

**A Content-focused, Social Constructivist Model of Professional Development:
Exploring its Effect on Adults' Knowledge of Social Communication Development,
their Style of Interaction and on Pupil Outcomes in Autism Specific Classrooms.**

Volume One of Two

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Doctor of Philosophy

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Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Doctor of Philosophy is entirely my own work, and that I have exercised reasonable care to ensure that the work is original and does not to the best of my knowledge breach any law of copyright and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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Abbreviations, Acronyms and Working Definitions

(a) From this study:

Academic Activities (AA)	Activities that involved teaching
Behaviour Directives	Seek to control/direct the pupils' behaviour
ClonadooS	Clonadoo SNA
ClonadooT	Clonadoo Teacher
Communication Cues	Expect the pupils to respond
Co-operative Activities (CA)	Activities that required input from an adult
Directive Communication	Seeks to control/direct the pupil's verbal and nonverbal behaviour
Eliciting Communication	Seeks to cajole/tempt the pupils to communicate
Facilitative Communication	Seeks to maintain the pupils' attention/interest in the interaction
LL	Learning Logs
MKO	More Knowledgeable Other
OE	Overall Evaluation
PD	Professional Development
PCK	Pedagogical Content Knowledge
Post-PDI	Professional Development Interview
Post-PD (<i>data</i>)	Data influenced by participants' engagement with professional development associated with this study.
Pre-PDI	Professional Development Interview
Pre-PD (<i>data</i>)	Data related to time before participants engaged with professional development associated with this study.
Pre-PDI	Pre-Professional Development Interview
RD	Reflective Diaries
Solitary Activities (SA)	Activities the pupil could do independently

(b) Related to autism and autism education

ABA	Applied Behaviour Analysis
AS	Autism Spectrum
ASD	Autism Spectrum Disorder
Hanen	An intervention to support children with severe language delay
MTW	More Than Words

PECs	Picture Exchange Communication System
PEP-3	Psychoeducational Profile Third Edition
Social Stories	Describe a situation and/or other's perspective, and suggest an appropriate response
TEACCH	Treatment and Education of Autistic and related Communication Handicapped Children

(c) Professional qualifications referenced`

B Ed	Bachelor's Degree in education
GCEAS	Graduate Certificate in the Education of Pupils on the Autism Spectrum
GDSen	Graduate Diploma in Special Educational Needs
M SC	Master's Degree in science
PGC ASD	Post Graduate Certificate in Autistic Spectrum Disorders
PGD Ed	Post Graduate Diploma in Education
PGDSen	Post Graduate Diploma in Special Educational Needs

(d) General

CFG	Critical Friends Group
Crisis Prevention	Strategies to promote a safe environment
DefS	Department for Education and Skills (GB)
DES	Department of Education and Skills (Ireland)
FETAC	Further Education and Training Awards Council
IDEA	Individuals with Disabilities Education Act
MCDI	MacArthur Communicative Developmental Inventory
NCLB	No Child Left Behind Act
NCSE	National Council for Special Education
NRC	National Research Council
PLC	Professional Learning Community
Primary	First level of formal education in Ireland, traditionally 4yrs to 12 yrs
RoI	Republic of Ireland
Secondary	Second level school for pupils aged 12-18 yrs
SEN	Special Educational Needs
SESS	Special Education Support Service
SNA	Special Needs Assistant

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**A Content-focused, Social Constructivist Model of Professional Development:
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on their Style of Interaction and on Pupil Outcomes in Autism Specific Classrooms.**

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Abstract

The number of children diagnosed on the autism spectrum (AS) both nationally and internationally has increased dramatically. Development of social-communication abilities is a major difficulty faced by these children. Challenges include attending to others, initiating and responding to social interactions and using and responding to verbal and non-verbal communication. Research has shown the positive impact of supporting parents to adopt facilitative interaction strategies on the social-communication abilities of their children on the AS. However, there is a paucity of research exploring the impact of enhancing teachers and school support staff's knowledge and use of such strategies. In response to this, a model of professional development was developed by the researcher for this study. The model was informed by the researcher's social constructivist view of teaching and learning.

This study explored the impact of a nine-month professional development initiative on the social-communication behaviours of a teacher, a Special Needs Assistant (SNA) and a young pupil on the AS in five different autism-specific classrooms. The research questions were:

1. Did professional development (PD) in communication-promoting strategies have a discernible impact on how the classroom adults interacted with their young pupils?
2. What were the effects on the social-communication skills of young infrequent communicators on the AS when classroom staff participated in the PD initiative?
3. What were the adults' perceptions of their participation in the social-communication professional development initiative?
4. How did the presence of an external "More Knowledgeable Other" (MKO) impact on the adult participants' learning within this model of PD?

Using a multiple case study approach, data were collected across five cases using pre and post semi-structured interviews, formal assessment, observations, reflective diaries, discussion fora, learning logs, and questionnaires. Qualitative and quantitative analysis techniques were used to explore the data.

The adults changed their interactive style, decreasing their use of “directive” communication considerably and adopting a mainly facilitative approach. The duration of positive shared engagement between the adults and their pupil on the AS increased significantly. The pupils’ rate of communication increased, particularly their initiations. The outcomes for the pupils’ language use were mixed. The outcomes were influenced by the context of the interactions and the pupils’ learning characteristics. The adults reported significant benefits arising from their participation in the PD for themselves, other pupils in their class and the school community. The More Knowledgeable Other (MKO) played a pivotal role in supporting adult learning within the initiative.

The findings from the study suggest that effective professional development for school staff working with pupils on the AS include pedagogical content knowledge (PCK) contextualised to the participants’ needs, opportunities for implementation of the PCK, a MKO to support deeper participant learning and, learning activities that promote reflection.

Chapter One: Introduction

Purpose of Study

This study investigated the effectiveness of a professional development (PD) initiative which enabled teachers and Special Needs Assistants (SNAs) from five autism primary school classrooms in Ireland to expand their own use of social interactionist strategies as a means of improving the social interactions occurring between their young pupils and themselves. The researcher developed, implemented and evaluated a framework for PD for staff working with pupils on the autism spectrum (AS) who had not yet become frequent clear, prelinguistic or linguistic communicators. For the purpose of this study, this cohort of pupils will hereafter be referred to as infrequent communicators.

This chapter begins with a statement of the research questions. A brief description of the theoretical framework and research design is presented, followed by an outline of the purpose of and rationale for the study. The background to the study is then presented, setting the context for the professional development for school staff working with pupils on the AS. The background is presented in two subsections: the first relates to autism, social-communication and language difficulties associated with the diagnosis and how these difficulties are addressed. The second section looks at professional development of staff working with pupils on the AS in Ireland. The chapter concludes with an overview of the whole study.

The specific research questions are-

Does professional development in communication-promoting strategies have a discernible impact on how the classroom adults interact with their young pupils?

What are the effects on the social-communication skills of infrequent communicators on the AS when their classroom adults participate in a professional development initiative which promotes communication?

What are the adults' perceptions of their participation in the social-communication professional development initiative?

How did the presence of an "external More Knowledgeable Other (MKO)" impact on the adult participants' learning within this model of PD?

Theoretical Framework and Research Design

The study sought to contribute to the improvement of staff knowledge and practice within autism-specific classrooms, which would ultimately lead to better social-communication and language outcomes for their pupils. It also sought to explore the effectiveness of the social constructivist model of professional development adopted, and whether variables such as individual participants' traits or quality of participation within the PD process would lead to differing outcomes. A pragmatic approach (Johnson & Onwuegbuzie, 2004) was adopted to explore the multiple realities anticipated (Krauss, 2005). This design allowed the researcher to use a combination of quantitative and qualitative methods to provide a better understanding of the outcomes. A range of data collection methods were used to explore the research questions including interviews, video analysis, discussion fora, reflective diaries, learning logs and questionnaires. A multiple case study design was adopted to capture sameness and unique differences arising from the PD initiative.

Rationale and Context of the Study

The study was concerned with the impact of developing the professional expertise of adults working with young pupils on the AS in primary education settings in Ireland with specific reference to positively influencing those adults' social interaction styles. The study's focus on social interaction should be considered in the context of the social-communication difficulties commonly highlighted in diagnoses of autism and this chapter presents a brief overview of those social-communication difficulties, the cognitive and speech difficulties that may co-occur with autism spectrum disorder, and approaches used to ameliorate these difficulties. The rationale for focusing on professional development of adults working in school settings will be discussed in the context of the prevalence of autism, the educational provision for pupils on the AS in Ireland and the current professional development provision for staff involved in the education of pupils on the AS in Ireland.

Social-communication difficulties and autism.

Autism spectrum disorder (ASD) is a neurological developmental condition characterised by persistent nonverbal and verbal social-communication and social interaction difficulties, restricted interests and repetitive behaviours that typically present

from early childhood (American Psychiatric Association (APA), 2013). According to the Diagnostic and Statistical Manual V (DSM-V; APA, 2013), social-communication difficulties include problems with social-emotional reciprocity such as initiating and maintaining back and forth conversations and interactions, and with difficulties sharing attention, sharing interests, emotions or affect with others. Difficulties in social interactions range from lack of interest in other people to difficulties establishing and maintaining relationship with peers. Social-communication difficulties experienced by children on the AS can seriously impair the quality of their engagements with others (Emam & Farrell, 2009; Robertson, Chamberlain, & Kasari, 2003). Limited nonverbal and verbal communication skills undermine the influence individuals have on their environment reducing the control they have over their lives (Brodin & Stancheva-Popkostadinova, 2009; Buckley, 2003). Lack of ability to have control and to express needs and wants in a conventional manner may lead to challenging behaviour such as self-injurious behaviour, aggression, and outbursts (Wetherby, 2008).

Cognitive delay and autism.

Social-communication difficulties vary greatly, ranging from mild to severe, depending on the level of severity of the disorder, cognitive delay, language impairment and chronological age (APA, 2013). There is no consensus about the rates of cognitive delay co-occurring with ASD. Fombonne (2003) suggests that the rate is 70% while Shea and Mesibov, (2005) report that it is as high as 80%. A study carried out in 2012 across 11 sites in the United States found that, within the population of 3,390 eight-year-old children screened, 31.6% had an intellectual disability, 24.5% were in the borderline range and 43.9% were in the average or above average range (Christensen et al., 2016). These numbers suggest that almost 1/3 of pupils on the AS enrolling in schools have comorbid cognitive delay. Cognitive delay in conjunction with social-communication difficulties exacerbates difficulties pupils have in accessing learning. The pupils in this study were all reported to have co-occurring cognitive delay.

There is also a lack of consensus on the number of children on the AS who do not develop speech. Earlier research estimated that up to 50% remain nonverbal (Schreibman, 1988; Wetherby & Prizant, 1992), while Bondy and Frost (1995) suggested the rate was as high as 80%. However, more recent research found that the number of non-speakers with ASD is reducing. Anderson et al. (2007) followed 84 children on the AS who were two

until they were nine years of age; 29% remained nonverbal (used less than five words daily) after the age of eight. Wodka, Mathy and Kalb (2013) verified this finding as 30% of the 535 children on the AS in their study who were nonverbal at four years old remained nonverbal after the age of eight. The pupils in this current study were all less than eight years old; one pupil was nonverbal while the other four were reported by their teachers to be infrequent communicators at the outset. The study sought to explore the impact of enhanced adult social interaction skills on the nonverbal and verbal communication abilities of these pupils.

Addressing the difficulties associated with a diagnosis of autism.

To date there are no biological markers that definitively diagnose autism (Volkmar, Chawarska, & Klin, 2008). Rather, diagnosis is based on the observation of a set of specific behaviours which indicate the presence of autism. Currently, there is no medical cure for the disorder. The primary routes for addressing the difficulties are interventions with the children's families and through the education system (Bailey, 2008; Jordan, 2008; Lord et al., 2005; National Research Council (NRC), 2001).

The importance of having high quality teaching occurring in classes to ensure each pupil on the AS maximises his/her full potential has been acknowledged in several national and international reports (Daly et al., 2016; Department of Education and Science (DES); 2001; 2006; Department for Education and Skills (DfES), 2002; National Initiative for Autism: Screening & Assessment (NIASA), 2003; NRC, 2001). Pupils on the spectrum enrolled in educational settings in the Republic of Ireland spend a minimum of twenty hours each week under the responsibility of the teacher, highlighting the pivotal role a teacher has in determining the outcomes for these pupils. This significant influence of teachers on their lives has been flagged by able adults on the spectrum (Gerland, 2003; Grandin, 2006; Shore, 2015), with Grandin (2006) stating in a radio interview, "I have found that the most important thing is a good teacher. Some teachers just know how to work with a child and get progress and others don't. And you need lots of hours with a good teacher."

High quality teaching in any setting requires the teacher to focus on the individual learner, to understand what methods the learner is using to access learning and what changes are required to ensure that obstacles encountered by the learner are overcome (Koenig, 2010). In the context of autism, Jordan (2005) suggests that teachers require

more than formal knowledge of the disorder; they require an understanding of how autism impacts on pupils on the spectrum as a group, and how autism impacts on each pupil, “at a particular time and in a particular learning environment” (p. 112). She advises that teachers require the ability to make changes not only by adapting the curriculum, but also adapting their pedagogical approach and the environment in which the teaching occurs, taking into consideration group and individual needs of pupils on the spectrum (Jordan, 2008).

Pupils on the autism spectrum play a pivotal role in their own learning. The nature of their autism and each pupil’s strengths and needs (learning temperament, cognitive ability, interests) are pivotal in influencing the level to which s/he accesses learning. While learning may occur through solitary pursuits (e.g. reading, television, trial and error), we know from established theoretical and empirical research across the fields of child development (Bruner, 1981), psycholinguistic (Vygotsky, 1978a) and sociolinguistic research (Carpenter, Nagell, & Tomasello, 1998), that early communication and language skills are acquired through adult-child interactions in social contexts. Within this social constructivist model of communication and language learning in an autism context, the skills the pupil and communication partner bring to the interaction will impact on the child’s progress.

The complexities inherent in addressing the educational needs of young pupils on the AS are exacerbated by the fact that many children on the AS are much slower at making the transition from prelinguistic stage to the linguistic stage of communication than neurotypical children (Wetherby, 2008), resulting in pupils who are still in the prelinguistic stage enrolling in schools. Further, many pupils present in school with gaps in their prelinguistic social-communication skills. Yet speech is the primary mode through which the curriculum is mediated. Pupils who are at this very early stage of social-communication development present teachers with serious challenges in relation to addressing the national curriculum (DES, 2006; Daly et al., 2016).

An evaluation of education provision for pupils on the AS across a range of settings, carried out by the Department of Education and Science (DES) in Ireland in 2006, identified the specific need to address social-communication difficulties, stating that the curriculum should “...include strategies that help the child understand the purpose and value of communication. It should address the social aspects of language, such as turn-

taking, active listening, topic introduction, maintenance, and change” (DES, 2006, p. 83). The issue of curriculum for pupils on the AS has also been highlighted by Jordan (2005), who believes that pupils on the AS “are entitled to a broad and relevant, not necessarily balanced, curriculum” (p. 119) and suggests that the curriculum should address the specific needs of the pupils to maximise their access to learning. In a more recent review of education provision for Irish pupils on the AS carried out by Daly et al. (2016), principals and teachers identified the challenge of supporting the learning of some pupils on the AS because of their lack of attention to their environment. In that same study, teachers of younger pupils on the AS believed that the requirement to address a range of subjects in the curriculum took them away from addressing the specific needs of their pupils on the AS. They reported trying to fit the pupil to the curriculum when often the pupil did not have the ability to access what was being taught.

Yoder and Warren (2002) advise that if a pupil has not reached the stage of understanding and using speech then it would be more beneficial to target prelinguistic skills because these skills “are more within the child’s zone of proximal development than speech” (p. 1159). Having intact prelinguistic skills provides the children with the same communicative functions of more conventional communication (Bruner, Roy, & Ratner, 1980). Further, intact prelinguistic skills are thought to be the foundation on which language is acquired as they elicit responses from responsive communicative partners that support language development (Warren & Yoder, 1998). Knowledge of pedagogical approaches to support the development of those absent social-communication skills, and to support the pupils’ transition from prelinguistic to the linguistic stage of social-communication, is pivotal for staff working with these developmentally young learners on the spectrum (Jordan, 2005; Ravet, 2011).

