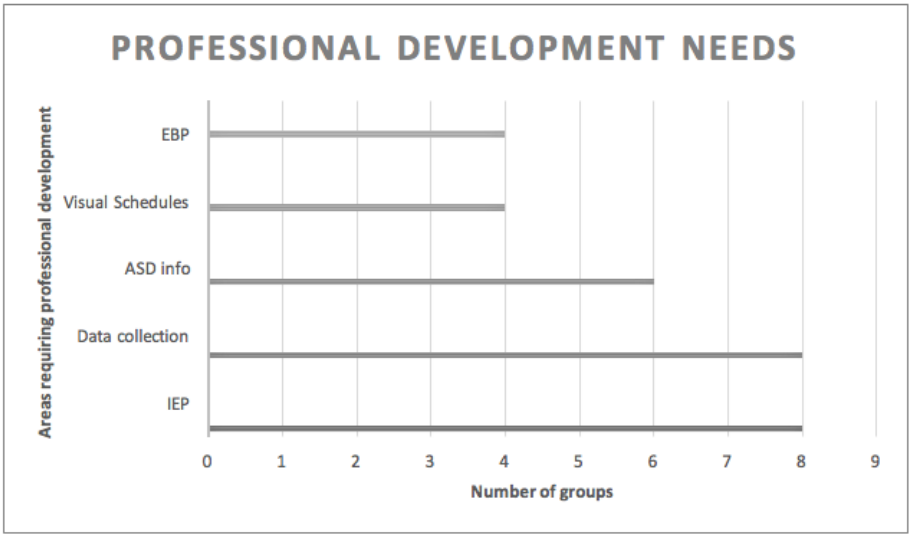

Figure 4.3. Professional development needs

Learning Environments

Ninety percent of groups made changes to the learning environment, which involved providing students with visual supports, resources and quiet zones. Overall, 80% of groups identified the need to implement visual timetables (Figure 4.4). The research indicated that the implementation of visual timetables resulted in a significant reduction in the number of times that students asked what was happening next. The data also demonstrated the benefits of implementing a colour-coded system, which was applied to timetables, task sheets, folders, door signs and a school map. The system resulted in one student with autism taking the correct materials to the correct location most of the time. Student feedback indicated that the student felt happy knowing that he was going to the correct class. Further, the data found that the use of break cards and choice cards helped another student with autism to regulate his emotions.

The group reported that students who used the break cards were more likely to have positive attitudes towards classroom tasks and take the initiative to negotiate their activities, breaks and classroom exits. The group also tracked students' behavioural changes and found that there was a noticeable improvement in students' ability to self-manage and their involvement in curriculum and extra curricula activities. The group reported,

> *'Communications with classroom teachers indicate that they have identified progress in overall student achievement and engagement since they have increased the environmental supports provided in their classrooms'.*

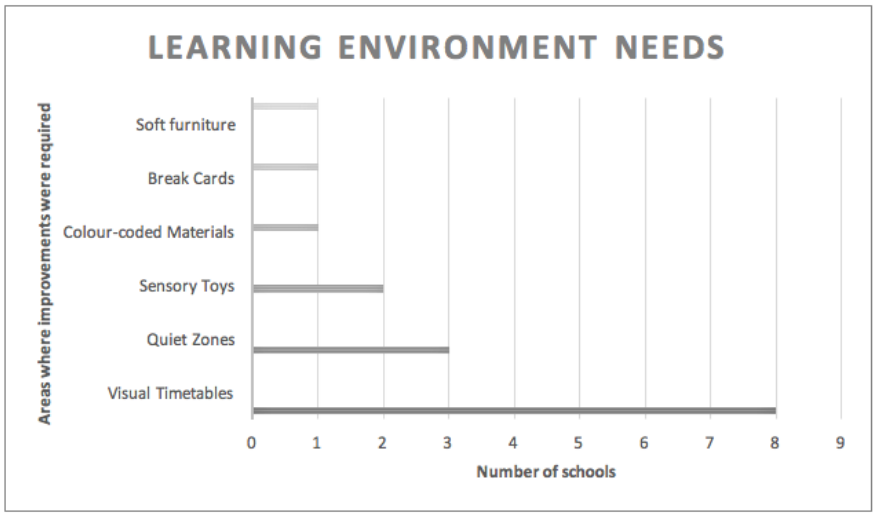

Figure 4.4 Improvements required in schools' learning environments

One group collected data to demonstrate the effectiveness of implementing visual timetables in the classroom. The group reported that baseline data from term three indicated that students within the class had asked timetabling directions over 150 times within a one week period. Student feedback revealed that 86% of students wanted to know what was coming up next in order to prepare themselves for activities. Data were collected again five weeks after implementing the visual supports. The data indicated that students had significantly reduced the number of occasions on which they asked for direction about what

was happening next (Figure 4.5). Student feedback revealed that students found the visual supports effective. Students' responses included the following:

'It doesn't matter if I forget, which I do all the time, the instructions are right there.'

'I love knowing what is next', and

'I now don't need to ask all the time.'

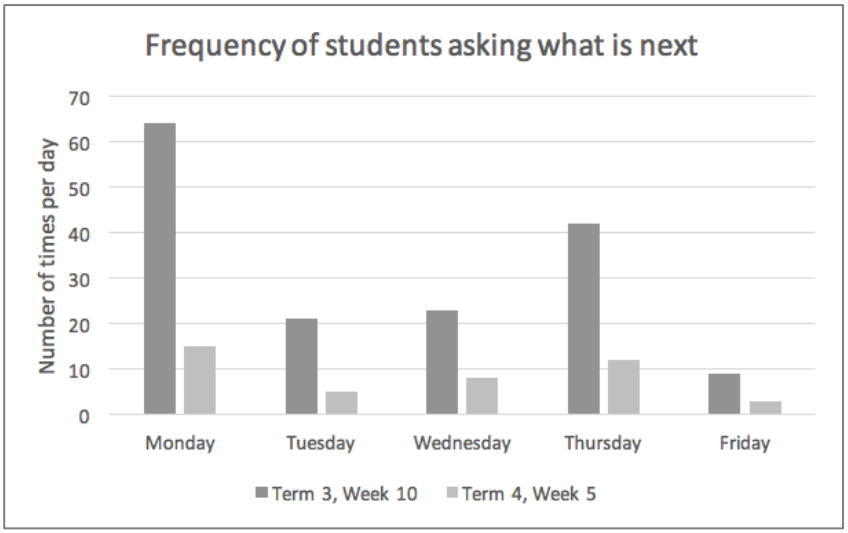

Figure 4.5. Comparison of the number of times students asked what was next

Schools also introduced a range of supports which included sensory toys, soft furniture and a noise metre. In one school, the group introduced a 'finish basket' for a student with autism. The basket was positioned so that it encouraged the student to 'stretch' each time he accessed the basket. Use of the support complimented the goals which had been identified as part of the student's occupational therapy program. The data indicated that the use of the 'finish basket' provided the student with feelings of satisfaction on each occasion when he completed a learning task. Additionally, the research revealed the importance of teacher training. Professional development had been essential for teachers to make successful connections between the task design and task skills, and the support structures being implemented. The group further reported the importance of additional funding as an essential

factor in its ability to provide additional supports. Extra funding had allowed the group to purchase staff PD training, staff reference books, picture books and classroom resources.

Thirty percent of the schools reported setting up quiet zones outside of the classroom to offer students with autism a place to regulate their emotions. Students were encouraged to follow set procedures and attend the quiet zone using the rating scale from Buron's (2015) Incredible 5-point scale. The Incredible 5-point scale is a self-regulatory scale that allows students to measure their own emotional states and regulate their behaviour (Buron, 2015). The research indicated that schools with quiet zones experienced a distinct decrease in the number of students who were removed for disrupting the class. They also reported that the new quiet zones reduced student anxiety and promoted self-regulatory behaviours. For instance, one group reported that 'the numbers increased from two supports not in place to 19 fully in place'. These numbers indicate that teacher awareness and the use of sensory accommodations increased proportionately after teachers participated in PD.

Whole School Awareness and Social Supports

Fifty percent of the schools addressed whole school awareness by introducing peer awareness programs and autism-friendly play options. Students were provided with options such as social clubs, a supervised 'Lego room' and alternative play activities. For example, alternative play programs provided options for students with autism and their peers to participate in joint play activities such as board and card games. Data from student-completed surveys revealed that the new lunchtime options benefited the social growth of all students, not just the school's students with autism. For instance, one group successfully introduced peer mediated intervention so that peers could learn to engage more effectively with the school's students with autism. Another group focused on developing student-teacher relationships in a playground area where teachers interacted with students. The group tracked

the behaviour of students with autism outside of the classroom and found a 61% reduction in the number of lunchtime infractions in comparison with the previous term before which the new play areas were introduced.

Prior to making changes to playground activities, students were taken on learning walks and asked about their feelings towards being in the playground at lunchtime. Some of the students' responses were as follows:

'I never get a turn on the playground; there are too many people.'

'I feel unsafe in the yard because big kids are scary.'

'There are too many people; it's crowded.'

'There is nothing to do; I'm bored.'

These comments, made before the implementation of the action plan, indicate that some students with autism felt uncomfortable in the playground at lunchtime. After the implementation of the action plan, however, students commented more positively about their experiences at lunchtime. Some of the students' responses were as follows:

'Games club is my favourite because everyone gets a turn.'

'I love Digital Tech club because it's challenging and fun.'

'Some big kids in the yard help me.'

'I like Lego club because its quiet.'