A strong body of research identifies the aspects of early communication which present particular difficulties for children on the AS (Kim, Paul, Tager-Flusberg, & Lord, 2014; Paul, 2008a; Twachtman-Cullen & Twachtman-Reilly, 2007; Wetherby, 2008). Equally, we know from wider research in early language and communication development, and from research within the specific field of autism, that particular styles of adult interaction support the development of these early communication skills (Diken & Mahoney, 2013; Dunst & Kassow, 2004; Girolametto, Sussman, & Weitzman, 2007; Kassow & Dunst, 2004; Landry, Taylor, Guttentag, & Smith, 2008; Mahoney & Perales, 2003; Mahoney, Perales, Wiggers, & Herman, 2006; Mahoney & Powell, 1998). Drawing

from the research evidence and from experience as a practitioner in the field, the focus of this study was the development of a programme of professional development that acquainted the classroom adults with a repertoire of communication strategies, supported them in the implementation of these strategies with infrequent communicators in their classrooms and explored the effectiveness of that professional development.

Supporting Social-Communication and Language Development in Individuals on the Autism Spectrum

While there is a consensus amongst theorists and researchers about the need to address the social-communication difficulties associated with autism spectrum disorder, there is disagreement on how best to address them. Three main approaches have been used to support the development of communication and language in children on the AS; behaviourist, or adult directed; naturalistic behavioural and developmental approaches.

Behaviourist approach.

The behaviourist approach (also labelled the didactic or directive approach) uses teaching techniques derived from applied behavioural analysis (Paul, 2008a). The adult directs and controls the teaching that occurs in a highly structured environment. The pupil is in a passive responder role. Teaching techniques include highly repetitive practice of preselected tasks aided by the use of teaching strategies such as prompts, shaping, chaining and fading to teach the new behaviours through rote teaching drills. Systematic reinforcement is used to increase the frequency and consistency of the behaviours being taught. Data are taken on each presentation of the behaviour to be learned and these are examined to ascertain whether the skill has been achieved or not. This approach to the development of social-communication and language skills theorises that language skills, like any other behaviours, are developed by environmental events that precede (antecedent) and or follow (consequence) them (Ingersoll & Dvortcsak, 2010). There are a number of criticisms levelled at this approach to the teaching of social-communication and language. One of the main criticisms is that the “form” of communication (i.e. speech) rather than the skills that underpin the development of language. Another criticism is that the approach ignores the critical role social interaction plays in the development of communication and language, and such a didactic approach inculcates an imbalanced communicative relationship (adult always as the initiator, learner always as the passive recipient) thus reducing opportunities for spontaneous initiations (Volkmar & Weisner,

2009). Also, the opportunities to use what is learned in the massed practice sessions in a functional and general manner are absent (Chiang & Carter, 2008; Rogers, 2008; Watson, McComish, Lanter, & Poston Roy, 2004). Further, the communication and language skills taught in the highly structured environment fail to generalise into other environments (Woods & Wetherby, 2003).

Naturalistic behavioural approach.

The naturalistic behavioural approach adheres to behaviourist principles and teaching strategies, while attempting to address the limitations of the didactic behaviourist model. Teaching within this model occurs incidentally in the context of on-going, naturally occurring activities such as play or daily routines rather than in a highly structured environment (normally used in a behaviourist) approach and is initiated by the learner's behaviour rather than being adult led. The adult prompts the child to elicit the target behaviour and the approach encourages reciprocity between the adult and child (Ingersoll & Dvortcsak, 2010; Rogers, 2008). The interests of the child are used as an integral aspect of the approach. The main criticisms of this approach are the level of training required by the teacher to ensure that the procedural integrity of the behaviourist principles is adhered to within such an unstructured environment (Suhrheinrich et al., 2013) and that the teacher needs to have the behavioural techniques and principles at his/her finger tips so that the moment to moment decision making about the learning is made in a prompt and informed manner (Paul, 2008). Further, the pivotal role of the child in his/her own learning is not taken into consideration by the teacher in behavioural approaches.

Social interactionist approach.

The social interactionist approach to communication and language learning (Prizant, Wetherby, & Ryndell, 2000) is rooted in the social-constructivism perspective of development (Vygotsky, 1978b). This approach is underpinned by a number of principles that are in contrast to those of behaviourism. It sees language development as emerging within the context of affect laden social interactions between the child and the responsive adult (Wetherby, Prizant, & Schuler, 2000; Woods, Wetherby, Kashinath, & Daly Holland, 2012). It recognises the child as an active participant rather than a passive recipient of training by the adult (Vygotsky, 1978a; Prizant, Wetherby, & Ryndell, 2000). The adult recognises the importance of the child's role and facilitates the child's participation in the

interaction through the use of responsive strategies that include environmental arrangements (e.g., by creating motivating contexts, using motivating resources), adjusting their communication style to match the needs of the child, interpreting all of the child's behaviours as communicative and using a facilitative rather than a directive style of adult interaction (Prizant et al., 2000; Woods et al., 2012). The social interactionist approach recognises the child's communicative level and supports social-communication and language development from there or slightly above that level rather than setting a target and expecting the child to achieve it (Prizant et al., 2000). Furthermore, this approach to communication and language learning, places more emphasis on supporting the development of prelinguistic skills rather than concentrating solely on the development of speech (Paul, 2008; Rogers, 2008; Woods et al., 2012).

Interventions underpinned by this perspective advocate the establishment of “strong, affectionate interpersonal relationships” (NRC, 2001, p. 147) as they recognise that the more the child interacts with the adult the more s/he encourages the adult to interact with him/her and from these interactive cycles the child's social-communication and language strengthens and develops (Girolametto, Sussman, & Weitzman, 2007). Interventions based on social interactionist approaches are particularly relevant for supporting the development of communication and language of children on the AS, as the social disinterest characteristic of autism is acknowledged, and the interventions use a variety of interactive strategies that help the adult to become more responsive to the child. Social interactionist interventions that have been used with pupils on the AS and other pupils with special education needs (SEN) include “Developmental, Individual-Difference, Relationship-Based model” (DIR) (Greenspan & Wieder, 1999), “Responsive Teaching” (Mahoney & Perales; 2003; Mahoney et al., 2006) and “Hanen” (Manolson, 1992). These interventions encourage adults to be observant, to build on what the child does and says and to use responsive interactive strategies that focus on reciprocity, shared control, positive affect, and responding to the child's behavioural state within everyday activities.

The main weakness of social interactionist approaches is the small number of studies that examine their effectiveness in comparison to the abundant research carried out on behavioural interventions (Paul, 2008; Rogers, 2008). The research that has been carried out shows that the use of the social interactionist strategies can lead to positive outcomes for very young children on the AS (Aldred, Green, & Adams, 2004; Field, Field, Sanders, & Nadel, 2001; Girolametto et al., 2007; Hwang & Hughes, 2000; Ingersoll, Dvortcsak,

Whalen, & Sikora, 2005; Klinger & Dawson, 1992; Mahoney & Perales, 2003; Mahoney et al., 2006; Siller, Hutman, & Sigman, 2013; Venker, McDuffie, Weismer, & Abbeduto, 2011). However, in these studies, the strategies were implemented by the children's parents or by therapists. There is a dearth of research exploring the use of social interactionist approaches with school-going children. Further, the use of these approaches by school staff has rarely been researched. This current study seeks to address these gaps and to add to the existing knowledge on the effectiveness of social interactionist strategies by supporting school staff to use them with their pupils on the AS.

Other criticisms of social interactionist approaches include the requirement for in-depth training on the strategies that target the compromised communicative behaviours and the on-going support required for the implementation of the strategies to ensure success of the intervention (Paul, 2008; Rogers, 2008). The researcher acknowledging these criticisms embarked on this study as she believed that pupils on the AS would benefit greatly if staff in autism classes embraced social interactionist strategies. She adopted a social constructivist framework (Vygotsky, 1978b) for the initiative believing that the adults' knowledge would develop through collective dialogues, reflection and problem solving in the presence of a More Knowledgeable Other. She adopted the role of a "more knowledgeable other" to support learning within the group by providing pedagogical content knowledge (PCK) and facilitating an appropriate learning environment.

Autism-specific Professional Development

The importance of researching autism-specific professional development in Ireland is underscored by the increase in the number of pupils with a diagnosis of autism, the growth in the number of staff working with pupils on the spectrum in school settings and the availability and nature of professional development available to the school staff.

Prevalence of autism.

There is national and international agreement that there has been a dramatic increase in the number of children diagnosed with autism spectrum disorder in recent decades (Hill, Zuckerman, & Fombonne, 2015; Isaksen, Diseth, Schjølberg, & Skjeldal, 2013; National Council for Special Education (NCSE), 2015). The increase in diagnosis has been attributed to a greater awareness of the disorder, changes in diagnostic criteria, a growth in

assessment teams, and parental determination for support for their child (Boilson, Staines, Ramirez, Posada, & Sweeney, 2016).

A recent study carried out in Ireland by Boilson et al. (2016) identified the number of 6-11-year-old pupils with a diagnosis of autism as 1% of the 9,000 pupils screened. However, the National Council for Special Education (NCSE), a statutory body tasked with planning and co-ordinating provision of educational supports in Irish schools reported that 1.55% of the general pupil population receive additional support because they have a diagnosis of autism (NCSE, 2015). There were 14,598 individuals aged between 2 years, six months and 18 years old receiving autism-specific support funded by the Department of Education and Skills (DES) in 2014. Almost 70% of those, (10,199 pupils) were receiving autism-specific support in early intervention classes, mainstream and special classes in primary schools, in special schools or receiving home tuition (NCSE, 2015). The other 30% were in post primary level schools. It can be deduced from these numbers that most Irish schools have or will have pupils on the AS enrolled and that most Irish teachers will teach a pupil on the AS during their teaching career, highlighting the pivotal need to support school staff in addressing the specific difficulties associated with a diagnosis of autism.

Educational provision for pupils on the autism spectrum in Ireland.

Since the recognition of the distinct special educational needs of pupils on the AS by the Minister for Education and Science in 1998 there has been an annual growth in “autism-specific” educational provision in Irish schools. Children with a diagnosis of AS over the age of three years may enrol in an early intervention class. In the academic year following their fourth birthday they transition to either a mainstream or autism-specific classroom. Those with more significant needs generally enrol in autism-specific classes in mainstream or special schools. There are 127 early intervention classes and 670 autism-specific classes in primary and special schools (NCSE 2015). These classrooms have a pupil-teacher ratio of six to one and have a minimum of two SNAs supporting the teacher. The numbers identified above suggest that almost 800 hundred teachers and a minimum of 1,600 SNAs work with pupils who are not yet frequent communicators. This study seeks to explore the impact of enhancing the knowledge of five teachers and five SNAs in supporting social-communication and language development of this cohort of pupils.

Autism-specific professional development for school staff.

Since the introduction of autism-specific education provision in 1998 there has been acknowledgement in a number of national reports of the importance of education and training for teachers and support staff working with pupils on the AS. The Task Force on Autism (Department of Education & Science (DES), 2001) recognised that “Teaching methods and standards are very closely linked to learning outcomes for all children.” (p.250) and recommended that, “...all staff working with children and families with ASDs receive specific training” (p. 267). The report specially mentioned the need to provide training for SNAs “It is also essential that special needs and childcare assistants working with persons with ASDs receive adequate education and training” (p. 250). The report acknowledged the individuality of each pupil on the AS advising that “all members of staff were made aware of and sensitive to the specific and differing needs of children with ASDs” (p.186). Further, it identified the need for all staff to have training in how “...to maximise communicative environments for children” (on the AS) (p. 267).

Five years after the Task Force report an evaluation of educational provision for pupils on the AS across a range of settings in Ireland carried out by the DES reported that staff believed that they lacked adequate training and that there was a need for continuous and accessible training for all school staff (Department of Education and Science (DES), 2006). In 2015, a report by the National Council for Special Education (NCSE) acknowledged that since the publication of the Task Force Report (2001) many teachers had training in the education of pupils on the AS but recommended teachers in autism-specific settings required “further skills in...selecting and implementing appropriate evidence informed interventions” (p. 8).

The pivotal need for specialised training of all staff is also echoed internationally. The No Child Left Behind Act (NCLB) (2002) and The Individuals with Disabilities Education Act (IDEA) both emphasise the need for highly qualified teachers to implement research-based practices (Taylor, 2005). “Highly qualified” requires proven knowledge of the content taught (NCLB, 2002). The NCLB requires that each US state ensures that paraprofessionals are also highly skilled. The National Research Council (NRC) (2001), tasked by the U.S Department of Education’s Office of Special Education Programs with exploring the scientific evidence of the effects of early educational intervention on young pupils on the AS reported that, “Teachers ... and paraprofessionals who often provide the

bulk of service to very young children need familiarity with the course of autistic spectrum disorders and the range of possible outcomes and with many methods that fit into best practices” (pp.7-8). They (NRC) advise, “...many qualified special education and early intervention teachers have little experience or knowledge about specific communication problems, limited social skills and unusual behaviours of children with autistic spectrum disorders” (p. 186).

Autism-specific professional development for teachers in Ireland.

Currently there are two state funded/partially funded post graduate autism programmes offered annually to teachers in Ireland; “Graduate Certificate in the Education of Pupils on the AS” (GCEAS) DCU, Dublin and “Post Graduate Certificate /Diploma in Special Educational Needs (ASD)” St. Angela’s College, Sligo. A total of 43 places are available to teachers working across the education continuum (early intervention, primary, post-primary and special school classes) and whose pupils differ in age, cognitive ability and severity of autism. The diverse makeup of the participants limits the opportunities for in-depth exploration of context specific issues. This study seeks to explore the effectiveness of a professional development initiative that is tailored to the specific needs of a particular group of teachers; those who are working with pupils who have not yet become frequent communicators.

A suite of DES funded short courses relating to a range of autism-specific topics is also available annually to teachers working with pupils on the AS. These courses are provided (usually free of charge) by a national support service (Special Education Support Service (SESS)) whose remit is to enhance the quality of teaching and learning in relation to special education provision in schools in the Republic of Ireland (RoI). Appendix 1 is a list of all of the courses on offer to teachers working with pupils on the AS in the RoI for the academic year 2017-2018. On first glance the range of courses available is laudable. However, only five of the 27 courses offered related to the topic of communication and language; Floor time (1day), Intensive Interaction (1day), Lámh (an augmentative communication system) (1day), Language & Communication (Pre and early verbal pupils on the AS) (2 day); Language & Communication (mainstream) (4 day). The courses are available to teachers from a wide range of contexts suggesting that PCK may not always match the context in which the teacher works.

This mismatch between PD pedagogical content knowledge and the context in which the teacher worked was articulated by the principals and teachers in “An Evaluation of Educational Provision for Pupils with Autism Spectrum Disorder in Ireland” carried out by Daly et al. (2016). One teacher remarked “Sometimes you don’t always come away feeling that this (course) has helped your class...it would be nice if we could do our course as a group of teachers here as opposed to going off meeting resource teachers and learning support teachers” (p. 65/66). Another teacher believed that the individuality of each pupil on the AS required that the teacher up-skill through a range of PD courses to ensure that each individual pupil’s needs are addressed. This need for context specific PD was also acknowledged in a policy advice report on supporting pupils on the AS in schools carried out by the NCSE in 2015 with a recommendation stating, “Sufficient comprehensive programmes of professional learning in ASD are funded, developed and made available for mainstream primary and post-primary teachers and teachers in specialist roles and settings which are tailored to the particular needs of each cohort of teachers” (NCSE, 2015, p. 148).

It is also widely accepted across professional development literature that for effective learning to occur, course participants require multiple opportunities to revisit and interrogate the content, to implement the content, and to discuss the effect of the content implementation (Darling-Hammond & Richardson, 2009; Fullan, 2006; Guskey, 2002; Little, 2003). Short courses by their nature do not provide such opportunities.

This study sought to explore the effectiveness of a PD model that brought together a number of aspects that are evident in some but not all of the courses on offer to teachers of pupils on the AS in the RoI. The PD addressed a specific topic (similar to once off courses but unlike the post graduate courses). The PCK relating to supporting social-communication and language of pupils on the AS was introduced to the adults over an extended period and opportunities for the implementation of the PCK in their own context was provided (similar to the post graduate and unlike the once off courses). Reflection and discussion on the implementation of the content occurred amongst the participants and course provider (some similarity to the post graduate courses). Further, this study targeted a specific group of teachers that is, teachers who have young pupils who are not yet frequent communicators rather than offering the PD to teachers across the continuum of education.

Autism-specific professional development for Special Needs Assistants (SNAs).

Since the introduction of autism-specific education provision there has been exponential growth in the provision of state-funded Special Needs Assistants (SNA). Despite recommendations from a number of reports (Daly et al., 2016; DES, 2001, 2006; House Of the Oireachtas, Joint Committee on Education and Social Protection, 2016) on the need to train this cohort of school support staff, the PD courses mentioned in the previous section are not available to SNAs. The 2006 DES report “An Evaluation of Educational Provision for Children with Autistic Spectrum Disorders” identified the need to train SNAs noting that all staff who support the teaching of pupils on the AS required professional development in “pedagogical principles and approaches” (p. 82). The report specifically advocated the provision of training for SNAs recommending, “Appropriate training courses to meet the requirements of special needs assistants who support teachers in teaching pupils with ASDs” (p. 83). This need for professional development for teachers and SNAs was called for by staff across the wide range of settings evaluated. Ten years later in a further evaluation of educational provision concerns were raised by teachers and SNAs across all of the settings (early intervention, mainstream and special classes in primary schools, post primary schools, autism-specific and special schools) about the lack of PD opportunities for SNAs (Daly et al., 2016). The 2016 Oireachtas report advised that, “SNAs should be provided with opportunities to avail of CPD relevant to their work and similar to that of teachers. SNAs should be allowed to participate in CPD for teachers where open places are available...” (House of the Oireachtas, Joint Committee on Education and Social Protection p. 13). The main process for gaining knowledge on autism by the SNAs reported by schools (Daly et al., 2016) was attending self-funded courses in their own time, attending school meetings where topics were discussed, incidental information in the staffroom, and mentoring by the teacher.

Despite the enormous financial commitment by the government in providing SNA support, this expenditure occurs without any recognition that merely providing additional personnel may do little to support the development of the pupil on the AS (Jordan, 2005). Perhaps the reason for this lack of state-funded professional development opportunities is answered in the role of the SNA as described by the DES, “Special Needs Assistants (SNA) are recruited specifically to assist in the **care** of pupils with disabilities in an educational context” (DES, 2002, p.1). This role was reiterated in 2014 (DES, 2014). The 2002 circular outlines the types of duties within the remit of the SNA for example,

assisting the pupil with self-help skills, assisting the teacher with supervision of the pupils, assisting the pupils on walks and trips. However, it is these particular routines that are highlighted in the literature as being pivotal for communication and language development (Bruner, 1981; 1983). The linguistic responsiveness of the adult to the child's communicative attempts is considered pivotal in the development of receptive and expressive language (Carpenter et al., 1998; Hoff & Naigles, 2002; Tamis-LeMonda, Bornstein, & Baumwell, 2001). Arguably training SNAs in appropriate ways of enhancing their interactions during these routines would seem an appropriate way of supporting pupils with ASD. Conscious of the pivotal role of all adults in supporting communication and language development, this study included SNAs in a PD initiative so that the information shared about social interaction strategies was gained by both teachers and SNAs together. The focus of the study then was to provide a PD initiative which would enable teachers and their SNAs to develop their use of social interactionist strategies as a means of improving the social interactions occurring between them and their young pupils.

Overview of the Study

Chapter two reviews the literature relating to the main elements within the study. In the opening section, the theories and literature which inform the design of effective professional development (PD) are reviewed and discussed. In section two, the literature relating to the social-communication difficulties of young children on the AS is reviewed. This section also includes a review of the literature on the interaction styles of the communicative partners of children on the AS and the influence of these styles on the children's development of social-communication and language.

Chapter three presents a conceptual framework and rationale for choosing a multiple case design as a research strategy. The stages of the study are outlined. The participant profiles are described, and ethical concerns are considered. The research instruments utilised which included, interviews, classroom observations, discussion fora, diaries, questionnaires and learning logs are described, and a description of the data analysis methodology is provided. Validity and reliability issues are also discussed.

Chapter four focusses on the quantitative findings relating to the learning outcomes for the adults and the pupils. It reports on the communicative style of the adults, the duration and balance of the adult-child interactions and the frequency, nature, role and

function of the pupil's communication prior to and following the conclusion of the PD process.

Chapter five presents the findings on the engagement of the adults with the PD and their experiences of being a participant in the initiative. Findings relating to the role of the researcher at the PD meetings in supporting the adult participants' learning are reported in chapter six. Drawing together the findings from chapters four, five and six, chapter seven presents analysis using a social constructivist lens.

Chapter eight presents the conclusions and implications for future professional development initiatives and further research arising from this study. Limitations of the study are also identified.

Chapter Two: Literature Review

The overall aim of this study was to develop the social-communication skills of young pupils on the AS through enhancing the social interaction abilities of their classroom adults. The theoretical and empirical literature reviewed in this chapter will be presented in two sections. The first section reviews the literature on PD and includes an exploration of models of PD which informed the selection of a model best suited to supporting change in the social interaction style of adults working in classes for pupils on the AS. The components that underpin effective PD will be critiqued, and the influence of these components on affecting change in the classroom will also be reviewed. The second section reviews the social interaction difficulties presented by young children on the AS, the interaction style of their communication partners and the effect of adult communication style on interactions. The chapter concludes with a review of the impact of training communicative partners in social interactionist strategies.

Although five of the ten adult participants in this study were not teachers, the literature in this chapter mainly relates to teachers as there is a dearth of research carried out with classroom support staff. Further, the empirical professional development literature reviewed pertains to curricular areas such as mathematics, reading and science rather special education due to a dearth of literature relating to professional development for practitioners involved in special education.

Literature Search Strategy

At the outset and throughout the study, books and ebooks from the DCU library were reviewed that related to autism and professional development. Recent texts were purchased from publishers including, Brookes, Guilford, Wiley, Fulton, Cambridge, Whurr, & Jessica Kingsely, Routledge, Sage, Springer websites if the table of contents contained topics relevant to the research. Online data bases were continually explored using authors cited in these books for their most recent work on the topics. Studies referenced in these texts were also sourced. Relevant theses and dissertations were accessed through the DCU Library catalogue, Irish and International databases such as, Doras, Rian, and Dart-Europe E-theses Portal. Government policies and initiatives were examined through a review of governmental websites (e.g. education.ie; ncse.ie) and publications.

Online databases including Academic Search Complete, Education Research Complete, Eric, Ebscohost, JSTOR, Journal @ Ovid LLTotal Access Collection. PyscArticles, PsycInfo, Sage Journals on Line, Science Direct Freedom Collection, Semantic Scholar, SpringerLINK, Taylor and Francis Online, were continually searched throughout the lifetime of the study. These databases were searched for papers relating to the three main topics of the study, professional development, social communication development in children on the AS, and adult interaction style. Key words for the professional development searches included; adult learning, training, up-skilling, models, traditional, collaborative, elements of, effective, facilitator, change, impact of. The search for articles relating to social communication development included the terms; neurotypical, autism, theories of, language development, communication, social communication, impairment, child/pupil/student, preschool, school going, while adult interaction style included; influence of, influence on, intervention, social communication strategies, facilitative. Derivatives of the key words mentioned above were also used e.g. (outside-expert/trainer, autistic/autism spectrum/autism spectrum disorder, parents/ teacher/ communicative partner). Citations within the most recent papers provided additional direction on searches for studies, theories and approaches. Google Scholar proved an excellent search engine for sourcing reports and documents (identified through reading) that were not available through the DCU databases. The relevant articles and reports were downloaded and housed in thematic folders (e.g. social constructivism, transactional, profiles, facilitator, effective PD, parent training, interaction style, dissonance). The pdf “advanced search” facility was used to explore themes within and across articles in the folders. No time limit was placed on the searches.

Section One: Professional Development

Models of Professional Development

There is a broad consensus among theorists (Borko, 2004; Clarke & Hollingsworth, 2002; Desimone, 2009; Guskey, 2002; Ingvarson, Meiers, & Beavis, 2005) on the components that must be in place before one can state that positive change has occurred in classroom practice. They include professional development, change in classroom adults’ knowledge and beliefs, change in the adults’ practice, and change in pupils’ learning outcomes. However, there is not the same consensus on *how* the process of change occurs. Guskey (2002) believes that teacher change follows their participation in PD and that the

level of change is influenced by the experiences teachers have in the classroom. He stated, “It is not the professional development per se but the experience of successful implementation that changes teachers’ attitudes and beliefs” (Guskey, 2002, p. 383). He suggests that if the teacher sees positive pupil achievement arising from the information encountered at the professional development initiative, there is greater possibility that the teacher will embrace the new content. Whereas, if the teacher encounters difficulty implementing the new content or if the content is deemed unsuccessful in bringing about pupil improvement, Guskey posits that the teacher will revert to previously used strategies that they considered to be successful even though they may not be the most effective. Thus, Guskey believes that teacher change occurs because the teachers see that the new content works. Change within this model arises from a “uni-dimensional causal path” (Boylan, Coldwell, Maxwell, & Jordan, 2017, p. 5). This linear model does not consider the PD components that influence the participants’ change in beliefs and attitudes. However, it recognises the importance of providing the participants with opportunities to implement the new content and of scaffolding the teachers during the early implementation of the new content to encourage their acceptance of the required change.

Desimone (2009) also presents a linear model for change. However, she suggests that change in the participants’ beliefs comes before their change in practice. She believes it is the components within the professional development initiative that influences teacher change.

The third model for change considered is . “The Interconnected Model of Teacher Professional Growth” developed by Clarke and Hollingsworth, (2002). This model recognises the complexity of the teacher change process and identifies the multiple possible routes to teacher change. The model includes the four core elements of Guskey’s and Desimone’s teacher change models; external domain (professional development initiative), personal domain (knowledge beliefs attitudes), domain of practice (instructional practice), and domain of consequence (the outcomes for the pupils and teachers). Within this model the domain of consequence acknowledges all positive changes in the pupils and teachers (e.g., academic, attitudes, affect) arising from the professional development initiative. Clarke and Hollingsworth, propose that the process of teacher change is more complex than Guskey’s and Desimone’s models portray. They recognise that change can occur in each of the four domains which could lead to changes in any of the other domains. It can also be inferred from this model that the quality of change in one domain will impact

on the changes in other domains. The quality of change according to this model is influenced by the mediating processes of implementing the new content (enactment) and reflecting on this enactment. This model presents a convincing framework for understanding teacher change as it acknowledges that it is multidimensional, individualistic and complex. It recognises that what individual teachers bring to the process (e.g., their ability to reflect on and implement the content) as well as the particular contexts in which they work, impact on the level of change arising from the professional development initiative (Richards, Gallo, & Renandya, 2001).

Informed by this review of three models of PD, the model of teacher change devised for this study is outlined in the following section.

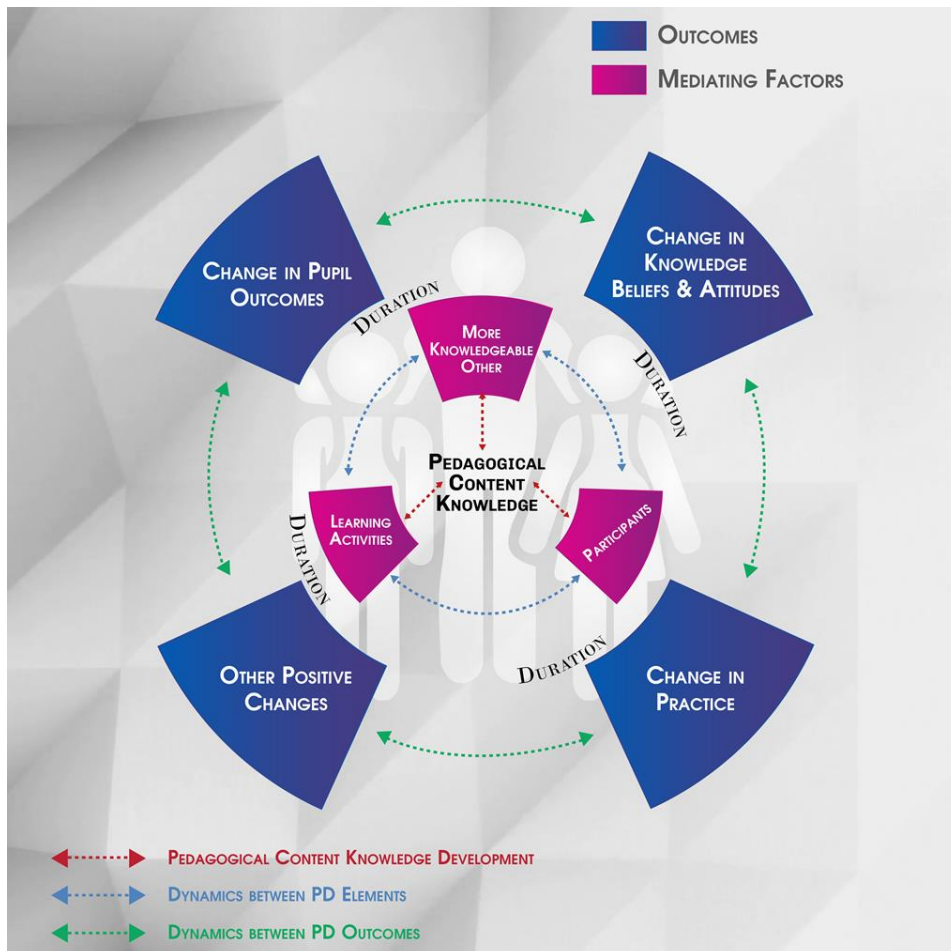
Model of Teacher Change for this Study

A central aim of this study was to increase the classroom adults' pedagogical knowledge of how to support social-communication development in their classrooms. For most, this would require that they receive information and practice in skills development in how best to support social-communication before they consider adapting their practice. Any framework for PD to be used therefore would need to begin with that PCK. It should retain the four features identified as being essential within the change process, the professional development initiative, change in attitudes and beliefs, change in practice, and change in pupil outcomes, and should reflect the acceptance that the change process is interactive and multidimensional (Clarke & Hollingsworth 2002).

Figure 2.1 illustrates diagrammatically the professional development investigation framework devised for use in this study. It draws on and adapts aspects of those models referred to above, most notably features identified by Desimone, but it is distinctive in placing pedagogical content knowledge (PCK) at the heart of the process. The model acknowledges that PCK evolves and develops as a result of interactions between the More Knowledgeable Other (MKO) and the participating adults. These interactions shape, and are in turn shaped by the learning opportunities, both planned and unplanned. This dynamic between the three elements, represented in the diagram by blue arrows, contributes to the development of the PCK. (PCK will be discussed in more detail later in the chapter).

The outer layer signifies the outcomes that arise. These outcomes are dependent on the duration and quality of the participants' engagement with the process. The outcomes also influence each other (green arrows) and, ultimately, contribute to on-going refinement of the PCK.

Figure 2.1: Model of Change for this Study



The components of the professional development initiative will be reviewed in the next section.

Components of Professional Development

Many writers have sought to identify in the literature on professional development what key components of PD can be associated with effectiveness. Garet, Porter, Desimone, Birman and Yoon (2001) identify six components required for effective PD: the type of PD initiative, the duration, collective participation, content, active learning, and

coherence. Maldonado and Victoreen (2002) add prolonged contact and on-going evaluation to the list. Desimone (2009) describes five critical features of effective professional development: content focus (focus on content proven to increase teacher knowledge), active learning (observing experts or being observed, feedback and discussion), coherence (learning is consistent with teachers' beliefs and school policy), duration (sufficient time spent on activity and the initiative is spread over time), and collective participation (teachers from the same class grouping, school or area to allow for interaction and discourse). While the lists may vary somewhat there is an agreed consensus that PD is comprised of three fundamental elements: the context, the process, and the content (Guskey & Sparks, 1996). Theory and research on these elements are reviewed in the sections below to inform the PD initiative used for this study. Cognisant of elemental variations in impacting change in the classroom, an objective of the study was to explore the influence of specific elements on the outcomes for this particular group of school staff.