Due to changes in playground programs, groups reported a significant improvement in students' behaviours. Increased training in communication for teachers also contributed to improved behaviour in the playground. This was evidenced by 20% of the groups, which incorporated Picture Exchange Communication System [PECS] into teachers' practices because it improved communication between teachers and students (Pyramid Educational Consultants, 2016).

Student awareness was further increased through internal programs such as a Christian-based special education awareness program and external programs such as the *Peer Awareness Program*, delivered by Autism SA. One group reported that the success of their peer awareness program was the result of embedding the content into the existing curriculum with the support of expert teachers. Teachers were provided with resources and supports that matched the current learning in their classroom. For example, a class that was focused on poetry received laminated poems of different levels that focused on diversity and difference. Similarly, differentiated texts were provided along with hands-on tools that related to the book. For instance, a shared reading text named 'All Cats have Asperger Syndrome' was delivered with purple playdough for students to create models in response to the content. Because the same text was provided across all year levels, it encouraged collegial discussion and conversation amongst students across the school. At the same time, teachers who were experienced in using the Incredible 5-point scale rotated around different year levels so that they could introduce the regulatory tool to all classes in the school (Buron, 2015).

Another group created an autism-friendly whole school planning matrix, which addressed multiple areas for improvement across the school. The group's plan addressed the environmental, social/emotional, communication, sensory-motor and learning domains. The group targeted topics such as the strategic use of funding (environmental); the provision of material to families regarding respite and social networks (social/emotional); the need to liaise with specialists when writing IEPs (communication); teacher PD about providing sensory and visual support (sensory-motor); PD about writing IEP learning objectives (learning). The group attributed the success of their whole school plan to teacher PD, which was delivered by presenters or staff using research articles as stimuli. Additionally, the group attributed the plan's success to the involvement of all school members. The plan included the support of the school principal, staff, parents and students.

Groups recognised that a whole school approach could only be successful if teachers were able to meet regularly to plan for change. One group reported that their 'meetings proved critical in developing a whole school approach and staff ownership'. The group formed teams across the school by year level, and supported each team with a mentor. The group indicated that this provided teachers with a more personalised opportunity to discuss matters relevant to their year level. The group recognised that 'whole school staff meetings did not always allow for tailored support and could be quite daunting when introducing something new'. The school's staff worked in small groups to plan activities that promoted autism awareness at the whole school level. One team of teachers created a morning prayer with PowerPoint slides of relevant images and quotes that were reported to 'provoke thought, discussion and awareness within the college'. The aim was for each year-level team to produce resources, which were made accessible to the whole school.

Barriers

Groups reported multiple barriers whilst implementing their school action plans. Thirty percent of the groups experienced barriers when they failed to successfully schedule team meetings with specialty teachers, classroom teachers, learning assistants and/or executive leaders within their own school. They identified a number of reasons, which included staff illness, inadequate administrative support from leaders, crowded teacher timetables and competing priorities. For one group, the biggest problem involved the group having too many priorities, which needed to be addressed in too short an amount of time. For a second group, staff illness proved to be the biggest challenge, 'with 17 teachers taking more than eight days off during term three, and 45 learning assistants taking more than five days off'. A third group experienced issues concerning time restrictions and an already full PD

schedule for the year. Groups also encountered barriers due to the unavailability of their chosen support agency.

Specific barriers involved the inability of 40% of the groups to schedule sessions with their assigned school facilitator for the program. Other barriers were more generic in nature and involved school-based barriers. For example, groups reported factors such as staff illness or a change in middle leadership as causes for delaying the implementation of PD programs. Other school-based problems involved the scheduling of team meetings. Thirty percent of groups experienced barriers when they tried to schedule team meetings with learning assistants, classroom teachers, specialist teachers and leaders. Barriers also included the time it took to plan and present a PD plan to the school's executive committee and/ or the school's difficulties in gaining funding for their PD plan. Further, groups recognised issues concerning time restraints. Groups reported having insufficient time to meet with leaders, train staff, apply for funding, update student profiles and collect or record student data. Finally, groups reported that they experienced obstacles regarding the management and funding of the school's quiet zones.

Summary

This chapter addressed the key areas, which groups identified for improvement at the student, class and whole school level. It described the findings related to the main themes including: IEP Planning, Programming and Data Collection; PD; learning environments; whole school awareness and social supports. First, the research indicated that teachers required additional knowledge about how to collect, monitor and record students' data related to IEP goal progress and behaviour. Second, the research showed that schools needed to improve their systems for data collection and regularly update students' IEP goals. The research determined a need to increase the engagement of classroom teachers and learning

assistants by regularly sharing valuable student data with them and maintaining the currency of student profiles. Some schools recorded data using spreadsheets and folders containing learning objectives, which allowed stakeholders to readily access information from different sites. Third, the research highlighted the importance of teacher PD, including the need for teachers to learn about creating learning objectives. Following the implementation of the PD program, groups reported that teachers had successfully updated their data collection processes and implemented increasing numbers of appropriate student accommodations.

Groups also introduced visual supports including timetables, colour-coded folders, coloured maps, break cards and choice cards. The visual supports provided students with increased access to information and ways to regulate their behaviour. For example, the research indicated that break cards increased one student's sense of ownership by allowing him to choose when he required breaks. In addition, 30% of groups introduced quiet zones, which offered students a quiet retreat away from sensory triggers. Whilst all schools recognised the benefits of making changes to the learning environment, some groups experienced barriers. For instance, barriers included difficulties in supervising the sensory spaces, and organising PD with external agencies due to unavailability or cancellation. Other barriers were experienced when schools tried to organise team meetings. Team meetings were considered important because they offer teachers a time to share data and discuss students' progress.

The chapter addressed whole school awareness at both the teacher and student level. It was suggested that teachers required increased knowledge of autism and PD to increase their understandings about students' sensory needs and triggers. For example, teachers require knowledge of autism and its aetiology to administer EBPs appropriately. The chapter also addressed the importance of raising student awareness through education programs such as Autism SA's *Peer Awareness Program* (Autism SA, 2015). In the playground, alternative

play programs were introduced by 50% of the schools to increase peer networks. For instance, groups introduced autism-friendly play areas, where all students were welcome, and all students benefited. Changes to play areas offered students with autism opportunities to interact with peers and teachers in environments, which they described positively using words such as ‘safe’ and ‘quiet’. The chapter concluded with a description of key barriers encountered by groups during the course of the research.

CHAPTER 5

DISCUSSION

Introduction

This chapter presents discussion from the research relating to whether leaders' and teachers' participation in a GCE course specialising in the area of ASD influenced outcomes for the school and its students with autism. The discussion responds to the research questions and interrogates the changes that were made in the school, the results of these changes and barriers experienced at both the classroom and whole school level. The chapter also discusses the key themes, which emerged during the data analysis phase and how they contribute towards improving the quality of learning for students with autism. Key themes address the need for improved data collection methods, increased teacher PD and the adoption of leadership practices that promote whole school inclusivity for students with autism. Finally, the chapter outlines the limitations and contributions, which should be considered when interpreting the data.

IEP Planning, Programming and Data Collection

A key finding involved the need for teachers to acquire additional knowledge about IEP planning, programming and data collection**.** Developing the necessary skills for data collection is essential because it allows teachers to plan, modify and implement changes to EBPs and IEPs (Hall, 2013; Wheeler et al., 2015). For instance, teachers use collected data to validate assessment, monitor students' progress and evaluate or plan interventions. Similar to the literature, the research findings indicated that the data collection practices in participating schools were inadequate and inconsistent (Hojnoski, Gischlar, & Missall, 2009; Sandall, Schwartz, & Lacroix, 2004). The research indicated that few schools had a systematic

approach to data collection, which was concerning because systematic data collection plays a fundamental role in the decision-making processes for any treatment program (Lerman, Hovanetz, Strobel, & Tetreault, 2009). Groups suggested that teachers required regular PD and increased opportunities to work as part of a team with support staff, students and parents.

The literature supports parents' and students' input because it promotes collaboration and empowers individual stakeholders (Wheeler et al., 2015). The critical role played by families in supporting student's IEP goals is also acknowledged by Hall (2013). Findings from the GCE demonstrated that families were highly satisfied with the new data collection methods and IEP planning in their schools. For example, the data indicated that 100% attendance at IEP meetings by students' families was indicative of them finding the processes 'supportive and solutions-focused'. The research also indicated that PD in these areas increased teacher motivation. In particular, teachers were motivated by the observational checklists which were regularly presented to them during their on-site PD. The data also found that groups implemented information storage systems to help teachers organise data and monitor students' progress. Specifically, groups created electronic folders which contained learner profiles, transition documentation, examples of learning objectives and data collection checklists.

The literature also supports the need for teachers to collect rigorous data for tracking students' progress and targeting teaching (Goss, Hunter, Romanes, & Parsonage, 2015). It is essential to ensure that students' IEPs are updated because IEPs are important management tools, which are used to identify students' changing needs (Ruble, Dalrymple, McGrew, & McGrew, 2012). For example, a quality IEP provides the information needed to identify ancillary services and appropriate resources for the student. The importance of an IEP was demonstrated in Ruble and McGrew's (2013) study, which found that IEP quality was responsible for 25% of the variance in child outcomes. The literature also recognises that

teachers often struggle when faced with the need to write measurable objectives for their students' social and communication skills (Ruble et al., 2012). This area for improvement was also recognised in the GCE data, which indicated that 40% of teachers had difficulty writing IEP objectives due to insufficient training prior to commencing the program.

Professional Development

The research found that classroom teachers from all groups required PD in a range areas that included: collecting and analysing data; planning IEPs; using EBPs; implementing visual supports; understanding ways to promote social skills; student autism awareness. The literature recognises that teachers of students with autism require additional training to support their students with quality learning (Pas et al., 2016; Soto-Chodiman et al., 2012; Webster, 2014). For instance, classroom teachers need knowledge about individualised instructional methods and behavioural interventions to manage the emotional, social, behavioural and academic needs of their students with autism. The literature further reveals that a whole school approach to PD is required because the school's students with autism are often taught by several teachers across the school day (Gavaldá & Qinyi, 2012; MAC: SWD, 2010; Postholm, 2012). Benefits for both students and teachers occur on occasions when teachers work collaboratively, share their knowledge and apply the same EBPs with consistency across the school (Postholm, 2012; Webster, 2014; York-Barr & Duke, 2004).

The research found that most groups recommended teachers receive PD in the area of data collection, IEP planning, and learning to write students' learning objectives. The collection of quality data is essential for monitoring students' progress, setting learning goals and planning instruction (Hall, 2013). Because students with autism are part of a heterogeneous group, teachers need to be able to identify the individual's preferences and needs so that learning can be tailored to support each student. Groups suggested that the

school's special education teachers assist classroom teachers with data collection processes and that all teachers engage in on-site PD and school-based training. The literature also describes the benefits of site-based PD, which offers teachers opportunities to learn with their colleagues in their everyday school setting. Site-based PD provides teachers with situational and immediate feedback, as well as opportunities to model practices under the guidance of a mentor or coach (Fixsen et al., 2005; Foreman, Arthur-Kelly, & Pascoe, 2007; Postholm, 2012; Webster, 2014; Webster & Wilkinson, 2015).

Ongoing PD was considered essential because teachers required additional teaching techniques to support the needs of students with autism. In particular, site-based PD allowed teachers to gain new skills within an authentic classroom context, rather than an academic simulation (Edwards & Kuhlman, 2007; Maddox & Marvin, 2012). For instance, classroom teachers received feedback and support within their everyday context tailored to the specific needs of their students with autism. One group described the aim of teacher PD as an opportunity to 'build the individual's capacity whilst simultaneously creating leaders within the group'. Another group described it as 'an opportunity to learn more about the supports and resources available for students with autism'. The literature suggests that schools provide PD opportunities during school meetings to engage teachers in new learning (Darling-Hammond & McLaughlin, 2011). The GCE indicated that one group took this approach by using meetings to learn about the benefits of Augmentative and Alternative Communication (AAC) for students with autism. The meetings were successful in raising teachers' awareness and encouraging them to increase the number of students with preferred communication modes.

Professional development plays a key role in helping teachers to administer and record the effects of EBPs with greater reliability and consistency (Hall, 2013). Professional development in this area was important because groups referred a range of EBPs including:

Visual Supports, PECS (Pyramid Educational Consultants, 2016), Functional Behaviour Assessment (FBA) and Social Skill Training (SST). Another key area for PD involved teacher training about autism and its aetiology. The GCE indicated that 60% of the groups recommended PD in this area. To teach students with autism, teachers require knowledge about the types of issues or behaviours commonly experienced by this group of students. The literature recommends that teachers engage in PD with hands-on support so that they can deal with problems as they arise (Webster, 2014). This co-planning process also equips them with the theory and practical skills that assist them to transfer their knowledge across contexts (Webster, 2014).

The number of teachers lacking basic knowledge about autism is significant because it demonstrated that six of the 10 schools employed teachers of students with autism who lacked basic understandings about autism. The research also indicated that teachers lacked access to written information about autism and details about online training programs, and local support agencies. General understanding about the nature of autism is critical because an ability to predict students' potential needs allows teachers to facilitate environmental changes and accommodations. In particular, the literature reports that some students may struggle in the areas of social and emotional understanding, and/or experience sensory overload based upon the levels of noise and light (Hume et al., 2014). Equipped with this knowledge, the classroom teacher is more able to situate the student in an environment that best meets her needs. Additionally, the teacher's knowledge of autism allows her to set goals, develop expectations and advise key stakeholders about the students' benchmarks in learning.

Learning Environments

The literature indicates that many individuals with autism may be intolerant of change and instead insist on routine and sameness (Lawson, Mathys, & Rees, 2017). As a result, they

may be overwhelmed by the environment of a secondary school, which is often noisy and hectic (APA, 2013). The research indicated that most groups made modifications to the school environment to accommodate for students' sensory sensitivities. The data revealed that changes to the environment improved students' behaviour, increased teachers' motivation and lifted the achievement levels of the school's students with autism. For example, the introduction of break cards and quiet zones enabled students with autism to escape from areas in which their senses became overwhelmed. Webster (2014) suggests that action plans enable teachers to 'more accurately pinpoint a student's current level of performance' (p. 28). Performance levels measured include performance related to academic, social, communication and behavioural areas. During the GCE teachers used their action plans to record, organise and reflect on the changes that they made to their school and the changes experienced by the school's students with autism.

The literature further supports the notion that students with autism benefit from the use of visual rather than auditory inputs due to difficulties in comprehending spoken language (O'Brien et al., 2016). Visual supports are useful for creating an ordered learning environment, which helps students to manage their need for uniformity and rigid schedules, in ways that reduce anxiety (Boyd, McDonough, & Bodfish, 2012; Matson & Konst, 2014; Menear & Smith, 2011). The research reflected the findings in the literature and indicated that the implementation of visual timetables reduced students' anxiety about the order of everyday events. Groups reported that the use of these environmental supports increased the independence of students with autism. When students with autism used environmental supports, they displayed increasingly autonomous behaviours that enabled them to move around the school more independently. In addition, the supports increased their confidence and feelings of self-satisfaction because they removed the need for students with autism to rely on the help and guidance of peers or teachers.

One student used visual supports including colour-coded school maps, task folders and schedules. The usefulness of colour-coding as a means to help him draw on learnt experiences is reflected in the literature (Devine, 2014). For example, when a subject or class is matched in the same colour with its location on a map, the student can more easily transfer between classes. By improving students' organisations skills, teachers are able to reduce the number of cognitive demands required for individual tasks. Research has demonstrated that individuals with autism prefer sensations when they are able to be predicted and controlled (Ashburner, Bennett, Rodger, & Ziviani, 2013). Whilst sensory differences vary between individuals with autism, their prevalence is far greater than those found in their typically developing peers (Ben-Sasson et al., 2009; Grandin, 2009). To support students' sensory processes, teachers need understandings about students' sensory stressors (Hall, 2013). The GCE reported that teachers were provided with PD about sensory stressors and regulation tools. According to Atmodiwirjo (2014), this allows teachers to appropriately tailor learning to suit the individual student's sensory needs.

These positive student behavioural outcomes are important because deficits in on task behaviour can impact greatly on a student's ability to learn and remain in the mainstream setting (Ashburner, Ziviani, & Rodger, 2010). Notably, 90% of groups reported making changes to the learning environment. This is interesting because only 17% of groups identified the need to make changes to the learning environment as one of their top three priority areas. The increased implementation of visual supports perhaps demonstrates that whilst some schools did not initially recognise the need for visual supports as a priority, they later recognised that visual supports were integral to improving a range of outcomes for students with autism. Barriers, which are discussed on p. 56, involved the difficulties experienced in sourcing funds to build and supervise the sensory spaces. Whilst most schools

were not initially set up to support students with autism, they all reported positive outcomes for students with autism after increasing their environmental supports.

The implementation of visual supports and sensory spaces in the school was considered a necessary inclusion because visual supports made 'information more accessible to students with autism'. This notion is supported in the literature, which suggests that students with autism prefer visual processing because it facilitates cognitive understanding and improves memory abilities (Green & Sandt, 2013). For example, the GCE indicated that increasing the numbers of visual and learning supports helped to raise students' levels of independence, improve on-task behaviour, reduce the likelihood of poor behaviour and facilitate transitions between classes. The use of visual learning supports also helped to improve communication in the classroom because they provided teachers and students with a common language. Future recommendations included creating a common language for visual supports across the school and the introduction of visual cards to playground bags to improve the communication between teachers and students in the playground.

Leadership Support

The research yielded a number of other insights into ways that schools can create more inclusive practices for students with autism. Groups recognised that both students and teachers benefited when classroom and specialist teachers learnt in co-operation with one another. For example, 80% of the groups recognised that both generalist and specialist teachers benefited from team meetings, which allowed them to share strategies and discuss students' progress. The literature also recognises the benefits of teachers combining their knowledge to create a community of learners (Gavaldá & Qinyi, 2012; Postholm, 2012; Robert & Simpson, 2016; Smith & Leonard, 2005; Webster, 2014). For instance, the collaboration between teachers of students with autism is essential for implementing

inclusive practices. The research found that groups required greater support at both the administrative and leadership levels to support the implementation of the program. This was an important recommendation because over half of the groups experienced scheduling barriers, which prevented them from organising team meetings.

Leaders play a pivotal role in creating whole school approaches towards inclusion by supporting teacher PD and students' awareness of autism (Bissaker et al., 2013; McDougall et al., 2009). First, leaders support the ongoing pedagogical development of teachers by organising PD that increases teachers' knowledge of autism and administering EBPs. This requires school leaders to organise teachers' release for PD, book external PD support agencies and co-ordinate team meetings for both specialist and classroom teachers. Second, leaders promote whole school approaches by raising peer awareness through the implementation of programs and whole school activities that recognise the diversity of the student population. This includes the integration of autism-friendly practices (e.g. quiet zones, visual supports and alternative play areas) and a recognition that all students' needs are equally valued. One group, which reported a lack of leadership due to timetable constraints stated that the '*inclusion of specialist teachers in the meetings would have proved invaluable as they take all classes in the school'*.