The context.

In terms of PD, context relates to the “who” (participants and their pupils), “when” (duration), “where” (where the initiative occurs and the environment in which the participants work), and “why” (rationale of professional development) (Guskey & Sparks, 1996). Professional development that improves instructional ability is “embedded with context specific needs of a particular setting” (Annenberg Institute for School Reform, 2004, p. 1) as “school contexts differ drastically, and what works well in one setting may not work equally well in another... The particular educators involved, the characteristics of pupils with whom they work, can all affect results” (Guskey, 2009, p. 229). There are subtle but real differences between the professional development needs of a teacher working with pupils on the AS in a mainstream class and those who work in a designated autism class. Equally the issues relating to the teaching of pupils on the spectrum who are frequent communicators may be different to the issues of teaching pupils on the spectrum who are infrequent communicators. A professional development initiative targeting large groups of teachers who teach pupils on the AS is laudable in that it provides an overview quickly and cheaply, but it does not take individual circumstances that vary widely into consideration (Little, 1993). Giving due regard to context, this study sought to enhance the social interaction skills of staff working in autism-specific classes with pupils who were reported to rarely communicate.

Professional development should link the new ideas introduced during the initiative to the specific needs of the participants as teachers' learning best occurs when it is related to their daily classroom experiences (Butler, Novak Lauscher, Jarvis-Selinger, & Beckingham, 2004; Putnam & Borko, 2000) as it heightens their interest in learning (Bolam & Weindling, 2006). Further, theorists suggest the need to ground teachers' learning experiences within their own classroom as learning about teaching best occurs in the teachers' daily experiences (Cochran-Smith & Lytle, 2001; Darling-Hammond, 1999). Teachers require opportunities to trial the new content rather than just listening to descriptions of how to implement the skills (Elmore, 2002). These opportunities allow them to see how the new content links with what they are already doing in the class (Little, 1993). Further, practising the new ideas, teachers learn to adapt the new content to the needs of their individual pupils (Hawley & Valli, 2000; Villegas-Reimers, 2003). However, Putnam and Borko (2000) caution against relying solely on embedding the learning in the teachers' classroom as what they experience within the confines of their own setting will shape and cement how they think and act, leaving them less amenable to change. They suggest that to support the teachers in the change process there is also a need to provide opportunities to engage in learning experiences that are different from their own classroom experiences away from the classroom. The PD process in this study included opportunities for implementation of the PCK and observation and discussion of other participants' implementation of the PCK.

Time/Duration.

The "when" refers to two aspects of duration, the contact time spent face to face at the PD initiative, and how long the initiative runs overall. A number of theorists have highlighted the importance of PD initiatives extending beyond isolated days. Bell and Gilbert (1996) advise that conceptual change for teachers is a longer process than was traditionally thought, as learning is a complex, multifaceted, and continuous process (Opfer & Pedder, 2011). While content knowledge may be introduced in a short face to face session, Blazer (2005) states, "Most people don't transform their behaviours and practices as a result of a single event, no matter how powerful" (p. 9). It takes time for participants to make sense of and assimilate knowledge to which they have been introduced (Darling-Hammond & Richardson, 2009). Motivating the participants to use and become proficient in using the new ideas also requires time (Fullan, 2006; Guskey, 2002). Desimone (2009) advises that interrogation and discussion are requirements for

changing beliefs and attitudes highlighting the need for time within PD for such activities. Others believe that change follows the successful trialling of the new ideas (Clarke & Hollingsworth, 2002; Guskey, 2002; Mohamed, 2006). Little (2003) suggests that participants need time to develop the confidence to articulate difficulties and seek solutions for the classroom difficulties.

Although there is a clear rationale for extended professional development initiatives as highlighted above, there is no clear consensus among researchers on the impact of contact hours and time span on teacher and pupil outcomes. A number of studies identified the need for sufficient time to allow multiple opportunities to teachers who are endeavouring to implement change (Cordingley, Bell, Rundell, Evans, & Curtis 2003; Cordingley, Bell, Thomason, & Frith, 2005; Garet, Porter, Desimone, Birman, & Yoon, 2001; Timperley, Wilson, Barrar, & Fung, 2007; Weiss & Pasley, 2006; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). Weiss and Pasley (2006) found that as the number of hours teachers participated in a PD initiative increased, there was a greater likelihood that their teaching was more aligned to their pupils' developmental level and the content was presented in a more motivating manner. Garet and colleagues, (2001) also reported that greater positive changes in teachers' practices were associated with longer professional development initiatives. Meta-analyses by Cordingley, Bell, Rundell, Evans, and Curtis (2003) and Timperley, Wilson, Barrar, and Fung, (2007) concluded that on-going professional development was linked to the pupils' positive outcomes while in a review of nine PD studies by Yoon et al. (2007), initiatives of more than 14 hours contact led to greater and more positive effects on pupil achievement, with the greatest effect found in initiatives of more than 30 hours spanning 6-12 months.

Other researchers report that time does not influence the outcomes of a PD initiative. Kennedy (1998) found that the total number of participation hours in mathematics and science PD was not associated with pupil outcomes. Desimone, Porter, Garet, Yoon, and Birman (2002) report from their 3-year longitudinal study that contact hours and time span did not have an impact on the teachers' use of specific teaching practices. Ingvarson, Meiers, and Beavis (2005) reported that the length of the professional development initiative did not directly impact on practice or pupil outcomes, but they found what was done during the time did. Buchanan, Morgan, Cooney and Gerharter (2006) found that the beliefs on pedagogy and learning environments of preschool staff changed and that the change was sustained following a three-consecutive-day PD initiative. However, they

suggest that the particular activities used during the PD influenced the change. In this review the only study found on the evaluation of PD for adults with children on the AS was a meta-analysis of parent training by Schultz, Schmidt and Stichter (2011). The authors sought to identify key characteristics of effective training provided to parents of children on the AS. They reported that the majority of the studies indicated positive outcomes regardless of the frequency or duration of the initiative. However, 47% of the 30 studies included in the review did not report on how frequently the training was given and 57% did not report over what duration the training was provided. In summary using Guskey's (2009) words "...time may be vitally important, simply adding more for professional learning does not invariably make things better. What matters most is how that time is used" (p. 230). The findings discussed in this previous section influenced the rollout of the PD and careful consideration was given to how the time was used while designing the PD model for this study. The following section focuses on literature relating to the process/design of a PD initiative.

The Process of Professional Development

The process of professional development includes two components, the nature or form of the initiative and the activities of the initiative. The theoretical and empirical literature for these two components is discussed in the following sections.

The nature/form of professional development initiatives.

The structure of this section of the review is informed by Hoban's (1996) categorisation of the nature of PD initiatives, Hoban suggests three categories or ways in which participants access new knowledge. He describes these categories as: Outside-In, Inside-In, and, Inside/Outside.

Outside-In initiatives.

Outside-In initiatives are reliant on knowledge that outside experts bring to the initiative (Hoban, 1996). Typically, these initiatives are described in a number of ways; traditional models, training models, transmissive models, deliver and apply models, and expert led models. They mainly occur as seminars, lectures, and conferences, where the latest ideas regarding teaching and learning are usually presented away from the teachers' schools. Typically, they are of short duration. The underlying assumption of this approach is when participants are introduced to new information and approaches they will

change their thinking and on return to their classes will change their practice thus having a positive effect on pupil outcomes (Smith & Gillespie, 2007).

Positives identified with this model include that content can be shared with large groups of participants (cost effective), content is sourced and introduced by the expert thus providing undiluted content to the participants (Maldonado & Victoreen, 2002), and attendance at such a PD may increase enthusiasm of the participants about a topic and may act as a catalyst for future learning (Chappuis, Chappuis, & Stiggins, 2009; Sparks & Loucks-Horsley, 1989). Ingvarson et al. (2005) suggests that these traditional initiatives are “the front end of the change process” (p. 67).

However, Outside-In professional development has been criticised for the following reasons.

- It focuses on the procedural skills and ignores the complexity of teaching arising from particular contexts (Butler, Novak Lauscher, Jarvis-Selinger, & Beckingham, 2004; Timperley et al., 2007).
- Content is very general and does not take into consideration the diversified needs of the participants within the group (Curry, 2008; Hoban & Erickson, 2004; Kennedy, 2005; Sparks & Loucks-Horsley, 1989).
- Opportunities for discussion of the content with the expert or co participants are rarely provided, resulting in surface level understanding of the content (Blazer, 2005; Butler et al., 2004; Hoban, 1996; Wideman 2010).
- Often there is no follow up or feedback for discussion of the content in relation to the participants’ own classroom nor the successes and problems encountered with the adaptation of the new content to the individual needs of their pupils (Blazer, 2005; Broad & Evans, 2006; Elmore, 2002; Ingvarson et al., 2005).
- There is no consideration of, or building, on the wealth of knowledge and expertise the participants bring to the session(s) (Butler et al., 2004; Piggot-Irvine, 2006).
- The model does not allow for incremental learning, expecting participants to grasp often complex content during a one-day course (Piggot-Irvine, 2006).

- The model conveys the message that “passive compliance is the key to effective practice” (Duffy & Kear, 2007 p. 581) rather than ensuring the participants develop adaptive problem-solving abilities through active participation (Ingvarson et al., 2005; Piggot-Irvine, 2006).
- No consideration given to how knowledge, pedagogical skills and attitudes are acquired, that is, the intellectual struggle required, for change to occur (Desimone, 2009; Guskey, 2002).

Research on the whole has been highly critical of Outside-In PD initiatives. Porter, Garet, Desimone, Yoon and Birman (2000) reported from a three year longitudinal study on the professional development activities of 287 teachers in 30 schools across five US states, that while half the teachers attended PD initiatives that lasted more than three days, 77% participated in traditional type professional development and although individual teachers reported changes, generally “teachers changed little in terms of the content they teach, the pedagogy they use to teach it, and their emphasis on performance goals for students” (p. 13). Yoon et al. (2007) also found that traditional initiatives to enhance teachers’ knowledge of specific pedagogical skills had little impact on pupil achievement even though the information was “drip fed” in one to two-hour sessions over a two to four-month period.

The review of the literature on an Outside-In model of professional development highlights the many limitations of a transmission model for effecting change in the classroom. However, the presence of an expert to source and share new knowledge was considered pivotal for this study.

Inside-In initiatives.

In light of the many criticisms of traditional models of professional development, more collaborative models of professional development emerged during the 1980s and are categorised as Inside-In initiatives (Hoban, 1996). Typically, they occur within a school context where staff take collective responsibility for their own learning with the intention of improving their practice over an extended period of time. These models do not seek input from outside experts or educators, relying on the collective knowledge of the group instead. They are based on constructivist principles, assuming that the participants of the group generate knowledge, rather than taking the transmission perspective reflected in

outside-in initiatives which see the participants' knowledge as being acquired (Cochran-Smith & Lytle, 2001). The process involves teachers actively developing new or improved practices through a cycle of sharing knowledge, discussion, implementation of new content/ideas within their classrooms, reflection, and feedback on the outcomes (Timperley & Alton-Lee, 2008). Collaborative models have been described as fora "where difference, debate and disagreement are viewed as the foundations of improvement" (Hargreaves, 2003, p. 163). Their purpose is to "create an ecology of thinking, deliberation and experimentation" (Richardson, 1998, p. 6). The most common Inside-In initiatives include, peer coaching, learning/collaborative teams, critical friends groups, learning communities and communities of practice.

These models are underpinned by a number of assumptions: a) the topic/content of the meetings is matched to the needs of the specific group (subject area/class level/ staff role) (Quick, Holtzman, & Chaney, 2009); b) the participants understand best how to improve practice in their setting as they understand the context (Hoban, 1996); c) new knowledge is socially constructed, generated through discussion and reflection within the group meetings (Butler et al., 2004; Curry, 2008); d) collective wisdom greatly enhances the ability to solve problems (Wideman, 2012); e) discussion within the group clarifies ideas and corrects misconceptions (Quick, et al., 2009); and f) working with others will sustain and strengthen the use of new knowledge (Butler et al., 2004).

However, a number of these assumptions are challenged, and limitations of group Inside-In initiatives are identified in the literature. Collaborative groups within schools may include a wide range of interests and agendas (e.g., class levels, subject areas, pupil needs) which does not allow for content to be tailored to specific individual group needs (Lalitha, 2005). The groups engaging in the context specific interactions may address practical knowledge but may not have the expertise to address new formal knowledge (knowledge for practice) (Kennedy, 2005; Mayer, 2004). As such, having the expertise to address knowledge for practice would seem to be an issue of concern regarding Inside-In initiatives. Supporting this concern, Corcoran, Fuhrman, and Belcher (2001) found that teachers working towards improvement within this type of PD initiative "paid lip service to the use of research" (p. 81) tending to select strategies that felt good rather than empirically evidenced strategies. Additionally, a number of theorists posit that getting together to collaborate, share and discuss pertinent topics does not necessarily mean that change will occur. They suggest among others that real change arises from dissonance,

occurring when previously held beliefs and assumptions are challenged within the context of new knowledge (Grieve, 2009; Pedder & Opfer 2013; Timperley et al., 2007). Van Lare and Brazer (2013) question whether genuine dissonance can occur amongst colleagues. Levine (2011) believes that the group “may not push themselves to engage in the most uncomfortable practices of self-scrutiny and collegial critique” (p. 44). Collegial critique may also be seen as personal attack and could undermine the work of the group (Dooner, Mandzuk, & Clifton, 2008).

There is also an assumption inherent in the Inside-In models that all the participants by their very presence are self-motivated to change. Pressure is often required to initiate change, particularly with those who are less willing, and this pressure may be difficult to apply amongst colleagues (Guskey, 2002). Guskey (2009) cautions against collaborative models without the presence of skilful abilities in leadership. He suggests that even when a collaborative group is presented with evidence of effective strategies, individual members, or indeed the group as a whole, may choose to ignore them and continue with their current practice. He also advises that without the presence of a skilful leader, conflicts may occur within the group, undermining the progress and collegiality of the group. Furthermore, he proposes that staff members may not have the specific knowledge required to address particular problems within their context, resulting in lack of action, or even the sharing of ineffective practice. As such, collaborative groups “...can turn out to be emotional support groups in practice, valuable to the moral and mental health of participants, but unlikely to effect real changes in their beliefs or knowledge” (Thompson & Zeuli, 1999, p. 353). The challenges and limitations of Inside-In initiatives highlight the pivotal role of skilful leadership within the collaborative group. The literature reviewed above identifies the need to have specific, relevant knowledge available to the group. Further it emphasises the significance of group dynamics and the participants’ willingness to engage in critical dialogue as essential elements of the design of any such programme. These aspects were all considered in the design and implementation of the professional development initiative for this study.

Positive research outcomes for the collaborative model.

Collaborative PD has been reported as effective in a number of studies. Bolam et al. (2005) carried out an in-depth study of professional learning communities (PLCs) across the continuum of education provision in England. Data were collected from 393

questionnaires, interviews from 16 different settings and from three workshop conferences. Positive and statistically significant correlations were found between primary and secondary pupils' achievement gains and the strength of the PLC characteristics (shared values and vision, collective responsibility, reflective professional inquiry, collaboration and group/individual learning) in the school. The more established the PLC, the greater the positive impact on the "pupils' attendance, interest in learning and actual learning" (p. 146). Staff in more developed PLCs reported more individual and group learning. Teachers and support staff who engaged in more collaboration also reported higher morale. However, Bolam and colleagues include in their definition of a PLC, openness to external partnerships to enhance the learning of the group which could have influenced the outcomes for individual collaborative groups. Vescio, Ross and Adams, (2008) reviewed the effectiveness of PLCs on teaching practice and pupil learning across 11 studies. Although all of the studies reported positive change in teachers' practice, only five reported specific changes and only one reported practices prior to involvement in the PLC. Six of the eleven studies provided strong evidence (mainly using assessment scores) that pupil outcomes had improved over time. Further, there was evidence across all eleven studies that a change in the teaching culture, "...collaboration, a focus on pupil learning, teacher authority, and continuous teacher learning" (p. 84) had emanated from the PLC. Key (2006) reported quantitative and qualitative evidence that involvement in a Critical Friends Group (CFG) increased the likelihood that teachers shared ideas, problems and pupils' work from the 16 studies reviewed. However, she observed that there was little evidence that measurable changes in practice occurred in the classroom. Only two studies in the review reported the impact of CFG on pupil outcomes, and while both reported improvements, one relied on the teachers' perceptions.