Groups recognised that the active engagement and support of the school's leaders was essential for planning whole school approaches. These findings were similar to those reported by Webster and Wilkinson (2015) who discussed the importance of teacher partnerships and the active engagement of school leaders. Webster and Wilkinson (2015) found that the school's teachers and leaders needed to work collaboratively to achieve improved outcomes at both the individual and whole school level. Webster and Wilkinson (2015) also highlighted the need for strong partnerships between the schools' principals and special education leaders. The research indicated that this was a necessary factor for creating a student-centred

focus and bringing the students' needs to the forefront (Webster & Wilkinson, 2015). Current literature also suggests that further research about the engagement of the principal is needed to improve the implementation of programs for students with autism at a whole school level. This is an important finding in relation to the GCE, because only one group from 10 referred to their school principal's active engagement in the GCE.

The literature suggests that the principal's direct involvement is necessary in building the capacity of staff to implement quality outcomes for the school's students with autism (Webster & Roberts, 2014). Interestingly at most participating GCE schools, the deputy, rather than the principal, had hands on involvement in the GCE program. Whilst school principals were sometimes part of the ASD team, they were mostly responsible for signing off on plans and organising funding applications. Only one school recommended that its principal needed to provide the school's classroom or special education teachers with leadership roles to promote greater levels of ownership. This notion is also supported in the literature, which addresses the importance of empowering the school's teachers and leaders with roles that are not merely operative in nature (Webster & Wilkinson, 2015). When the school's teachers and leaders are empowered to build their own leadership skills, they are more likely to directly influence the process of change at the school level (Webster & Wilkinson, 2015).

A second insight involved the need to increase teachers' awareness about autism so that they could identify and support students' sensory, behavioural and communication needs (Leblanc et al., 2009; Marder & deBettencourt, 2015). Despite current debate about the specialist and generalist nature of teaching students with special needs (Hall, 2015; Lewis & Norwich, 2005), the research showed that specialist knowledge and pedagogical strategies are required for teaching students with autism. Without knowledge of autism and its aetiology, it is suggested that teachers are unable to identify and implement appropriate practices or

techniques. The literature also suggests that teachers who lack basic understandings about autism are more likely to experience stress, which negatively impacts upon their learners (Robert & Simpson, 2016). Whilst data about teachers' levels of stress were not collected, groups recognised that teachers felt concerned about their abilities to meet students' complex needs. Groups recommended that schools provide explicit guiding principles and well-communicated policies that ensure consistent pedagogical approaches across the whole school (Lindsay, Proulux, Scott, & Thomson, 2014).

Barriers

Within the literature a number of barriers have been identified with regard to the implementation of teacher PD (Saggers et al., 2015). The Australian Autism Educational Needs Analysis addressed a number of barriers, which were acknowledged by educators, specialists and parents (Saggers et al., 2015). For example, barriers included issues concerning time, funding, suitable training, and workplace and organisational support. These findings are similar to those identified in the literature. For instance, Webster (2014) found that leaders supported teachers in more meaningful and practical ways when they referred to teachers' action plans and engaged in teacher PD programs themselves. Ensuring the support of school administration and leadership was considered essential for the success of the GCE program because it allowed leaders to schedule PD, organise team meetings and provide teachers with the necessary release time needed to organise instruction, plan funding applications and work with one another. Barriers in these areas occurred on occasions when school leaders, including school principals, failed to provide adequate support due to their passive engagement in the program.

Teaming and working collaboratively is especially important because students with autism are often taught by multiple teachers (Graham & Spandagou, 2011; Hall, 2015;

Postholm, 2012). Team meetings are essential because they provide specialty staff and classroom teachers with opportunities to share information about their sessions with students. Barriers in this area occurred as a result of timetabling issues, which included problems that arose due to teachers' crowded schedules. Without formal meeting times, teachers from one group found themselves too busy with their own workloads to share information with other teachers by either email or telephone. In addition, groups reported that the varying schedules of speciality staff and learning assistants prohibited them from organising a suitable meeting time. The research indicated that barriers to teaming and teacher PD occurred on occasions when leaders failed to successfully address administrative outcomes. The literature recognises that leaders play an important role in the provision of system-level support that promotes a whole school culture (McDougall et al., 2009).

In particular leaders play an essential role in co-ordinating sessions with external PD agencies and organising meetings between the school's classroom and specialist teachers (McDougall et al., 2009). One group from the GCE program, reported issues concerning the passive engagement of its school's leaders. Whilst its leaders were supportive, they had failed to become directly involved in the logistics. The role of school leaders is highlighted in the literature, which recognises the need for the school principal to be actively engaged to bring about systematic change at the whole school level (Webster & Wilkinson, 2015). Other barriers occurred when staff became too focused on other priorities because it was drawing towards the end of the school year. Despite their obstacles, all groups recognised the benefits of teaming. One group suggested that that team meetings supported 'the development of shared responsibility and an understanding of the individual's goals'. Another group stated that teaming and joint PD allowed teachers to 'develop a common vision for the future'.

Limitations and Contributions

There are a number of limitations, which need to be considered when interpreting findings from the research. Firstly, the research depended upon a convenience sample, which limits the ability to generalise findings across the broader school population. Teachers' action plans represented a group of 22 (10 schools) participating in the first cohort (2016) of the GCE (SE) program and may not represent the findings of all teachers who undertook the course. Second, the research made no attempt to assess the experience levels of participating teachers. For example, teachers and leaders were required only to have had prior experience educating students with autism. Third, the researcher needed to be aware of the teachers' subjectivity and the varying degrees of ability, which they used to document events in their school context. For example, each teacher brought her own assumptions and biases to the task and this resulted in varying levels of objectivity, consistency and accuracy. To offset limitations and reduce bias, the researcher analysed documents from multiple groups of teachers, across 10 different school sites (Bryman, 2012; Punch & Oancea, 2014).

This approach allowed the researcher to produce a degree of generalisability, as well as establish confirmability by examining the ways that different schools created autism-friendly environments. Fourth, the researcher needed to be aware of her own bias and experience, which influences the analysis done during the interpretative phase (Johnson & Onwuegbuzie, 2004). For example, the researcher identified key themes in the literature review, such as the importance of teacher PD and whole school approaches towards inclusivity for students with autism. Due to the researcher's prior interest in these areas, the categories may have received a greater focus during the interpretative data phase. Finally, the researcher recorded the data using Nvivo software, which reduced the likelihood of manual errors and increased the consistency and accuracy with which the data was recorded (Punch & Oancea, 2014; QSR International Pty Ltd, 2016). The research contributes to a gap in the

literature about PD for secondary teachers of students with autism. Nine of the 10 schools, participating in the GCE, enrolled secondary school students. This offered the researcher an opportunity to analyse data about teachers of secondary students and ways to improve the quality of learning for secondary students with autism.

Summary

In this chapter, the findings of the research were discussed in relation to the literature. Key themes were addressed including: data collection, PD, learning environments, whole school awareness and barriers. Within these themes a number of sub-themes emerged which included the need for schools to train teachers in using EBPs and visual supports to meet students' unique needs. Groups reported that their schools lacked clear systems and processes for data collection and reporting. This was considered important because good data allows teachers and students to fill learning gaps, and set learning goals. In particular, teachers required PD in planning IEPs and setting learning objectives. The schools delivered PD with the help of special education teachers, consultants and support agencies. Most schools chose site-based PD, which provided them with opportunities to train in authentic contexts to manage the everyday needs of the school's students with autism.

The literature suggests that site-based PD offers teachers opportunities to embed their understandings in everyday learning contexts under the guidance of mentor teachers. It also provides opportunities for situational feedback and performance evaluation, which helps teachers to make connections between theory and practice so that they can administer treatments across a range of settings. Due to barriers, many schools were unable to book their agency of choice and this caused unnecessary delays to the implementation of their action plans. Another key theme included making changes to the learning environment, which included increasing the number of environmental supports.

Schools raised whole school awareness through both internal and external programs. The research indicated that peer mediated intervention and alternative play areas offered students opportunities to develop friendships in spaces that were tailored to meet their sensory needs and interests. When applied appropriately, the environmental interventions and EBPs were found to empower the schools' students with autism and benefit all students with opportunities that encouraged socialisation. Finally, the chapter included a description of the limitations and contributions, which need to be considered when interpreting the research.

CHAPTER SIX

IMPLICATIONS

The purpose of this research was to analyse secondary data generated from phase 2 of the APLP (Bissaker et al., 2013). This was achieved by examining teachers' action plans and outcomes to assess whether the quality of school-based programs improved for students with autism at participating schools, whereby teachers and leaders participated in the PD program. The first practical implication of the research is the provision of empirical data that examines whether the specific GCE model, described in the research, might contribute to creating improved quality in the whole-school programming for students with autism at participating schools (Hall, 2013; Pas et al., 2016). Teachers participating in the PD program identified key areas for school improvement, including IEP development and data collection, teacher PD, learning environments, and whole school awareness and social supports. The data also revealed that participating teachers lacked confidence in their ability to provide quality learning outcomes for students with autism in these areas, prior to commencing the GCE. The findings supported the literature, which revealed that classroom teachers required additional instruction to support the behavioural, academic, social and communication needs of students with autism (Holdheide & Reschly, 2008; Morrier et al, 2011; Odom et al., 2013).

A second implication of the research indicated that the GCE in combination with onsite PD provided teachers with opportunities to acquire the necessary knowledge and skills to provide quality learning for students with autism. The literature suggests that on-site PD offers teachers opportunities to engage with mentors and coaches in a community of learners (Odom et al., 2013; Maddox & Marvin, 2012; Smit & Humpert, 2012; Webster, 2014). On-site PD also encourages teachers to collaborate with colleagues in their everyday setting to develop the necessary tools to manage students' needs (Fixsen et al., 2005; Foreman, Arthur-Kelly, & Pascoe, 2007; Postholm, 2012). On-site PD is particularly important because IEP

development and data collection are not taught comprehensively in pre-service teaching courses (Soto-Chodiman et al., 2012). This results in many teachers learning 'on the job' or using trial and error to navigate the requirements of managing students' needs (Hall, 2013). The research further indicated that on-site PD opportunities need to be planned well in advance to ensure the school's success in engaging their preferred facilitator. The issue of timing was also critical for the development of teachers' action plans because groups preferred to implement their plans at the beginning of the school year as opposed to mid-year.

A third implication involves recognition of the important role played by teachers and leaders in developing a whole school approach towards more inclusive practices for students with autism (Bissaker et al., 2013; Humphrey, 2008; Marshall & Goodall, 2015; Webster, 2014). Again, the findings supported the literature, revealing that school leaders played a pivotal role in planning and scheduling, and motivating teachers to acquire new pedagogical knowledge (Bays & Crockett, 2007; Desimone, 2009; Postholm, 2012). In particular, the active engagement of the school's principal and leaders was considered an essential factor in achieving increased levels of teacher support and release time (McDougall, Servais, Meyer, Case, & Dannenhold, 2009). The findings also indicated the usefulness of implementing whole school inclusive practices, which benefited both the students with autism and their peers. For example, groups made changes that included increasing peer awareness about autism, improving playground options to promote social inclusion and providing adjustments and accommodations to improve the independence of individual students in both the classroom and playground. Whilst the data about the effects of the PD program on the progress of individual students was limited, the findings were unanimously positive. Although some schools experienced barriers during the implementation of their action plans, they recognised the benefits of making changes to the learning environment.

Overall, the research indicated that schools did not have the required programs in place to support the needs of students with autism prior to their engagement in the GCE. The research found that teachers required additional training in theory and practice so that they could meet the needs of the school's students with autism across a range of areas. Due to rapidly increasing numbers of students with autism entering mainstream schools, this focus on teacher preparedness is both timely and important (Morrier et al, 2011; Odom et al., 2013). Future research might address the types of PD which teachers find most suitable for sustainable learning and ways to increase the active engagement of school principals in programs such as the GCE. The research also recognises that ongoing PD is critical for all classroom teachers of students with autism. Ongoing PD is important because of factors such as staff turnover, gaps in teachers' knowledge and the need for teachers to be updated about the latest research on EBPs. Future research about teachers' long-term experiences with on-site mentoring will offer further insight into the most effective practices used during onsite PD programs for teachers of students with autism.

CHAPTER SEVEN

CONCLUSION

The study aimed to inform both practice and policy so that teachers are better prepared and efficacious when teaching students with autism. Due to increasing numbers of students with autism attending mainstream schools, there has been growing pressure on classroom teachers to support the unique needs of this group of learners. Consistent with previous research, teachers in the study did not feel confident in their abilities to deliver quality learning to students with autism. As a result, they required additional training in key areas including data collection, setting students' IEP objectives and the provision of educational supports. In order to develop teachers' knowledge and abilities, teachers participated in the GCE and on-site PD. The research showed that even small amounts of PD impacted positively upon the learning outcomes and engagement of the schools' students with autism. The research also demonstrated that the GCE encouraged the implementation of practices and supports that promoted greater awareness of autism and inclusivity at the whole school level. Overall, groups reported success improving teachers' knowledge of autism in ways that encouraged significant changes to school programs to benefit students with autism.

References

Altheide, D., Coyle, M., DeVriese, K., & Schneider, C. (2008). Emergent qualitative document analysis. In Hess-Biber, S. & Leavy, P. (Eds.), *Handbook of emergent methods*, p. 127 – 154. New York, NY: Guilford.

Alvesson M. & Skolberg K. (2009). *Reflexive Methodology*, 2nd Ed. Sage, London.

Atmodiwirjo, P. (2014). Space affordances, adaptive responses and sensory integration by autistic children. *International Journal of Design, 8*(3), 35-47.

American Psychiatric Association, [APA]. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VS: American Psychiatric Publishing.

Ashburner, J., Ziviani, J., & Rodger, S. (2010). Surviving in the mainstream: Capacity of children with autism spectrum disorders to perform academically and regulate their emotions and behaviour at school. *Research in Autism Spectrum Disorders, 4*(1), 18-27.

Ashburner, J., Bennett, L., Rodger, S. & Ziviani, J. (2013). Understanding the sensory experiences of young people with autism spectrum disorder: A preliminary investigation. *Australian Journal of Occupational Therapy, 60*, 171-180.

Australian Advisory Board on Autism Spectrum Disorders [AABASD]. (2012). *Autism Spectrum Disorders (ASD) and the National Disability Insurance Scheme (NDIS).* Position Paper 2012. Retrieved 20 March 2017 from http://www.autismadvisoryboard.org.au/uploads/file/pdfs/Position%20Paper%201%20Assessment%20150812%20FINAL.pdf

Australian Curriculum Assessment and Reporting Authority, [ACARA]. (n.d). *Australian Curriculum*. *F-10 Curriculum. Mathematics. Rationale*. Version 8.3. Retrieved 7 April 2017 from: http://www.australiancurriculum.edu.au/mathematics/rationale

Autism SA. (2015). School Program. Retrieved 7 April 2017 http://www.autismsa.org.au/school-program

Barbaro, J., & Dissanayake, C. (2012). Developmental profiles of infants and toddlers with autism spectrum disorders identified prospectively in a community based setting. *Journal of Autism and Developmental Disorders, 42*(9),1939-1948.

Bays, D. A., & Crockett, J. B. (2007). Investigating instructional leadership for special education. *Exceptionality: A Special Education Journal, 15*(3), 143-161.

Bazeley, P., & Jackson, K. (2013). *Qualitative data analysis with NVivo* (2nd ed.). London: SAGE.

Ben-Sasson, A., Hen, L., Fluss, R. Cermak, S.A., Engel-Yeger, B., & Gal, E. (2009). A meta analysis of sensory modulation symptoms in individuals with autism spectrum disorders. *Journal of autism and developmental disorders*, 39(1), 1–11.

Bevan-Brown, J., Bourke, R., Butler, P., Carroll-Lind, J., Kearney, A., & Mentis, M. (2012). Essential elements in a professional learning and development programme: A New Zealand case study of autism professional development to promote collaborative practices. *Professional Development in Education, 38*(4), 631-646.

Bissaker, K., McMillan, J., Ellison, C., Davies, L., Cray, J., Clark, T., et al. (2013). *Autism Professional Learning Project.* Research Report.

Boeije, H. (2002). A purposeful approach to the constant comparative method in the analysis of qualitative interviews. *Quality and Quantity, 36*(4), 391-409.

Bogdan, R.C., & Biklen, S.K. (2007). *Qualitative research for education: An introduction to theories and methods*. Boston, United States of America: Pearson Education, Inc.

Bowen, G., A. (2009). Document analysis as a qualitative research method, *Qualitative Research Journal*, 9 (2), 27-40.

Boyd, B. A., McDonough, S. G., & Bodfish, J. W. (2012). Evidence-based behavioural interventions for repetitive behaviours in autism. *Journal of Autism and Developmental Disorders, 42*, 1236 –1248.

Boyle, C., Boulet, S., Schieve, L., Cohen, R., Blumberg, S., Yeargin-Allsopp, M., Visser, S., & Kogan, M. (2011). Trends in the prevalence of developmental disabilities in US children, 1997-2008. *Pediatrics, 127*(6), 1034-42.

Brock, M., & Carter, E. (2015). Effects of a professional development package to prepare special education paraprofessionals to implement evidence-based practice. *The Journal of Special Education, 49*(1), 39-51.

Bronfenbrenner, U. (1979). *The Ecology of Human Development*. Cambridge, Harvard University Press.

Bryman, A. (2012) *Social research methods*, 4th edition, Oxford: Oxford University Press.

Buron, K. D. (2015). The Incredible 5-Point Scale. Retrieved 19 August 2017 from https://www.5pointscale.com/

Busby, R., Ingram, R., Bowron, R., Oliver, J., & Lyons, B. (2012). Teaching elementary children with autism: Addressing teacher challenges and preparation needs. *Rural Educator, 33*(2), 27-35.

Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. Thousand Oaks, CA: Sage.

Commonwealth of Australia. (2006). *Disability standards for education, 2005*. Retrieved 6 May 2017 from: https://docs.education.gov.au/node/16354

Cook, B. G., & Cook, S. C. (2013). Unravelling evidence-based practices in special education. *The Journal of Special Education, 47*, 71–82.

Cornett, J., & Knight, J. (2009). Research on coaching. In: Knight, J., editor. *Coaching: Approaches and perspectives.* Thousand Oaks: Corwin Press, p. 192-216.

Creswell, J. W. (2012). *Educational research: Planning, conducting and evaluating quantitative and qualitative research*, (4th ed.). Upper Saddle River, NJ Pearson Education Inc.

Darling-Hammond, L., & McLaughlin, M. (2011). Policies that support professional development in an era of reform. *Phi Delta Kappan Magazine, 92*(6), 81-92.