Need for specialist knowledge within Inside-In initiatives.

Although, the evidence highlights the value of collaborative professional development for teaching and learning and, in particular for acting as a catalyst for positive changes in school culture, a number of researchers (Coburn, 2001; Saxe & Gearhart, 2001; Timperley & Parr, 2005; Timperley, et al, 2007) suggest that collaborative models are enhanced with the presence of an outside specialist. Little (2003) found in her analysis of the discussion transcripts of a collaborative group within a US high school Maths and English department, that the discussions were limited in effecting change in the teachers' practice, as certain beliefs about teaching and learning came to the fore and acted as a

barrier to change within the classrooms. Timperley and Parr (2005) also found that school-led professional communities across 29 sites whose remit was to improve literacy achievement did not have the desired impact. Principals and literacy leaders from the primary schools were provided with two one-day training sessions that focused on analysis of literacy needs, implementation of literacy strategies and collection of achievement data. Interviews and achievement scores were the data collection tools. Timperley and Parr highlight that the literacy initiative did not achieve the desired outcomes because the leaders (principals and literacy leaders) saw their role as a facilitator of collaboration rather than as a leader who provided relevant instructional content and who had a more in-depth knowledge of the content. The researchers argue that the communities did not have the specific knowledge required to ensure success (i.e., pinpoint, tackle and monitor the problem) and they lacked the ability to challenge the community's existing problematic beliefs. They conclude that time and resources are not sufficient to effect change and that someone with real expertise in the topic area was necessary to support and challenge the group to adopt and implement the new content. This suggestion that a more knowledgeable other (MKO) is necessary within a collaborative initiative is echoed by a number of researchers. The teachers in Coburn's (2001) qualitative case study of an elementary professional community focused on reading instructional reform were observed to interpret content so that their own beliefs and practices were reinforced rather than changed when topics within the community were divergent from their own world views or were not linked to the classroom. Coburn recommends access to appropriate support to "push thinking" (p. 164) and to ensure correct understanding of the content.

The literature explored above suggests that positive outcomes emerge from the use of a collaborative model of PD in terms of change in teachers, practice, increased collaboration, and group and individual learning. However, the social constructivist view of learning identifies the value of collaboration with more informed others in supporting and accelerating learning (Vygotsky, 1978b). The next section reviews the literature on a model of PD that embraces this view.

Inside/Outside model.

The third category of professional development initiatives relates to Inside/Outside models which are similar to the Inside-In models in that they typically involve a small group of educators who come together and through cycles of sharing, discussion,

implementation and reflection, aim to improve their knowledge of content or pedagogy or both for the purpose of enhancing pupil outcomes in their classroom (Hoban, 1996). The significant difference between both models is that the collaborative group of Inside/Outside initiatives comprises “others” from outside a specific school. The composition of the collaborative group tends to include those who teach the same subject/class level, or it may be comprised of clusters of Special Educational Needs (SEN) teachers from a range of schools who teach pupils with similar SEN diagnosis. Inside/Outside models also differ from the Inside-In models in that the PCK is highly relevant to all members of the particular group. Research has found that optimum learning occurs when participants with specific requirements collaborate together (Porter et al., 2000; Smith, Hofer, Gillespie, Solomon, & Rowe, 2003).

This model generally includes an external expert/MKO who remains available for the duration of the initiative. Collaborative discourse within this model differs to that of the Inside-In model as the MKO facilitates and guides the discussions while bringing an objective and less insular perspective. As such, the Inside/Outside model provides a forum where the knowledge of the MKO (who may be a researcher, teacher educator or topic specialist) is combined with the knowledge and practical expertise of the participants. It is a structured collaborative forum for “integrating ideas from theory with practice” (Hoban, 1996, p.29). Kennedy (2005) views the Inside/Outside models as a union of a contextually specific Inside-In model with the formal content dissemination Outside-In Model. Timperley et al. (2007) suggest that the expert has another role within this model; s/he should be viewed as a change agent, who facilitates the participants’ learning process. The nature of MKO’s role has been well documented in the literature.

The use of MKO may

- support participants to use evidence-based practices rather than using practices that the group felt were good (Cordingley et al., 2003; Guskey & Yoon, 2009);
- support the participants in gaining a deeper understanding of the new content (Coburn, 2001; Timperley, 2008);
- aid the participants in becoming more adept at making adaptations to suit the specific context while ensuring the new content’s integrity (Blazer, 2005);
- facilitate reflection by the participants on what enhances or impedes their existing practice and support them to analyse the information brought to the group from

their classrooms (Bolam et al., 2005; Ince, 2017; Richardson, 1998; Stoll, Harris, & Handscomb, 2012; Timperley, 2008);

- provide informed support when problems or difficulties arise, encouragement to continue should the teachers experience failure and affirmation of successes (Butler et al., 2004; Cordingley et al., 2003);
- aid reluctant participants in sharing their practices, ideas and concerns with a safe environment and ensure enthusiastic participants don't monopolise the discussion (Cordingley et al., 2003; Dooner et al., 2008; Hoban, 1996; Smith & Gillespie, 2007);
- challenge the participants' existing beliefs and attitudes that pose a barrier to change, and scaffold them to embrace new beliefs (Baviskar, Hartle, & Whitney, 2009; Richardson, 1998; Stoll et al., 2012; Timperley, 2008);
- motivate the educators to implement the new content (Butler et al., 2004); and
- scaffold the participants to become independent problem solvers (Ince, 2017).

In summary, the success of the Inside/Outside model is underpinned by abilities of the MKO. The aim of this model is more than the dissemination of new knowledge, it also seeks to support the participants' independent problem-solving abilities through the adaptation of the new knowledge to suit their own context (Timperley et al., 2006). The MKO therefore requires skills; to make the content accessible to the group, to provide opportunities for in-depth interrogation of the content in relation to the participants' existing assumptions and practices, to scaffold sharing of ideas and practice from each member, and to ensure the participants acquire reflective and problem solving skills while implementing the new knowledge (Butler et al., 2004; Ince, 2017; Timperley, 2008).

Research perspectives on the role of the More Knowledgeable Other.

Evidence from the literature identifies the pivotal role of an MKO in enhancing the learning of a collaborative group. In a study by Butler et al., (2004), the participants articulated the value of coming together to discuss and share ideas about supporting their pupils to become more independent learners. However, they reported that the sustained presence of the specialists (MKOs) encouraged them to use the new strategies continually. They emphasised the importance of interacting with and getting feedback from the experts for ensuring they changed their practice.

A systematic review on collaborative professional development carried out by Cordingley, et al, (2003) gave rise to three reports (the initial review, Cordingley, Bell, Evans, & Firth, 2005 & Cordingley, Bell, Thomason, & Frith, 2005). Cordingley and colleagues investigated whether collaborative professional development had an impact on teaching and learning in the classroom and in what way was the impact manifested. Collaboration was defined as “teachers working together on a sustained basis and/or teacher working with LEA or HEI or other professional colleagues” (Cordingley et al., 2003, p. 2). Fifteen studies were included in the final review. The authors found that all 15 studies involved an outside expert (MKO) although this criterion was not part of their selection process. All but one of the studies reported positive changes in teacher behaviour and pupil outcomes and in many cases the changes were substantial. Teacher changes included greater confidence, enhanced self-efficacy in affecting the pupils’ learning, greater enthusiasm for collaboration and greater commitment to trying new strategies. Measured pupil improvements included; motivation, academic ability in the targeted areas, organisation of work, and attitude towards the targeted subject. Further, improvement in pupil learning was more evident when the role of the external experts included content input (Cordingley, Bell Thomason, & Frith, 2005). Timperley et al. (2007) also identified that the presence of a MKO as a pivotal element of professional development that was linked with improved outcomes for pupils. Almost all of the 97 core studies (core studies included individual and group studies) in their comprehensive international review included an external expert. However, they found that the presence of an external expert alone was not sufficient to secure improved pupil outcomes. Experts who collaborated with the teachers, facilitated discussion of the new content and who contextualised the content to the teachers’ classroom were found to be more effective than those who followed a traditional presentation and who expected the participants to adopt the content as it was presented. A limitation of both these reviews which is recognised by the authors was that most of the studies were instigated and carried out by researchers who acted as the external specialist. Timperley and colleagues admit that the external experts/ researchers (because of their know-how) were more likely to publish the findings in a manner that met the criteria for inclusion. Despite limitations, they argue the need for external researcher experts because of the new knowledge required and to ensure the new content is discussed with the context of the participants’ existing practice.

A comparison of an Inside-In model with the Inside/Outside model by Saxe and Gearhart (2001) found that the teachers who got input on maths content from an outside expert and worked with the expert throughout the year made significantly more changes to their practice than the group of teachers who collaborated together for a year without the presence of an external expert. The former group's pupils' achievement in a post intervention maths test was also greater. Englert and Tarrant (1995) sought to improve the literacy abilities of pupils with mild general learning disabilities through a researcher-teacher professional learning community of three teachers from different schools and seven research staff. The community met twice monthly over a year. The researchers shared videos of evidence based exemplary literacy practice with the teachers and through support and discussion, scaffolded the teachers to change their literacy pedagogy. Each subsequent meeting followed the same protocol; the meeting began with a short period of sharing the teachers' efforts in implementing the literacy strategies, followed by a critical analysis by the group of videoed literacy instruction and concluding with a discussion of the potential of the viewed literacy practices for pupils with special educational needs. The findings were based on transcripts of the meetings and assessment of the pupils' reading ability. Both the teachers and pupils benefited from this style of professional development. Nineteen of the twenty-three pupils who were taught by the three teachers were reading at their grade level or above within two to three years of their teachers using the revised pedagogy. The three teachers made changes to their practice with one making substantial changes, and they grew in their ability to collaboratively problem solve pedagogical issues while the expectations for their pupils increased over the year. There was also evidence that the teachers moved out of their comfort zone to ensure literacy objectives were met and their literacy teaching occurred in a less silent environment to allow opportunities for pupils' literacy dialogue. Similar learning activities were considered in the design of this study's PD initiative.

Hollins, McIntyre, DeBose, Hollins, and Towner, (2004) supported a literacy professional learning community over a two-year period and reported the documented changes in the teachers' attitudes towards their pupils, from bemoaning the difficulties of teaching low achieving African American pupils during earlier meetings to focussing more on developing new pedagogical practices during later sessions. They also noted quantitative evidence of pupil improvement in literacy. The researchers highlight the value of professional learning communities having the support of a MKO in order to maintain the

participants' focus on the literacy content and on the overall objective of improving pupil literacy scores. In their two-year collaborative partnership with 10 second level teachers (nine of whom were teachers of pupils with special educational needs) from four different schools, Butler et al. (2004) sought to improve the teachers' abilities in supporting their pupils with SEN in becoming self-regulated learners. The teachers were introduced to the new content developed by the researchers. They were supported in their classroom once a week in the first year and less frequently in the second year, in planning the implementation of the content, in problem solving and in feedback provision by the principal researcher. The teachers met four times over the year to share successes and engage in problem-solving dialogues. These discussions were facilitated by the researcher. Data transcribed from the interviews and the collaborative meetings were used to report the findings. Eight of the teachers reported changes in their practice; they thought about their teaching methodologies and they made modifications to their practice (e.g., improved time management, improved teacher-pupil communication, knowing their learner and matching the strategies to the individual pupil). Seven teachers commented on their pupils' abilities to think actively about their learning. Teachers also identified other positive changes in the pupils' learning, confidence, independence, and comprehension of task requirements. From the interviews and collaborative meetings there was clear evidence of conceptual changes in the teachers' knowledge about teaching and learning, and that they were adapting the content to the needs of their context. The presence of the researchers (MKOs) was identified as pivotal to the participants' learning, as they introduced the theoretical content, and supported deeper understanding and feedback on the implementation of the content. The teachers also emphasised the pivotal role collaboration played in their learning with one teacher articulating the need for teachers to have opportunities to observe and give feedback to each other. These findings indicate that real change requires time, support from more informed others and that the MKO scaffold the participants to be active in the learning process and to become independent problem solvers.

Having considered the literature on nature and form of PD initiatives and indicated its significance for this study, the following section reviews the literature and research relating to the elements that underpin the professional development experience.

The Process within Professional Development Initiatives

The aim of PD initiatives is to facilitate and encourage professional learning so that positive change occurs in classroom practices. The process of such learning in an Inside/Outside model includes, an in-depth focus on new knowledge (PCK) development scaffolded by an expert and the embedding of that PCK in the participants' practice through engagement in a range of PD learning activities (Desimone, 2009; Field, 2011). The key elements of the Inside/Outside model identified in literature and with potential to inform the design of the PD model used in this study require consideration. These elements are: PCK, activities, enactment, reflection, and challenges relating to changing teacher beliefs.

Pedagogical Content Knowledge.

The importance of content within a PD initiative has been well documented (Desimone, 2009; Garet et al., 2001; Harwell, 2003; Hill, 2007; Kennedy, 1998; Yoon et al., 2007). The ultimate goal of PD in education is to enhance the educators' teaching abilities to ensure optimal pupil outcomes (Luneta, 2012). Cochran-Smith and Lytle (1999) suggest that "...teachers who **know** more teach better" (p. 249). Kennedy (1998) reviewed twelve PD studies aimed specifically at enhancing the learning outcomes of pupils (in maths and science) and found that the content introduced to the educators during the initiative is more important than the type or structure of the initiative (e.g., duration, rollout, on-site). She identified two different types of knowledge that make the greatest difference to pupil improvement, an in-depth understanding of the specific topic and knowledge of what to do when the pupil has difficulty learning the new content. Cochran-Smith and Lytle (1999) add that teachers need to have deep knowledge of "the most effective teaching strategies for creating learning opportunities for students" (p. 255). There is general consensus that providing participants with expert understanding of the topic alone is not enough to result in classroom change (Harwell, 2003), equally teachers attending professional development focussing solely on instructional based strategies may not have the deep theoretical knowledge base to understand why the strategy fails to work (Harwell, 2003; Saxe & Gearhart, 2001). Thus, content provided during PD should be a blend of a thorough knowledge of the specific curricular area being targeted and opportunities for the participants to learn how to adapt the content so that each pupil is learning. These integrated knowledge bases are referred to in the literature as pedagogical

content knowledge (PCK) (Blank, de las Alas, & Smith, 2007; Fraser, 2005). Hattie (2003) suggests that this blend of formal and applied content (PCK) ensures teachers become proficient problem solvers.

A number of studies indicate the importance of PCK in PD initiatives. Gibson and Brooks (2012) found that only 39% of the 31 teachers reported that their teaching of a social studies curriculum changed sufficiently or significantly following their participation in social studies PD. The teachers attributed the limited change to their practice to the lack of opportunities to learn how to teach the new content. However, an overemphasis on teaching techniques at the expense of knowledge of the specific curriculum area being targeted is also problematic. Gottfredson, Marciniak, Birdseye, and Gottfredson (1995) explored the impact of a staff development program entitled the Teacher Expectations and Student Achievement (TESA) programme in the United States. The initiative provided 20 teachers with a set of teaching strategies designed to raise their expectations and reduce disparities within classrooms. New content was given in each of five 3-hour sessions, a month apart. The teachers viewed video of the content in practice and discussion of the content also occurred. They observed each other implementing the content and gave and were given feedback on the observations at least three times between meetings. Findings indicate that well implemented PD focusing on the strategies alone was insufficient in producing meaningful change in the elementary school pupils' maths and reading achievements. Research by Saxe and Gerheart (2001) also found that PD initiatives that focused solely on teaching techniques had lower pupil outcomes.

The Outside-In approach to professional development usually introduces the educators to evidence-based content with a view to enhancing existing practices in classrooms (Hoban, 1996). The transfer of the content generated at the PD to the classroom is dependent on teachers' perceptions of the appropriateness and relevancy of the information to their context (Awais Bhatti & Kaur, 2010; Gibson & Brooks, 2012). Another factor influencing the transfer of content to the classroom is the participants' perception of whether or not they have the ability to do so. Participants are more likely to adopt new content if they have a chance to observe how the new skills are implemented effectively (Boudah, Blair, Mitchell, 2003; Butler et al., 2004; Gibson & Brooks, 2012; Quick et al., 2009). Borko and Putnam (1995) argue that professional development initiatives can influence teachers' knowledge and beliefs. However, providing teachers with the new knowledge alone does not bring about that change. Ensuring activities within

the PD initiative provide opportunities so that the educators' beliefs and knowledge are challenged with the newly presented theories and strategies are required for real change to occur. Teachers need to spend time discussing and reflecting on the new content, implementing and adapting it, and observing positive pupil outcomes before embracing the new content (Guskey, 2002; Hawley & Valli, 2000; Kennedy, 1998).

Activities within the professional development.

Timperley et al. (2007) advise that the learning activities should be the vehicle for deepening the participants' understanding of the content and for refining the new skills. Effective learning activities should strive to bring about change by developing "new knowledge and beliefs about content, pedagogy and learners" (Darling-Hammond & McLaughlin, 2011, p. 82). Learning arises from opportunities to acquire new knowledge/content by listening with and to others, observation of the new content in practice, chances to implement the new content in the classroom, to reflect on the new content's effectiveness in the classroom, and, when necessary, to modify it by problem-solving, often through the sharing of experiences with others (Cordingley, Bell, Evans, & Frith, 2005, Cordingley, Bell, Thomason, & Frith, 2005; Cordingley et al., 2007; Darling-Hammond & McLaughlin, 2011; Gregson & Sturko, 2007; Harwell 2003; Joyce & Showers, 2002; Timperley et al., 2007). Darling-Hammond and McLaughlin (2011) advise that teachers need to engage in activities such as experimentation and reflection for learning to occur, while Timperley, (2008) believes that change will not occur without challenge. The participants need to be challenged to take the risk of implementing the new content, while their existing beliefs may also need to be challenged. However, they need to feel safe to talk openly about their efforts and practices, trusting that their disclosures of problems and failures will not be belittled (Darling-Hammond & McLaughlin, 2011). These four elements, enactment, reflection, challenge, and trust, bring to professional development programmes the capacity to effect change in teachers' practice and each is developed below.

Enactment.

It is widely accepted that the traditional PD model of dissemination of knowledge in a lecture style is highly unlikely to result in permanent change in the classroom (Desimone et al., 2002; Garet et al., 2001). Participants who attend a "sit and get" professional development initiative may implement the new content enthusiastically on return to their

school. However, the implementation rarely continues long enough for the practices to become automatic and embedded in the teacher's practice. Joyce and Showers (2002) suggest that teachers need eight to ten weeks of practice to ensure the new content becomes part of classroom practice. The teachers in Gregson and Struko's case study (2007) reported that enacting the new learning in their own context (which was a requirement of the professional development initiative) gave them greater confidence in using the new strategies, and that they were more willing to try to implement them. However, incorporating strategies does not necessarily mean embedding. Guskey (1997) advises that embedding of new practice will not occur unless teachers see that it is positively impacting on the learning in their classroom. Fraser, Kennedy, Reid, and McKinney (2007) go further suggesting that teachers need to understand why it is working, "Making sense of practical experiences, particularly those with positive outcomes can lead to conceptual change and acceptance of theory" (p. 159). Kennedy (1999) suggests that practices in the classroom will only change "by changing the way teachers interpret particular situations and how to respond to them" (p. 56). Field (2011) concurs suggesting that teachers may become adept at using the content and skills provided by others but without reflection, real learning does not occur. Deep understanding arises from numerous opportunities to experiment with new strategies /methods, while the element of reflection supports the teachers to interpret what is happening and to make conscious decisions about the strategies (Meirink, Meijer, Verloop, & Bergen, 2009) thus empowering them to become problem solvers.

Cordingley et al. (2007) in their review of 22 professional development studies found that in the 14 initiatives that required the participants to experiment with the new content, the participants became more confident in using the new content and that they adapted the new content to suit their particular context. Learning by experimentation is a cyclical process which consists of enacting the new content, reflecting on/making sense of the implementation, considering other alternatives where needed and carrying out the alternatives (Kolb, 1984). Given the significance of enactment of practices in the cycle for change highlighted in research, opportunities for enactment was an activity included in the PD initiative for this study.

Reflection.

Boud (2001) defines reflection as “taking the unprocessed, raw material of experience and engaging with it in a way that makes sense of what has occurred ... and that it is a process of “turning experience into learning” (p. 2). Reflection is cyclical, beginning with teachers thinking about their experience of teaching during or following the lesson (what worked well/what not so well and what impact it had on the pupils), thinking about “why” leading to alternative possibilities being formed and implemented when practice is not successful, and bringing the cycle back to beginning by thinking of their experience with the new content (Kolb, 1984). Freed (2003, pp. 2-3) summarises stating “reflection involves rethinking experiences so that perspectives change and practice (action) is improved”. Hence reflection is critical to changing and improving practice.

Reflection can be an individual activity or can occur through group discussion. Hoban (1996) cautions against relying solely on individual reflection as the individual may not have the ability to interpret their practice objectively and may need to hear alternative views that are beyond their experience and understanding. Further, issues may be missed by the individual but picked up by another in the group. Group reflection may be achieved through sharing the experience with likeminded others and engaging in reflective dialogues with them. Reflective dialogue is “reflection with others who ask questions of one another, thereby helping each other gain new insights about situations, beliefs and values” (Rarieya, 2005 p. 315). This activity encourages the opening up of an individual’s practice and therefore their beliefs about teaching and learning to scrutiny and discussion. It provides opportunities to the group members to comment, question and problem solve the issues raised by offering ideas and solutions so that practice can be enhanced, and beliefs changed (Hord, 1997). Through this process the group members learn to reflect and articulate what they know and believe about pedagogy and pupils, coming to new understandings and beliefs about the same. However, de-privatisation of one’s practice and admitting to the need to improve is difficult and requires an environment of mutual support (Rarieya, 2005) so that individuals feel safe in discussing the difficulties that they face. The presence of a skilled and informed MKO will be pivotal for creating a safe environment and supporting the participants to share their difficulties. Further, the presence of such a MKO could ensure that the group dialogues include challenging questions that push individuals within the group to reflect deeply on their practice. It is these powerful exchanges that positively inform future practice (Stoll et al., 2012).

Challenge.

Change in participants' beliefs is necessary to bring about change in practices in the classroom (Borko, 2004; Clarke & Hollingsworth, 2002; Desimone, 2009; Guskey, 2002; Ingvarson et al., 2005). Beliefs therefore, need to be challenged within the professional development model as they determine how the participants engage with the content and what aspects of the content they will implement in the classroom (Johnson & Fargo, 2010; Richardson, 1998). This next section addresses the nature of teachers' beliefs and what is required to bring about change in their beliefs to ensure positive change occurs in the classroom.

Changing teachers' beliefs.

Beliefs are used as an internal, interpretive lens to make sense of, and respond to any new information encountered by teachers (Pajares, 1992; Remillard, 2005). They are thought to have a strong influence on their classroom practice, determining what practices will or will not be used (Ambrose, Philipp, & Clement, 2003; Ertmer, 2005; Nespor, 1987; Pajares, 1992). Teachers' beliefs about teaching are known to be influenced by their own experiences as learners in their primary and secondary schools (Lortie, 1975; Powell & Anderson, 2002; Richardson, 1998). If a teacher's past learning experience occurred within an autonomous or controlling environment, this experience will impact on his/her beliefs about what is the optimum learning environment for their classroom (Richardson, 1998).

Teacher beliefs about pupil characteristics influence how teachers teach those pupils. Teachers who believe their pupils to be less able academically tend to use an authoritarian style (Olmedo, 1997; Solomon, Battistich, & Hom, 1996; Stevens & Palincsar, 1992), while teachers who believe pupils to be academically able give them more autonomy over their learning (Ladson-Billings, 1994). Beliefs about the causes of pupil's problem behaviour also seem to impact on the teacher's response to the problem (Grieve, 2009). Teachers who believe the pupil's behaviour problems stems from difficulties with academic content rather than the pupil trying to undermine the teacher's authority tend to try and support the pupil to achieve academic success (Davis & Andrzejewski, 2009; Larrivee, 2000). If a pupil's academic behaviour is incongruent with the teacher's expectations, the teacher may believe that the pupil is unable/less-competent resulting in lower expectations for the pupil and a mismatch between the pedagogical instruction

required by the pupil to that used by the teacher (Bryan & Atwater, 2002). Professional development is a means of challenging teachers' beliefs that impact negatively on the learning occurring in the class.

Teachers' beliefs are deeply personal as they have been formed from individual experiences, and are held over time, usually without discussion or debate with others (Nespor, 1987). They are the basis of the teacher's sense of identity (Davis & Andrzejewski, 2009). Beliefs are difficult to challenge, especially if they have developed from earlier experiences, as they are held to be true and have become so deep seated and resilient (Bryan & Atwater, 2002; Ertmer, 2005) that alternative arguments are not open to consideration. If new information about pedagogical practice does not align with the teacher's usual practice then there is a high probability that the teacher will not accept the value of the new information or incorporate it to change practice (Harwell, 2003). Further, if teachers allow their deeply held beliefs to be interrogated by themselves or others, their sense of self-worth and competence as a teacher is open to threat (Davis & Andrzejewski, 2009). Deeply embedded beliefs about teaching perceived to be useful by the teachers but which are identified as ineffective (in the literature) for pupil learning, need to be replaced with more pertinent beliefs (Nespor, 1987). Timperley et al. (2007) advise that these beliefs are particularly difficult to change because this knowledge is more intuitive than articulated, it has been developed over a long time, and it is rarely discussed and thus rarely questioned. Further, these beliefs are much more resistant to change because they provide the owner with a sense of structure, order and identity as well as a sense of equilibrium between what they think and do (Pajares, 1992).

Pajares (1992) suggests individuals become comfortable with their beliefs and "hold on to beliefs based on incorrect or incomplete knowledge even after scientifically correct explanations are presented to them" (p. 317). He advises that beliefs will not change unless they are deliberately challenged. Writers in education (Davis & Andrzejewski, 2009; Pajares, 1992; Timperley et al., 2007) believe that challenges come in the form of dissonance where beliefs, knowledge and/or practices are proposed that are incongruent to those held by the teachers. The dissonance arises when comparisons are made between the knowledge/beliefs held by the teachers and the new suggested knowledge. Timperley et al. (2007) caution, that some teachers will not embrace change particularly if they "are taken too far out of their comfort zone" (p. 17). Teachers attending professional development bring a wealth of experience and ideas gathered prior to and during their

teaching career. When the new knowledge dovetails with that held by the teachers, change will occur quite readily. However, when there is divergence between the new knowledge and teacher knowledge, tensions arise. Some teachers welcome the tension and seek ways to address it while others avoid it and remain within their comfort zone. Providing evidence of alternative effective practice is one way of challenging teachers' beliefs in a less threatening manner (Timperley, 2008).

A number of scholars (Becker & Riel, 1999; Joyce & Showers, 2002; Schwillé, Dembélé, & Schubert, 2007) argue that teacher's beliefs can be shaped by their discussions within a community of teaching peers and by individuals they hold in high esteem. Harwell (2003) posits that the "supportive coaching...will help teachers develop and maintain a sense of efficacy regarding new strategies" (p. 4). If we wish to change teachers' beliefs, opportunities are required to ensure the teacher's unspoken beliefs about teaching and learning are made known and the value of such beliefs are reflected on by the teacher him/herself and others in the context of the new information (Kagan, 1992). When teachers holding a set of beliefs engage in dialogue and reflection with teachers who hold another set of beliefs, there is the possibility that dissonance will occur aiding in modifying and reconstructing one or both sets of beliefs over time (Taylor, Marienau, & Fiddler, 2000). Taylor and colleagues advise that this activity of discussion will support flexible thinking and ensure the teachers "are not simply adopting new ideas" (p. 5).

Ertmer (2005) suggests that "if beliefs are formed through personal experience, then changes in beliefs might also be facilitated through experience" (p. 32). As discussed in the enactment section above, implementation of the new content in their classroom is pivotal in supporting change in beliefs; the process allows the teacher to examine their implementation of the new content; and change is thought to occur when success is experienced (Putnam & Borko, 2000). Grieve (2009) is of the opinion that teacher change comes about when they see others successfully implementing the new practices. By providing opportunities to question one's own experience and the experiences of others, the beliefs of the teachers may begin to alter. Richardson (1996, p. 104) posits that "beliefs are thought to drive actions; however, experiences and reflection on action may lead to change in and/or addition to beliefs". Research supports the importance of addressing participant beliefs in the professional development initiative in this study. To support the initiation of change in their classroom practice, opportunities were provided

where participants could articulate their current beliefs, interrogate them, and hear and share alternative beliefs.

Trust.

Providing opportunities for self-examination and self-exposure does not guarantee that they will occur. Collaboration that involves critique of oneself and others requires a high level of intra-group trust, as the participants need to feel safe to open up and share their experiences, their beliefs and thoughts (Dooner et al., 2008; Parr & Ward, 2006). Teachers in studies by Quick et al. (2009) and Czaplicki (2012) identified the need to feel safe to speak about their practice and that fear of criticism is what hindered the sharing within the group. A sense of trust is required to ask challenging questions and to critique the work of the other members of the group (Key, 2006). This deep reflection is essential for professional growth but hinges on trust. Development of trust amongst a group of educators takes time (Czaplicki, 2012), and trust within a group that involves participants from other schools may take longer to establish, Wilson and Berne (1999) in their review of professional development studies found that disclosures increased as the PD initiative became more established.

Within an Inside/Outside model of PD the relationship established between the expert and group members has a role to play in the development of trust (Rathgen, 2006). The group needs to trust the expert and the expert needs to trust the expertise of the group. Having similar classroom experience to the group aids in the establishment of trust between the expert and the members (Rathgen, 2006). The personal characteristics and facilitation style of the expert may impact on how conversations and discussions are mediated within the PD initiative and how trust develops. The ability of the expert to establish a positive learning environment is critical for the success of the initiative (Parker, Patton, & Tannehill, 2012;). Parker and colleagues (2012) found that giving the participants a voice, allowing discourse between the expert and the group, ensured a willingness by the group to accept the views of the expert.

The MKO as a supportive facilitator may be the conduit for the discourse required for powerful learning, by structuring the conversations so that no one feels threatened or belittled when talking about their practice. S/he may calm the environment should conflict arise while new learning is negotiated and boost confidence to admit failures through positive and thoughtful feedback (Fraser, 2005; Wennergren & Rönnerman, 2006).

Research supports the necessity of creating a safe and trusting learning environment in professional development initiatives. As such, the characteristics contributing to the creation of trust, such as; facilitation style of expert and participant opportunities for voicing, sharing and critiquing expertise, were attended to in the design and implementation of the professional initiative for this study.

This critique of the constituent elements of professional development initiatives influenced the model and design of this study. An Inside/Outside model was considered appropriate for this study, by the researcher, as it aligned with her social constructivist view of learning. This model allowed the researcher to share formal knowledge on communication and language and to scaffold the participants' deeper understanding of the PCK through a range of learning activities identified as effective for supporting change in the classroom.

The next section will explore the literature on the atypical communication and language skills presented by young children on the AS. This will be followed by a review of interaction styles of adults when interacting with young children on the AS. The section will conclude with a review of the interventions used to support the development of social-communication and language for pupils on the AS.

Section Two: Theoretical and Pedagogical Content Underpinning the Professional Development

The objective of the PD initiative in this study was to enhance the adults' abilities to scaffold the pupil's acquisition of social-communication and language. This section begins with a discussion of the social-linguistic view of how communication and language emerge in typically developing children. It then focuses on the difficulties in social-communication abilities of young children on the AS identified in theoretical and empirical literature. A critique of the interaction styles of parents and the impact of those styles on the communication and language development of neurotypical children and children on the AS follows. This section concludes with a review of the empirical research on training for parents and educators on the use of social interaction strategies and the impact of the training on the adult-child social interactions.