Denning, C., & Moody, A. (2013). Supporting students with autism spectrum disorders in inclusive settings: Rethinking instruction and design. *Electronic Journal for Inclusive Education, 3*(1), 1-21.

Desimone, L. (2009). Improving impact studies of teachers' professional development: Towards better conceptualizations and measures. *Educational Researcher, 38*, 181-199.

Devine, A. (2014). *Colour coding for learners with autism: A resource for creating meaning through colour at home and school*. Jessica Kingsley Publishers.

Dillenburger, K., Jordan, J. A., McKerr, L., Lloyd, K. & Schubotz., D. (2017). Autism awareness in children and young people: Surveys of two populations. *Journal of Intellectual Disability Research, 61*(8), 766-777.

Durlak, J. A., & DuPre, E. P. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology, 41*, 327–350.

Edwards, S., & Kuhlman, W. (2007). Culturally responsive teaching: Do we walk our talk? *Multicultural Education, 14*(4), 45-49.

Emam, M., & Farrell, P. (2009). Tensions experienced by teachers and their views of support for pupils with autism spectrum disorders in mainstream schools. *European Journal of Special Needs Education, 24*(4), 407-422.

Engward, H., & Davis, G. (2015). Being reflexive in qualitative grounded theory: Discussion and application of a model of reflexivity. *Journal of Advanced Nursing, 71*(7), 1530-1538.

Fereday, J., & Muir-Cochrane, E. C. (2006). Demonstrating rigor using thematic analysis: A

hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods, 5*(1), 80-92.

Fixsen, D. L., Naoom, S. F., Blase, K. A., Friedman, R. M., & Wallace, F. (2005). *Implementation research: A synthesis of the literature*. Tampa: University of South Florida, Louis de la Parte Florida Mental Health Institute, the National Implementation Research Network (FMHI Publication No. 231). Retrieved 6 April 2017 from http://ctndisseminationlibrary.org/PDF/nirnmonograph.pdf

Florian, L. (2012). Preparing Teachers to Work in Inclusive Classrooms. *Journal of Teacher Education, 63*(4), 275-285.

Foreman, P., Arthur-Kelly, M., & Pascoe, S. (2007). The impact of partner training on the communicative involvement of students with multiple and severe disabilities in special schools. *Journal of Intellectual and Developmental Disability, 32*, 233-247.

Forlin, C. (2006). Inclusive education in Australia ten years after Salamanca. *European Journal of Psychology of Education, 21*, 265–277.

Frankel, F. D., Gorospe, C. M., Chang, Y., et al. (2011). Mothers' reports of play dates and observation of school playground behaviour of children having high-functioning autism spectrum disorders. *Journal of Child Psychology and Psychiatry* 52(5): 571–579.

Franklin, J. (2013). 'Non-deductive logic in mathematics: The probability of conjectures', in *The Argument of Mathematics*, pp. 11 - 29

Gavaldá, J., & Qinyi, T. (2012). Improving the process of inclusive education in children with ASD in mainstream schools. *Procedia - Social and Behavioural Sciences, 46*, 4072-4076.

Glaser, B., & Strauss A., (1967). T*he discovery of grounded theory: Strategies for qualitative research*. Aldine, Chicago.

Glesne, C. (2006). *Becoming qualitative researchers*. Pearson/ Allyn & Bacon.

Goldkuhl, G. (2004). Meanings of pragmatism: Ways to conduct information systems research. In *Proc. of the 2nd Intl Conf. on Action in Language, Organisations and Information Systems*, ALOIS. Linköping University, Sweden. Retrieved 29 April from https://pdfs.semanticscholar.org/cb0a/c1af70a6ae0c6ff439f5c7449940a433e1d7.pdf

Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information systems research. *European Journal of Information Systems, 21*(2), 135-146.

Goodall, C. (2015). How do we create ASD-friendly schools? A dilemma of placement. *Support for Learning, 30*(4), 305-326.

Goss, P., Hunter, J., Romanes, D., Parsonage, H. (2015). Targeted teaching: how better use of data can improve student learning, Grattan Institute.

Graham, L., & Spandagou, I. (2011). From vision to reality: Views of primary school principals on inclusive education in New South Wales, Australia. *Disability & Society,26*(2), 223-237.

Grandin, T. (2009). Commentary: Visual Abilities and Sensory Differences in a Person with Autism. *Biological Psychiatry, 65*, 15–16.

Green, A., & Sandt, D. (2013). Understanding the picture exchange communication system and its application in physical education. *Journal of Physical Education, Recreation & Dance, 84*(2), 33–39.

Griffith University, Autism Centre of Excellence [ACE] (2014). *Whole School ASD Profile.* Adapted from A. A. Webster, & J. R. Roberts, Autism Centre of Excellence ACE, who also acknowledged Positive Partnerships in the development of their tool.

Hall, L. (2013). *Classification and physiological approach. In Autism spectrum disorder: From theory to practice*. (2nd ed., pp. 1-19). Upper Saddle River, NJ: Pearson Education Inc.

Hall, L. (2015). Sustaining evidence-based practices by graduated special educators of students with ASD. *Teacher Education and Special Education, 38*(1), 28-43.

Hojnoski, R., Gischlar, K., & Missall, K. (2009). Improving child outcomes with data-based decision making: Graphing data. *Young Exceptional Children, 12*(4), 15-30.

Holdheide, L. R., & Reschly, D., J. (2008). Teacher preparation to deliver inclusive services to students with disabilities. National Comprehensive Centre for Teacher Quality. Washington DC.

Horner, R. H., Sugai, G. M., & Anderson, C. (2010). Examining the evidence base for school-wide positive behaviour support. *Focus on Exceptional Children, 42*(8), 1-14.

Hume, K., Boyd, B. A., Hamm, J. V., & Kucharczyk, S. (2014). Supporting independence in adolescents on the autism spectrum. *Remedial and Special Education, 35*(2), 102-113.

Humphrey, N. (2008). Autistic spectrum and inclusion: Including pupils with autistic spectrum disorders in mainstream schools. *Support for Learning*, *23*, 41–47.

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.

Kasari, C., & Smith, T. (2013). Interventions in schools for children with autism spectrum disorder: Methods and recommendations. *Autism, 17*(3), 254-267.

Keane, E., Aldridge, F. J., Costley, D., & Clark, T. (2012). Students with autism in regular classes: a long-term follow-up study of a satellite class transition model. *Journal of Inclusive Education*, 16(10),1001–101.

Kretlow, A. G., & Bartholomew, C. C. (2010). Using coaching to improve the fidelity of

evidence-based practices: A review of studies. *Teacher education and special education. 33*, 279–299.

Kretzmann, M., Shih, W., & Kasari, C. (2015). Improving peer engagement of children with autism on the school playground: A randomized controlled trial. *Behaviour Therapy,46*(1), 20-28.

Kucharczyk, S., Shaw, E., Smith Myles, B., Sullivan, L., Szidon, K., & Tuchman-Ginsberg, L. (2012). *Guidance & coaching on evidence-based practices for learners with Autism Spectrum Disorders.* Chapel Hill: The University of North Carolina, Frank Porter Graham Child Development Institute, National Professional Development Center on Autism Spectrum Disorders. Retrieved 11 April 2017 from http://autismpdc.fpg.unc.edu/sites/autismpdc.fpg.unc.edu/files/NPDC_CoachingManual.pdf

Kuckartz, U., & McWhertor, A. (2014). *Qualitative text analysis: A guide to methods, practice & using software*. London: SAGE Publications.

Lawson, R, P., Mathys, C. & Rees, G. (2017). Adults with autism overestimate the volatility of the sensory environment. *Nature Neuroscience, 20*(9), 1293-1299.

Leblanc, L., Richardson, W., & Burns, K. A. (2009). Autism spectrum disorder and the inclusive classroom: Effective training to enhance knowledge of ASD and evidence-based practice. *Teacher Education and Special Education 32*(2), 166–79.

Lerman, D. C., Hovanetz, A., Strobel, M., & Tetreault, A. (2009). Accuracy of teacher collected descriptive analysis data: A comparison of narrative and structured recording formats. *Journal of Behavioral Education, 18*(2), 157-172.

Lewis, A., & Norwich, B. (eds.) (2005). *Special teaching for special children? Pedagogies for inclusion*. Maidenhead: Open University Press.

Lindsay, S., Proulx, M., Scott, H., & Thomson, N. (2014). Exploring teachers' strategies for

including children with autism spectrum disorder in mainstream classrooms. *International Journal of Inclusive Education, 18*(2), 101-122.

Maddox, L. L., & Marvin, C. A. (2012). A preliminary evaluation of a state-wide professional development program on autism spectrum disorders. *Teacher Education and Special Education, 36*(1), 37-50.

Marder, T. J., & deBettencourt, L.U. (2012). Using a hybrid model to prepare special educators to teach students identified with ASD. *Rural Special Education Quarterly, 31*(3), 12-23.

Marder, T., & deBettencourt, L.U. (2015). Teaching students with ASD using evidence based practices: Why is training critical now? *Teacher Education and Special Education: The Journal of the Teacher Education Division of the Council for Exceptional Children, 3*, 5-12.

Marshall, D., & Goodall, C. (2015). The Right to Appropriate and Meaningful Education for Children with ASD. *Journal of Autism and Developmental Disorders*,*45*(10), 3159-3167.

Martinez, J. R., Werch, B. L., & Conroy, M. A. (2016). School-based interventions targeting challenging behaviours exhibited by young children with autism spectrum disorder: A systematic literature review. *Education and Training in Autism and Developmental Disabilities, 51*(3), 265-280.