Language Acquisition and the Developing Child

The researcher's view of learning influences her view on how communication and language develop. Social constructivists accept that communication development is influenced by reciprocal and bidirectional transactions that occur between the child and the adults in his/her environment beginning from birth (Bruner, 1983; Lock, 2008; Paul, 2008; Snow, 1999; Warren & Yoder, 1998). Both the adult and the child play a pivotal part in the success of the exchanges. This perspective of language development is premised on two essential components, that infants have an innate awareness of and attraction to social stimuli (Bruner, 1983; Paul, 2008; Snow, 1999; Trevarthen, 1975) and that a social context that structures interactions for the child is available so that language can develop (Bruner, 1981; Hoff, 2006; Paul, 2008; Snow, 1999). The infant's ability to recognise, respond, attend and show a preference for social stimuli acts as the catalyst for eliciting social responses from the adults (Snow, 1999; Trevarthen, 1975). The adults' ability to provide salient linguistic input facilitates the quality and extent of the language learning (Bakeman & Adamson, 1984; Bruner, 1983; Warren & Yoder, 1996), while their ability to maintain, prolong and develop the interaction enhances opportunities for learning to occur. Success in the exchanges encourages both parties to continue to engage in future interactions.

Researchers studying the relationship between prelinguistic communication and language development acknowledge that very early difficulties in the development of the child's social-communication and language skills may lead to delays in linguistic

development as the child may not be available for learning. The child's neuropsychological difficulties could disrupt the reciprocal nature of the interaction occurring in the natural social environment (Bornstein & Tamis-LeMonda, 2008; Warren & Brady, 2007; Wetherby et al., 2000; Warren & Yoder, 1996), causing a "negative social spiral" (Rice, 1993, p. 147) thereby reducing the opportunities for communication and language learning. While social interactionists acknowledge the role of both partners in language learning, they identify the critical role of the adult to scaffold the child's social-communication (Twachtman-Cullen & Twachtman-Reilly, 2007).

Social-Communication Development and the Neurotypical Child

Throughout their first year, typically developing children develop many of the building blocks, now known to be critical for proficient social-communication. The blocks include an ability to monitor, respond to and use facial expressions, sounds, and eye gaze or pointing to socially engage with their carers (Trevvarthen, 1975). Infants also imitate parent's intonation patterns and gestures at this age (Meltzoff & Moore, 1977; Trevvarthen, 1975). The infants become proficient in face to face interactions with their carer, spending ever increasing time getting to know them intimately, attuning and responding to their verbal and nonverbal expressions. The ability of the adult to maintain and prolong these episodes is crucial for the development of mutual attention, turn-taking, and the initiation, repair and completion of proto conversations (Trevvarthen & Aitken, 2001). Infants during this period become increasingly active participants taking more control within the interactions, influencing the responsiveness of the adult. These "moment to moment responsiveness of each partner to each other... (are) the basics of human communicative 'dancing'" (Lock, 2008, p. 385).

In the middle of their first year they become more interested in objects they can hold and play with, rather than the faces of their carers (Lock, 2008). During this dyadic interaction phase the infant attends to only one element, either a face to face interaction with their carer or an interaction with an object. The task for both partners is "how to incorporate each other's attention into on-going activities so as to share this emerging interest in objects" (Lock, 2008, p. 385). The adult plays a pivotal role during this period as "how" they endeavour to maintain their engagement with the infant whose interest is focussed on an object interaction will have implications for what the infant will learn about "attending to and manipulating their environments" (Lock, 2008 p. 386). By the time they

are nine months old typically developing infants have moved from basic one to one interactions to triadic interactions (merging their attention between object and person) (Lock, 2008). They begin to understand the influence they have on others and use their communication to regulate the communicative partner's behaviour (Lock 2008).

Typically developing infants begin to say their first words at about 12 months. By eighteen months they show expert capacity for joint attention by co-ordinating attention between social partners and objects in order to show an awareness of the object, and at this age they develop a "*naming explosion*" (Camaioni, 2008, p. 410). By the end of the second year of life, toddlers have become accomplished social interactionists. They may use two-word sentences to comment, gain information and to develop new vocabulary through their talk and discussion with communication partners. The toddlers become more purposeful in their communication, using simple forms of gestures and vocalisations for a wide range of functions, to request/reject/command, to gain attention to themselves, to express opinion or emotion, to seek and provide information, to interact, and to pretend (Camaioni, 2008). By the time they reach school at four, typically developing children have acquired an expressive vocabulary of up to 2,000 words and have become highly sophisticated communicators, with the ability to use a variety of communicative skills; and to combine these means with communicative acts to ensure their message is understood (Schwartz, 2004). However, the importance of the biological ability required for this extraordinary explosion of early social-communication and language cannot be ignored. Nevertheless, the influence of social context in which the explosion occurs is equally if not more important according to the social linguistics view of language development. The social context will be explored later on in this section. This charting of social-communication development for neurotypical children provides an appropriate backdrop for the account of social-communication development for children on the AS detailed in the following section.

Social-Communication Development and Autism Spectrum Disorder

Children on the AS can be reliably identified by the age of three (Chawarska & Volkmar, 2005). Research has sought to identify the early developmental profile of children with autism spectrum disorder, and to document the skills and syndrome specific deficits that emerge during this period. Knowledge of the pattern of strengths and needs may aid in educational planning for this group of children (Tsatsanis, 2005). Difficulties

engaging in social interactions and deficits in communicative behaviours are consistently identified as core features of autism spectrum disorders (ASD) (Chawarska & Volkmar, 2005; DSM V, APA, 2013). These developmental difficulties are observed at all levels of the autistic spectrum and various levels of intellectual functioning (Tager-Flusberg, Joseph, & Folstein, 2001).

Research exploring the social-communication profiles of children on the AS between two and five years of age in particular, has documented unique differences in the verbal and nonverbal behaviours used in reciprocal interaction compared to those of typically developing children and children with developmental delays without autism. Stone, Ousley, Yoder, Hogan and Hepburn (1997) carried out one of the earliest studies of the social-communication profile of children on the AS within the preschool age range. The focus of the study was to determine whether the frequency, functions (request, reject, comment) and form of nonverbal communication in fourteen, two to three and half-year old children on the AS differed from those used by a group of developmentally delayed (DD) children without autism. Both groups were closely matched on the basis of chronological age, mental age and expressive vocabulary. The children on the AS communicated less frequently (mean. 0.6 per minute) than the children with DD (mean = 1.09 per minute), and they also initiated significantly less frequently (mean = 7.9, per minute) compared to the control group (mean = 20.3, per minute). Both groups used their communication mainly to request (behaviour regulation). However, the children on the AS used their communication mainly to “request” rarely commenting or sharing objects or information which is normally seen as the initiation of a social interaction. The children in both groups “rejected” at similar rates per minute. This research found that children on the AS in their preschool years displayed relative strengths in their skill to request and some ability to reject. However they displayed very limited use of communicative acts for joint attention, in comparison to their DD peers with less than 1% of their communicative acts used to direct the assessor’s attention to an object.

A more detailed study examining the social-communication profile of children on the AS in preschool years (2-4 years) was carried out by Wetherby, Prizant, and Hutchinson in 1998. They compared the social communicative behaviours of a group of children on the AS with those of a group of children with delayed language (DL). The groups included 22 children and were matched closely in age (average age = 34 months) and language stage. Thirteen of the group with delayed language were preverbal while eighteen on the AS

were preverbal; the others in both groups were at the one word or early multiword stage of language development. The researchers explored the children's behaviours under seven areas, communicative functions, three types of communicative means (gestural/vocal/verbal), reciprocity, social affective signalling and symbolic behaviour while interacting with their caregiver. The children on the AS communicated less frequently than those with DL. Major differences between the two groups were found in four areas, the functions for which communication was used, the communicative means (gestural) used, social affective signalling and symbolic behaviour. The researchers also found a significant difference in social reciprocity. Similar to Stone et al.'s study (1997) both groups displayed comparable scores in communicating for behaviour regulation and the children on the AS showed substantially less ability than the control group in directing a social partner's attention to an event or object as a means of communicating for joint attention. Wetherby et al. (1998) also found the children on the AS used their communication considerably less to engage socially than the control group. The children on the AS also demonstrated less frequent use of conventional gestures such as giving, showing, pointing, open handed reaching, waving, gaze shifts nodding or shaking head. They rarely alternated gaze between object and the social partner, and rarely directed their excitement or frustration to their social partner. There were also differences between the groups in language comprehension. The group on the AS displayed considerably more difficulty understanding single/multiword utterances and contextual clues than those with delayed language.

Data from these two studies suggest that young children on the AS do not display a pervasive deficit in social-communication; rather, when they are compared with children with developmental or language delay, they demonstrate strengths and difficulties in the development of early social-communication skills. Their ability to regulate behaviour by requesting and protesting is relatively strong. Nevertheless, their ability to use communication for other social functions seems to be impaired, as they display very limited ability to engage with others for joint attention and social interaction. They have a restricted repertoire of conventional gestures and an overall low rate of communicative acts as well as difficulty in gaze shifts and gaze/ point following. Wetherby (2008) suggests that many children on the AS remain in the prelinguistic stage of communication development for a much longer period than their neurotypical peers resulting in delayed acquisition of language. The evidence from the reviews of the social-communication

abilities of children on the AS informed the selection of the professional development initiative PCK and the development of the coding frame to explore the impact of the PD on the social communicative behaviours of the pupils.

The social interactionists' view of communication and language development identify the pivotal role of social engagement between the child and communicative partners during the first year of life of a neurotypical child for communication and language development. This next section will review the literature that explores the strengths and difficulties manifested by children on the AS in these very early social engagement behaviours (orienting and attending, initiating an interaction, duration engaged with others). This literature review informs the PCK of the PD in this study and provides a framework for exploring the effectiveness of the PD on the outcomes for the pupils.

Social Engagement and the Child on the Autism Spectrum

The empirical studies cited in this following section have been carried out mainly with infants and toddlers, and while acknowledging the pupils in this current study were of school going age, there is a dearth of studies specifically exploring the social engagement behaviours of young school going children. Lord, Risi, DiLillo, Shulman, Thurm, and Pickles (2006) reported from their longitudinal study that children's diagnosis at two years remained and even strengthened at follow-up when they were nine years old. Their findings suggest that the behaviours identified in studies with infants and babies are also the behaviours of older pupils on the AS.

Osterling and Dawson (1994) compared video footage of eleven children on the AS and eleven typically developing infants at a year old and found the children on the AS looked at their parent less and sought interaction less than the typically developing infants. Further, that they failed to orient to the speaker when called by name. Leekam and Ramsden (2006) confirmed this latter finding with preschool children on the AS who only responded to 28% of attention bids by the field researcher compared to children with developmental delays who responded to almost 66% of the bids. These studies suggest that children on the AS have diminished interest in responding to or initiating interactions with others even if the adult is a parent.

Dawson, Tooth, Abbott, Sterling, Munson, Estes and Law (2004) explored the attention of three to four-year-old children on the AS, (matched on mental age with children having developmental delay and typically developing children) to social (humming sound, calling the child's name, snapping fingers, and patting hands on thighs) and non-social stimuli (beeping, phone, whistle, and car horn). The preschool children on the AS oriented less to all of the stimuli when compared to the children without ASD. They also displayed a greater orienting impairment for social stimuli than did both of the controls. These basic skills of orienting to social information expose the infants to social interactions and offer opportunities to develop an understanding of the social world (Charman, 2003). Their absence may also contribute to joint attention deficits in children on the AS they are seen as the foundations on which this pivotal skill develops (Charman, 2003; McArthur & Adamson, 1996). Further, failure to orient towards auditory social stimuli may result in essential vocal information being lost to the child, restricting the opportunities for language learning. Intervention programmes addressing these difficulties may ameliorate the consequences.

Swettenham and colleagues (1998) observed the initiation skills of 43 (20-month-old) toddlers during 5 minutes of free play while both parents and two researchers were in the room. The group included 10 children diagnosed on the AS, 17 with developmental delay and 16 typically developing children. The adults were asked to interact only if the toddler initiated. Results confirmed the findings of Stone et al. (1997) that children on the AS initiate social interaction less frequently than the other children. Lower rates of initiating social interactions was also found in two more recent studies carried out with older children on the AS (Corbett, Schupp, Simon, Ryan, & Mendoza, 2010; Forde, Holloway, Healy, & Brosnan, 2011). Forde et al. (2011) reported that the children on the AS in their study (mean age 7 yrs. 8 mths.) initiated less frequently than their neurotypical peers and that they responded more than they initiated. Corbett et al. (2010) found that the ten-year-old children on the AS in their study initiated less often, rejected initiations more frequently and spent less time interacting with their neurotypical peers.

Freeman and Kasari (2013) explored initiations of developmentally matched children on the AS (mean age 49.5 months) and neurotypical children with their respective parents within play sequences. However, Freeman and Kasari coded the child's initiation towards a toy as an initiation. Both groups of children were found to make the same number of initiations within the play interactions. The author's finding suggests that an initiation

towards a toy may be considered an invitation for social interaction and that the onus is on the adult to recognise it as such and respond to it. Initiation towards a toy may be the precursor to person to person social initiations. This view of what constitutes an initiation was taken when coding the data of this current study.

Mundy, Sigman, Ungerer, and Sherman (1986) found in their comparison study of 18 children on the AS (age range 34 to 75 months of age) and groups of neurotypical and developmentally delayed children matched in cognitive abilities, that the children on the AS engaged socially with the researcher as much as did the control groups when a tickle game had ceased. They reached out to the adult after the tickle ceased and also gave eye contact after the tickle had ceased. However, the children on the AS had much briefer episodes of turn-taking during a ball game than the controls and responded less to the researcher's invites for social engagement (place a hat, comb glasses on the head of the adult) than the other children. Six of the ten parents in the study by Wimpory, Hobson, Williams, and Nash (2000) reported that their child on the AS enjoyed lap games and half of the parents reported being able to amuse their child when no toys were available. In a later study Wimpory, Hobson, and Nash (2007) identified a number of factors that supported the likelihood of engagement from pre-schoolers on the AS. These factors related to: activities that included active input, the adult's ability to tune into and encourage the child's interest and the ability of the adult to scaffold social routines. Mundy and Wimpory's studies highlight that when interaction occur using activities and contexts of interest to the child on the AS, the children do indeed socially interact.

Attention to others.

A number of studies explored the duration of time children on the AS spend attending to individuals in their environment. Sweetenham et al. (1998) found that children on the AS spent a significantly lower percentage of the time attending to the adults overall than did their typical or developmentally delayed peers (4.9%, 28.2%, and 27.5% respectively), and even when they did look at people, it was for a shorter duration than the control groups. However, the children on the AS were as interested in the toys in the room as the control groups and actually spent more time attending to the toys than the other children. Patterson, Elder, Gulsrud, and Kasari (2014) provided a set of toys to 85 caregivers and requested them to interact with their 30-month child on the AS as they would normally during a 10-minute interaction session. The children spent on average 3

minutes (33%) interacting with their parent. However, they spent 87% of the time overall engaged with either the parent or the toys. Similar findings are reported by Adamson, Bakeman, Decker, and Ronski (2009) as their group of 30-month-old children on the AS spent 85% of the 30-minute interaction session engaged, 50% of which was engagement with the parent. Adamson and colleagues used three contexts for the 30-minute session; social interaction (sharing music; taking turns), requesting (seeking assistance), and commenting (discussing pictures and objects). They found that the level of engagement differed across the contexts; the children on the AS were most often unengaged during the commenting session, suggesting that a language filled context is not the most effective forum for supporting shared engagement. The children were most engaged when they required their parent's help. Swettenham, Patterson, and Adamson's studies highlight that children do not lack attention per se, rather the children on the AS in their studies seem to be at the stage of development of focussing on objects (usually seen in six-month-old neurotypical children). The adults were competing with non-social stimuli for the attention of the child. However, Adamson's study indicates that contexts also have an impact on the duration of the child's engagement with them.

Freeman and Kasari (2013) also found that autism dyads spent shorter periods of joint engagement than the typical child-parent dyads. The authors identified that the parents of the children on the AS had great difficulty matching their level of play to their child's level, that they were more inclined to dominate the interactions by commanding and suggesting and that they rarely responded to the play actions of their child. These findings suggest that the interaction style of the adult also influences the duration of joint engagement between adults and children on the AS. This will be discussed further later in the section. These studies indicate that children on the AS have diminished interest in attending to social stimuli. The less time the child spends interacting with another the less opportunities they have for language development (Freeman & Kasari, 2013).