Matson, J. L., & Konst, M. J. (2014). Early intervention for autism: Who provides treatment and in what settings. *Research in Autism Spectrum Disorders, 8*(11), 1585-1590.

Mavropoulou, S., & Avramidis, E. (2012). Befrienders to Persons in the Autistic Spectrum in Greece: What Support Do They Offer and What Challenges They Face? *European Journal of Special Needs Education, 27*(3), 337-353.

McCabe, H. (2008). Effective teacher training at the autism institute in the people's republic

of China. *The Journal of the Teacher Education Division of the Council for Exceptional Children, 31*(2), 103-117.

McDougall, J., Servais, M., Meyer, K., Case, S., & Dannenhold, K. (2009). A preliminary evaluation of a school support program for children with autism Spectrum Disorders: Educator and School Level Outcomes and Program Processes. *Exceptionality Education International, 19*(1), 32-50.

Menear, K. S., & Smith, S. C. (2011). Teaching physical education to students with autism spectrum disorders. *Strategies: A Journal for Physical and Sport Educators, 24*(3), 21–24.

Mesibov, G. B., & Shea, V. (2010). Evidence-Based Practices and Autism. *Autism, 15*(1), 114-133.

Mesibov, G., Thomas, J., Chapman, T., & Schopter, E. (2012). *TTAP-CV: TEACCH Transition Assessment Profile,* Second Edition. Retrieved 2 April 2017 from http://teacch.com/resources/assessment-tools

Ministerial Advisory Committee: Students with Disabilities - South Australia [MAC: SWD], (2010). *Education options for children and students with Autism Spectrum Disorder*. Retrieved 22 April 2017 from http://www.macswd.sa.gov.au/files/links/Education_Options_for_Chil.pdf

Ministerial Advisory Committee: Students with Disability – South Australia [MAC: SWD], (2015). Annual Report 2015. Retrieved 24 April 2017 from https://www.decd.sa.gov.au/sites/g/files/net691/f/maccswd-annual-report-2015.pdf

Morrier, M. J., Hess, K. L., & Heflin, L. J. (2011). Teacher training for implementation of teaching strategies for students with autism spectrum Disorders. *Teacher Education and Special Education, 34*(2), 119-132.

National Health and Medical Research Council [NHMRC]. (2007). *The Australian code for*

the responsible conduct of research. Retrieved 10 April 2017 from http://www.nhmrc.gov.au/publications/synopses/r39syn.htm

National Health and Medical Research Council [NHMRC]. (2014). *National statement of ethical conduct in human research*. Retrieved 10 April 2017 from http://www.nhmrc.gov.au/guidelines/publications/e72.

O'Brien, A., Schlosser, R., Shane, W., Abramson, H., Allen, C., Flynn, J., . . . Dimery, A. (2016). Brief Report: Just-in-Time Visual Supports to Children with Autism via the Apple Watch: ® A Pilot Feasibility Study. *Journal of Autism and Developmental Disorders*,*46*(12), 3818-3823.

Odom, S. L., Collet-Klingenberg, L., Rogers, S., & Hatton, D. (2010). Evidence-based practices for children and youth with autism spectrum disorders. *Preventing School Failure, 54*, 275–282.

Odom, S., Cox, A., & Brock, M. (2013). Implementation science, professional development, and autism spectrum disorders. *Exceptional Children, 79*(2), 233-251.

Olson, J., McAllister, C., Grinnell, L., Walters, K., & Appunn, F. (2016). Applying constant comparative method with multiple investigators and inter-coder reliability. *The Qualitative Report, 21*(1), 26-42.

Olson, A., Roberts, C., & Leko, M. (2015). Teacher-, student-, and peer-directed strategies to access the general education curriculum for students with autism. *Intervention in School and Clinic, 51*(1), 37-44.

Opfer, V.D., D.G. Pedder, & Lavicza, Z. (2011). The influence of school orientation to learning on teachers' professional learning change. *School Effectiveness and School Improvement, 22*(2),193–214.

Pas, E., Johnson, S., Larson, K., Brandenburg, L., Church, R., & Bradshaw, C. (2016). Reducing behaviour problems among students with autism spectrum disorder:

Coaching teachers in a mixed-reality setting. *Journal of Autism and Developmental Disorders, 46*(12), 3640-3652.

Ponelis, S. R. (2015). Using interpretive qualitative case studies for exploratory research in doctoral studies: A case of information systems research in small and medium enterprises. *International Journal of Doctoral Studies, 10,* 535-550.

Postholm, M.B. (2012). *Teachers' professional development: A theoretical review. Educational Research, 54*(4), 405-429.

Powell, D., Fixsen, D., Dunlap, G., Smith, B., & Fox, L. (2007). A synthesis of knowledge relevant to pathways of service delivery for young children with or at risk of challenging behaviour. *Journal of Early Intervention, 29*(2), 81–106.

Punch, K. F., & Oancea, A. (2014). *Introduction to research methods in education* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Pyramid Educational Consultants. (2016). *Picture Exchange Communication System, [PECS]*. Victoria, Australia. Retrieved 5 August from: http://www.pecsaustralia.com/

QSR International Pty Ltd. (2016). *NVivo Products*. Retrieved 11 August from: http://www.qsrinternational.com/nvivo-product

Reinke, W., Herman, K., & Stormont, M. (2013). Classroom-level positive behaviour supports in schools implementing SW-PBIS: Identifying areas for enhancement. *Journal of Positive Behaviour Interventions, 15*(1), 39-50.

Roberts, J., & Simpson, K. (2016). A review of research into stakeholder perspectives on inclusion of students with autism in mainstream schools. *International Journal of Inclusive Education, 20*(10), 1084-1096.

Ruble, L., Dalrymple, N. J, McGrew, J. H. (2012). *Collaborative model for promoting competence and success for students with ASD*. Springer.

Ruble, L., & McGrew, J. H. (2013). Teacher and child predictors of achieving iep goals of

children with autism. *Journal of Autism and Developmental Disorders, 43*(12), 2748-2763.

Saggers, B., Klug, D., Harper-Hill, K., Ashburner, J., Costley, D., Clark, T., Bruck, S., Trembath, D., Webster, A. A., & Carrington, S. (2015). Australian autism educational needs analysis – What are the needs of schools, parents and students on the autism spectrum? Full report. Cooperative Research Centre for Living with Autism, Brisbane.

Sandall, S. R., Schwartz, I. S., & LaCroix, B. (2004). Interventionists' perspectives about data collection in integrated early childhood classrooms. *Journal of Early Intervention, 26,* 161-174.

Sansosti, J. M., & Sansosti, F. J. (2012). Inclusion for Students with High-Functioning Autism Spectrum Disorders: Definitions and Decision Making. *Psychology in the Schools, 49*(10), 917-931.

Schultz, T., Sreckovic, M., Able, H., & White, T. (2016). Parent-teacher collaboration: teacher perceptions of what is needed to support students with ASD in the inclusive classroom. *Education and Training in Autism and Developmental Disabilities, 51*(4), 344-354.

Shaddock, A.J., Hook, J., Giorcelli, L., Smith, S., Elliott, A., Hoffman-Raap, L., Kilham, C., et al. (2007). *Improving the learning outcomes of students with disabilities in mainstream classes: A review of the literature from a practice standpoint.* Canberra: Department of Education, Employment, and Workplace Relations.

Smit, R., & Humpert, W. (2012). Differentiated instruction in small schools. *Teaching and Teacher Education, 28,* 1152-1162

Soto-Chodiman, R., Pooley, J., A., Cohen, L, & Taylor, M, F. (2012). Students with ASD in mainstream primary education settings: Teachers' experiences in Western Australian

classrooms. *Australasian Journal of Special Education, 36*(2), 97-111.

Spooner, F., Dymond, S. K., Smith, A., & Kennedy, C. H. (2006). What we know and need to know about accessing the general curriculum for students with significant cognitive disabilities. *Research & practice for persons with severe disabilities*, *31*, 277–283.

Stahmer, A., Rieth, S., Lee, E., Reisinger, E., Mandell, D., & Connell, J. (2015). Training teachers to use evidence-based practices for autism: Examining procedural implementation fidelity. *Psychology in the Schools, 52*(2), 181-195

START Resources. (2017). *Assessment and data tools*. START Project, Grand Valley State University. Retrieved 23 June 2017 from http://www.gvsu.edu/autismcenter/start-resources-230.htm

Stephenson, J., Carter, M., & Arthur-Kelly, M. (2011). Professional learning for teachers without special education qualifications working with students with severe disabilities. *The Journal of the Teacher Education Division of the Council for Exceptional Children, 34*(1), 7-20.

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research.* Techniques and procedures for developing grounded theory. Newbury Park, CA: Sage.

Stringer, E. (2014). *Action Research*. (4th ed.). Los Angeles, California: SAGE Publications, Inc.

Symes, W., & Humphrey, N. (2011). School factors that facilitate or hinder the ability of teaching assistants to effectively support pupils with autism spectrum disorders (ASDs) in mainstream secondary schools. *Journal of Research in Special Educational Needs, 11*(3), 153-161.

Taylor, M., Yates, A., Meyer, L. H., & Kinsella, P. (2011). Teacher professional leadership in support of teacher professional development. *Teaching and Teacher Education, 27*(1), 85-94.

Teffs, E. E., & Whitbread, K. M. (2009). Level of preparation of general education teachers to include students with autism spectrum disorders. *Current Issues in Education*, *12*(10), 29.

Terzi, L. (2004). The Social Model of Disability: A Philosophical Critique. *Journal of Applied Philosophy*. 21, 141–157.

Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2007). *Teacher professional learning and development: Best evidence synthesis iteration.* Wellington, New Zealand: Ministry of Education. Retrieved 6 May 2017 from http://www.oecd.org/edu/school/48727127.pdf

UN General Assembly. (2006). *Convention on the Rights of Persons with Disabilities.* Retrieved 5 April from http://www.un.org/disabilities/default.asp?id=150

Van De Ven, A. (2007). *Engaged scholarship: A guide for organizational and social research*, Oxford University Press, Oxford, United Kingdom.

Walliman, N. (2011). *Research methods: The basics* (Basics (Routledge (Firm). Abingdon, Oxon: Routledge.

Wilkinson, L. (2010). Best practice for intervention and treatment. In L.A. Wilkinson. *A best practice guide to assessment and intervention for autism and Asperger syndrome in schools*. (pp. 99-126). London; Jessica Kingsley Publishers Ltd.

Webster, A. (2014). Using the cycle of learning to differentiate for students with diverse needs in primary schools. *Special Education Perspectives, 23*(2), 19-30.

Webster, A. A., & Roberts, J. R. (2014). *Building the capacity of schools to achieve outcomes for students with Autism Spectrum Disorders: A pilot project*. Cairns, Australia: Department of Education, Training & Employment, Far North Queensland.

Webster, A., & Wilkinson, J. (2015). Leading school communities to implement a sustainable

school-wide model leading to enhancing learning outcomes for students with ASD. *Special Education Perspectives, 24*(1), 27-37.

Wheeler, J., Myton, M. & Carter, S. (2015). Teaming with families. In Methods for teaching students with autism spectrum disorders: *Evidence-based practices*. Upper Saddle River, NJ: Pearson Education Inc.

York-Barr, J., & Duke, K. (2004). What do we know about teacher leadership? Findings from two decades of scholarship. *Review of Educational Research, 74*(3), 255-316.

Appendix A: Teacher Information Sheet

INFORMATION SHEET
(for Participants Assignments)

Title: Autism Professional Learning Project Phase 2: Evaluation of School-based Outcomes

Researchers:
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Description of the study:
This study is part of a program evaluation entitled '*Autism Professional Learning Project: Phase 2'.* This project will evaluate a professional learning program which specialises in Autistic Spectrum Disorder (ASD). The project is support by Flinders University School of Education.

Purpose of the study:
The aim of this project is to evaluate school-based outcomes of the Graduate Certificate in Education (Special Education). The project has a number of key aims:

- To what extent do program participants use evidence-based practice to support and teach students with autism during and following their professional learning?
- To investigate whether the quality of school-based programs has improved for students with autism at participating schools (whereby leaders and teachers are participants of the PL program).
- To investigate outcomes for individual students with autism at a sample of participating schools (whereby leaders and teachers are participants of the PL program).

What will I be asked to do?
You are invited to participate in this project by submitting your student projects to the research team, who will use content analysis to identify evidence which can be used to answer the aims of the research. Additionally, some information may also be used as examples to support key research findings. All documents you provide will be confidential, and any identifiable information, including your name and student number, will be removed by your course tutors prior to being given to the research team. Your participation in this stage of the research is entirely voluntary, and you have the right to withdraw your permission for the research team to use this information at any time.

What benefit will I gain from being involved in this study?
The sharing of your experiences will assist in the improvement of the planning and delivery of the Graduate Certificate in Education (Special Education). We are very keen to deliver a program that benefits teachers, their students, and the school community in general.

Will I be identifiable by being involved in this study?
No. All identifying information is removed from the data collected before it is entered into a database, analysed or published. Publications will only report anonymous aggregated data, not school or individual data, and this will not happen without your full and informed consent. All data collected and coded will be entered into password-protected

files on the University Network, only accessible by the Flinders University research staff named above. All hard copies of the data will be kept in locked filing cabinets in the researcher's office for at least 5 years.

Are there any risks or discomforts associated with the research?
As you will be required to provide some identifiable information, your participation will not be anonymous, however, all information will be treated confidentially by the research team, and all identifying information will be removed and excluded from any published material. All data collected and coded will be entered into password-protected files on the University Network, only accessible by Flinders University research staff. The research team anticipates few other risks from your involvement in this study; however, if you have any concerns regarding anticipated or actual risks or discomforts, please raise them with the researcher.

How do I agree to participate?
Participation in this study is completely voluntary. If for any reason you choose to withdraw your consent, you may do so at any time without penalty or need to explain, and any information obtained from you will be destroyed. To do so, please notify a member of the research team. A consent form accompanies this information sheet. If you agree to participate, please read and sign the form and send it back to me at Julie.mcmillan@flinders.edu.au.

How will I receive feedback?
Information collected from this research will be analysed and presented as aggregate data in a report that will be provided to the Minister for Education and Child Development.

Questions / further information
You are welcome to ask questions about the research and raise any concerns you have before agreeing to participate. These questions can be directed to the project leader, Dr Julie McMillan.

Thank you for taking the time to read this information sheet and we hope that you will accept our invitation to be involved.

This research project has been approved by the Flinders University Social and Behavioural Research Ethics Committee (Project number XXXX). For more information regarding ethical approval of the project the Executive Officer of the Committee can be contacted by telephone on 8201 3116, by fax on 8201 2035 or by email human.researchethics@flinders.edu.au

Appendix B: Teacher Consent Form for Observation

CONSENT FORM FOR OBSERVATION OF PROFESSIONAL ACTIVITY

Autism Professional Learning Project Phase 2: Evaluation of School-based Outcomes

I hereby give my consent to Dr Julie McMillan, a researcher in the Faculty of Education, Humanities and Law at Flinders University, whose signature appears below, to record my work activities as part of a study of my professional activities and role.

I give permission for the use of these data, and other information which I have agreed may be obtained or requested, in the writing up of the study, subject to the following conditions:

1) I understand that my involvement in this research includes observation of my professional work in the classroom and that any data gathered as a result of my participation will be de-identified.
2) I have had any questions answered to my satisfaction;
3) I understand the risks involved;
4) I understand that there will be no direct benefit to me from my participation in this research;
5) I understand that my participation in this research is voluntary and the information will not in any way impact on my teaching position or my relationship with the student(s) in my class or his/her parents;
6) I understand that if I have any additional questions I can contact the research team;
7) I understand that I am free to withdraw at any time, without explanation or penalty and that does not prevent me from continuing to attend the PD workshop series or related activities;
8) While the information gained in this study will be published as explained, I will not be identified, and individual information will remain confidential.
9) I agree to participate in the project.

SIGNATURES

Participant……Date……...

Researcher……Date…….

Appendix C: Parent Consent Form for Interviews

CONSENT FORM FOR PARTICIPATION IN RESEARCH (by interview)

Autism Professional Learning Project Phase 2: Evaluation of School-based Outcomes

I ….....
being over the age of 18 years hereby consent to participate as requested in the information sheet for the research project on autism and professional learning.

1. I have read the information provided.
2. Details of procedures and any risks have been explained to my satisfaction.
3. I understand that my involvement in this research will include an interview regarding the support my child with ASD receives at school, at the beginning of the research study and at a ten-month follow-up period after the completion of the professional learning program.
4. I understand and consent to my child's Individual Learning Plan and Goal Attainment Scales being reviewed.
5. I agree to audio recording of my information and participation.
6. I am aware that I should retain a copy of the Information Sheet and Consent Form for future reference.
7. I understand that:
   - I may not directly benefit from taking part in this research.
   - I am free to withdraw from the project at any time and am free to decline to answer particular questions.
   - While the information gained in this study will be published as explained, I will not be identified, and individual information will remain confidential.
   - Whether I participate or not, or withdraw after participating, will have no effect on any treatment or service that is being provided to me.
   - I may ask that the recording be stopped at any time, and that I may withdraw at any time from the session or the research without disadvantage.
8. I have had the opportunity to discuss taking part in this research with a family member or friend.
9. I agree to participate in the project.

Participant's signature……Date……...

I certify that I have explained the study to the volunteer and consider that she/he understands what is involved and freely consents to participation.

Researcher's name…….…….....

Researcher's signature……. Date…….

NB: Two signed copies should be obtained. The copy retained by the researcher may then be used for authorisation of Items 8 and 9, as appropriate.

Appendix D: Key Terms and Definitions

Autism

Autism Spectrum Disorder (ASD) are described in the Diagnostic and Statistical Manual of Mental Disorders (5th Ed.) [DSM-5] as complex developmental disorders, which include difficulties in social communication, as well as restricted or repetitive behaviours and interests (APA, 2013).

Evidence-based Practice

Evidence-based practice refers to an approach, which draws on scientifically based research that is current and high quality, and integrated with both the client's preferences and practitioner's expert skill and knowledge (Hall, 2013; Mesibov & Shea, 2010).

Prevalence

Prevalence data indicates that there are approximately 6 per 1000 people in Australia with autism (AABASD, 2010). Approximately 11 in 1000 of these people are children, who are aged between 6 and 12 years (MAC: SWD, 2010).

Professional Development

The project describes PD as learning, which increases teachers' knowledge using ongoing site-based learning and support, that is consistent with the goals discussed for the education of children with autism in the 'Ministerial Advisory Committee: Students with Disabilities' 2010 Report' (Bevan-Brown et al., 2012; MAC: SWD, 2010).

Whole School Approach

The project positions teachers' PD within the broader school context and argues for whole school inclusive practices that support the needs of students with autism. A whole school approach towards PD requires the support of school leaders, as well as teachers, in accommodating special requirements for children with autism, with a focus on increasing awareness of autism (Bissaker et al., 2013).