The research discussed above identifies significant differences children on the AS have in many early social behaviours compared to their neurotypical peers and peers with developmental delay. However, these studies also highlight that the child on the AS can indeed participate in early face to face social interactions and will actively request social interactions particularly when the adult provides input that is engaging for the child. The research suggests that when adults use activities/stimuli which are highly motivating to the child on the AS, there is a greater possibility of social engagement. These episodes of

intimate sharing are pivotal for the development of emotional and mutual understanding (Lock, 2008) and are the foundations on which social engagement are built. The task for adults is to have the knowledge of how best to prolong the duration of shared attention so that opportunities for the development of early social-communication skills are maximised.

The studies in this review shed light on elements that merit consideration by adults concerned with the development of the communicative competencies of pupils on the AS, and that therefore informed the interactional programme incorporated in the professional development initiative explored in this study. The participants were encouraged to replicate early infant–carer routine formats, specifically, a structured fun laden activity with a social partner that is understood by the child and that occurs regularly (Bruner, 1983) in their classrooms. Acknowledging the difficulty which young children on the AS have in attending to auditory messages, the adults were also encouraged to include a combination of visual and tactile strategies to convey the message while using minimal speech to aid the pupil’s understanding of language. The adults were also advised to incorporate the pupil’s interests and motivators into games and turn-taking routines for the purpose of greater person to person social engagement.

The social constructivist model of communication and language which underpins the PD initiative in this study emphasises the importance of both communicative partners in influencing children’s social-communication and language skills. It also emphasises the ability of the child to present himself/herself to and participate in the interaction and the adult’s ability to maximise the potential for communication and language learning within the interaction. The review above highlights that children on the AS have difficulties in rates of social interactions, initiation frequencies, social attention, reciprocity, and sharing interests. This restricted repertoire of social interaction abilities of the child on the AS may influence the interaction style of the communicative partner in such a way that the adult and the child could fail to “establish a communicative meshing” known to be essential for language development (Aldred, Green, & Adams, 2004, p. 1421). The literature on the interaction styles of the communicative partners and what influences their style of interaction is reviewed in the next section. The effect of the adults’ style on the child’s social-communication and language follows. The chapter will conclude with a review of studies which explore the impact of providing training to communicative partners.

Interaction Style of Communicative Partners of Children on the Autism Spectrum

Maintaining interactions.

Research has shown that in general there are a number of differences in the interaction style of the communicative partners (parents, care staff and teachers) of children on the AS compared to those of typically developing children. Caregivers of children on the AS work as hard if not harder at maintaining interactions with their children than the caregivers of typically developing children and children with SEN (Adamson, McArthur, Markov, Dunbar, & Bakeman, 2001; Kasari, Sigman, Mundy, & Yirmiya 1988; Lemanek, Stone, & Fishel 1993). However, the nature of how they strive to establish and maintain the interaction was found to differ. The caregivers of children on the AS used a more directive style of interaction than the caregivers of typically developing children. They were observed to, direct the interaction, seek the child's attention more than follow the interest of the child, give more commands than suggestions, give less positive feedback, and were observed to physically hold the child more often to keep him/her on task. (Dawson, Hill, Spencer, Galpert, & Watson, 1990; Doussard-Roosevelt, Joe, Bazhenova, & Porges, 2003; Kasari et al., 1988; Lemanek et al., 1993; Sigman, Mundy, Sherman, & Ungerer, 1986; Wai Wan, et al., 2012; Watson, 1998). Meirsschaut, Roeyers, and Warreyn (2011) reported that the mothers of young children on the AS (mean age= 36.94 months) worked harder at maintaining their play interactions than mothers of typical developing children. However, they controlled the interactions more than the parents of the typically developing children as they initiated more often, they were also seen to be more directive using more commands and less comments and they used higher rates of refusals with their children. Further, they also sought to move their child's play to a higher level unlike mothers of typically developing children who were content to play at the level of their child. The parents of older children on the spectrum (mean age 49.5 months) in Freeman and Kasari's (2013) study also used more commands, and made more suggestions, they initiated more frequently within play interactions than parents of neurotypical children. Further, they were highly dominant in the interactions, initiating play sequences with considerably more frequency than their child, while the neurotypical children-initiated play sequences more frequently than their parents. Strid, Heimann, and Tjus (2013) reported that parents of children on the AS commented less frequently on what their child was attending to than parents of typically developing children.

Overall, the research supports the view that parents of children on the AS work hard at maintaining their interaction with their child. However, the studies highlight that there is an imbalance in reciprocity within the interaction, with the adult controlling the sessions through their use of commands and making suggestions that may not be targeted at the interest level of the child.

Dominant style.

Evidence also suggests that caregivers interact differently depending on the communicative ability of the child on the AS. Elder and Goodman (1996) analysed ten-minute interactions of 43 parent-child dyads from video clips taken in the home for the frequency of the adults' and children's initiations and responses. All the children had communication disorders (many had a diagnosis of pervasive developmental disorder including autism). The children ranged in age from 36 to 196 months. Twenty-seven of the children were considered pre-linguistic (no definition of "pre-linguistic" was given), and most children were developmentally delayed. The authors found that mothers of pre-linguistic children dominated the interactions by initiating and responding more than the mothers of linguistically able children. However, they found that the pre-linguistic children initiated significantly less than linguistic children, suggesting a negative spiral occurred where the adults filled the silences, while the children did not communicate as the adults did all the talking. Willemsen-Swinkels, Buitelaar, and Engeland (1997) also found that the mothers of young nonverbal children on the AS initiated more often than mothers of high functioning children on the AS and the initiations tended to be mainly directive. Further, the authors found that the mothers and less able children on the spectrum spent significantly less time ($p = 0.006$) interacting than the mothers and more able children on the AS. Kasari et al. (1988) and Doussard-Roosevelt et al. (2003) reported that mothers were more directive, used less positive comments and engaged in less play when the child on the AS was less communicatively able than when the child was verbal. The caregivers of the more verbal children on the AS in the study by Konstantareas, Zajdeman, Homatidis, and McCabe (1988), of 10 verbal pupils and 10 nonverbal pupils on the AS, asked and answered more questions, modelled language more, and reinforced more for language use than the parents of the nonverbal pupils. Mothers of the nonverbal children used more directives, used shorter utterances, and reinforced their children's motoric actions rather than language use. In a more recent study, Strid et al., (2013) found that the parents of the nonspeaking children on the AS used more unsynchronised comments

(comments about objects to redirect the child's focus) than the parents of the children on the AS who had speech.

There is limited research on the interactive style of adults in educational settings. Girolametto, Hoaken, Weitzman, and van Lieshout (2000) explored the verbal communication of adults in childcare provisions. The classes included eight pupils with language delays (although none had a diagnosis of autism). The adults used twice as many directive utterances (attention calls and behaviour control) with the pupils with language delay than with the other pupils. They did not match the language input to that of the children with language delay as their utterances were at least twice as long as the average length of the utterance used by the children with language delay. They also used fewer language modelling utterances (e.g., labelling, comments, and expansions) with the language delayed group.

The studies discussed above on the interaction styles of mothers and caregivers of children on the AS suggest that social-communication difficulties of children on the AS have a considerable impact on how adults in their lives interact with them. The input from the adults differs in quality and quantity from the input provided by parents of typically developing children. Parents endeavouring to elicit engagement with the child on the AS seem to adopt a more directive style of interaction. Further, the greater the social-communication difficulties presented by the child the more directive style strategies are used by the adult. No empirical evidence was found reporting that teachers interact with their pupils on the AS in a similar manner to parents of children on the AS. However, Irish teachers report great difficulty teaching pupils on the AS who have severely compromised social-communication skills (Daly et al., 2016), suggesting that communication within those classes may be adult directed and perhaps directive in nature also. This current study sought to enhance the knowledge of staff working in autism-specific classrooms on how best to support social-communication and language development and during this study data on how classroom adults interact with their pupils on the AS were gathered and reported on.

Influence of Context on Adult–Child Interactions

Empirical evidence identifies that the nature of parents and classroom adults' interaction style with young neurotypical children and children with SEN changes across contexts. Mahoney and Wheeden (1999) explored the interactive style of teachers of

preschool pupils with a range of special educational needs (although none were identified with AS) across two contexts, instruction (teacher asked to teach pupil as normal) and free play (toys were provided, and teacher was requested to play as they would normally do). They found more directive communication was used by the teacher during the instruction compared to the play context. This finding concurs with that of Landry, Garner, Pirie, and Swank (1994) who found that the mothers of young children with Down Syndrome used a significantly higher proportion ($p < .006$) of directive behaviours during the making of a puzzle task compared to during a tea party activity. Girolametto, Weitzman, van Lieshout, and Duff (2000) reported similar findings from a study within mainstream settings. The classroom adults used more behaviour control (attention calls), response control (test questions, directive yes/no questions), and topic control during a book reading activity with neurotypical pre-schoolers. The classroom adults were also observed to dominate the turn-taking within this activity. In contrast, the staff used less directive communication (used fewer attention calls, asked fewer test questions, and fewer directive yes/no questions) during a play dough activity session. Additionally, they followed the child's lead more often, asked more open type questions, sought clarification more, and the turn-taking was more balanced during the play dough session. A possible explanation for this finding may be that the adults see the need to support the pupil to complete a cognitive learning task and do not see the play interaction as an opportunity to support the pupil's development. These studies highlight the influence of context on the nature of adults' interaction style.

The impact of context on the social-communication of children with SEN including children on the AS gives mixed results. Adamson et al. (2009) explored the influence of context on the interaction behaviours of children on the AS with a parent during 10-minute sessions across three contexts, social interaction (sharing music; taking turns), requesting (seeking assistance), and commenting (discussing pictures and objects). The young children on the AS were more engaged with their parent during interactions sessions that involved music and turn-taking and when the child needed the help of the adult than in the sessions where the child took a more sedentary role (looking at and discussing pictures and objects). This finding concurs with Wimpory et al. (2000; 2007) who reported that children on the AS were more engaged within a play compared to a cognitive informed context. Mahoney and Wheeden (1999) reported a considerably higher frequency of initiations by preschool pupils with SEN during play sessions compared to working with

the teacher contexts. Conversely Kossyvaki, Jones, and Guldberg (2012) found that young pupils on the AS interacting with classroom adults (who were using a responsive style of interaction across contexts) initiated more frequently during more sedentary sessions such as lunch time and academic 1:1 work time than during more active activities such as sensory and soft play. However, Mahoney and Wheedens' report that the teachers used a lower frequency of directive communication during the play sessions while the teachers in Kossyvaki's study were reported to use high rates of non-directive communication across all of the settings offering an explanation perhaps for the differing findings in the studies.

The context in which the interaction takes place seems to have an impact on the directiveness of the adult and there are mixed findings on the influence of context on the children's social-communication. The studies reviewed above informed the analysis of the adult-child interactions explored in this current study. This study sought to explore in more detail the influence of context on the pupils' social-communication.

Directive Communication and Social-Communication and Language Development

Lock (2008) believes that the interactional approach of adults significantly influences the neurotypical child's development advising that if, "...infants learn through their actions on the world, then how the world they are learning about is structured becomes a major significance as to what they learn" (p. 386). Kochanska and Kuczynski (1991) caution against adults' over use of directive communication with very young children suggesting that adults need to provide a balance of control within their interactions so that the child has a sense of autonomy. They suggest the provision of this balance sets the scene for co-operation, and promotes social initiations, increasing reciprocity. While the authors were not referring specifically to children on the AS or indeed children with SEN, a sense of control is equally if not more important for these children as they may not have the communication repertoire to successfully negotiate this autonomy.

The use of a directive style of interaction by adults with children who have SEN may be explained by the adults' perception that the child's learning will be accelerated if they are guided to tasks that will stretch them cognitively and remain engaged with the task in a manner that will encourage their development (Doussard-Roosevelt et al., 2003; Mahoney & Wheeden, 1999; Spiker, Boyce, & Boyce, 2002). Mahoney and Wheeden (1999) believe that if children with SEN are allowed to only engage in activities that are of

interest to them, they may not choose to engage in activities thought to accelerate their learning. Further, they may not involve the adult, preferring to engage with the task alone, thus minimising opportunities for learning. However, others believe that the use of directive communication by adults with children on the AS exacerbates the unresponsiveness of the child (Shapiro, Frosch, & Arnold, 1987). Tomasello and Farrar (1986) posit that the use of highly directive communication strategies such as behaviour directives inhibits the development of joint attention as directive communication demands attention switching (a cognitively onerous task) by the child which may in turn interfere with language acquisition. Further, shifting the child's attention away from their interest may act as a barrier to the development of the child's language use, as opportunities to elaborate and extend on the topic of the child's attention are lost (Girolametto et al., 2000b). Patterson et al. (2014) advise that adult directiveness places the child in a responder role thus minimising the opportunities for child initiations, compromising the development of reciprocity.

This next section will review the research on the impact of adult interaction styles (directive and responsive/facilitative) on the social-communication behaviours of typically developing children and children with SEN, with emphasis on research carried out with children on the AS

The Effect of Adult Interaction Style on the Social-Communication Behaviours of Children on the Autism Spectrum

There is limited research on adults' style of interaction in pre-school/school settings, in this regard the study by Mahoney and Wheeden (1999) is useful in that they investigated the effect of preschool teachers' interaction style on the social-communication behaviours of pupils with SEN. The pupils were identified as having a wide range of special needs (although autism was not specifically identified). The study included forty-nine teacher-pupil dyads. Findings revealed that when the teachers used directive communication strategies (defined as "the frequency and intensity with which the teacher requests, commands, questions, hints or in other ways controls or guides the pupil's behaviour" p. 56), they elicited compliance from the pupils. However, the pupils were observed to be more passive in their interactions when directive strategies were used, responding to the teacher more than initiating an interaction. The pupils initiated more frequently overall and more frequently to the teacher when non-directive communication was used. In a

recent study, Freeman and Kasari, (2013) reported that parents of young children on autism spectrum were more directive than parents of neurotypical children during play interactions. They initiated play episodes more frequently than the neurotypical parents and more than their child. Similar to Mahoney and Wheeden (1999) their use of directive communication elicited compliance from their child. However, when the child on the AS began a play sequence with their parent, the episode did not last as long as the sequences of play initiated by the children in the control group suggesting the parents of the children on the AS did not have the skills to maintain the play interaction session. Meirsschaut et al. (2011) found that the children on the AS ignored their mothers more when they used behaviours directives (e.g., commands) than when they commented on what was happening during play interactions. The children on the AS in the study by Diken and Mahoney (2013) were observed to be least engaged with the most directive mothers, while the most responsive mothers had children who engaged most. Adamson et al., (2001) also found that the toddlers on the AS in their study ignored or rejected their mothers more when the mothers used directive communication.

The findings discussed above suggest that opinions are mixed in terms of the influence of directive communication on the duration of shared engagement. They do however, identify that a directive style reduces the possibility of the child being an active partner in the interaction as child initiations were fewer. This lack of active engagement by the child limits the opportunities for the development of reciprocity in the children, that is, “the ability to participate in long chains of back-and-forth interactions” (Leach & LaRocque, 2011, p. 151). The reciprocity of adult-child interactions is known to influence the development of language (Bruner, 1983; Snow, 1999). Additionally, research has shown that there is a significant association between the caregivers’ responsiveness (defined as “immediate, contingent, and affectively positive reactions to children’s acts of communication and play”), (Ruble, McDuffie, King, & Lorenz, 2008 pp. 158-159) and the ability of the children on the AS to initiate social interactions with them. The research on the impact of a adult verbal behaviour on children’s language is reviewed next.

Adult verbal behaviour and child’s subsequent language.

A number of researchers investigated the impact of adults’ verbal input on the language skills of children on the AS. Siller and Sigman (2002) found in their longitudinal study that the parents who had the ability to support shared attention during early play

routines by talking about and commenting on focus of attention of their child on the AS rather than redirecting their child's attention had significant positive effects on their child's later social-communication abilities. They found that children's ability to initiate and respond increased with parents who had the ability to comment and initiate joint attention on the child's focus of attention. They also reported that parents who followed their child's lead and spoke about what the child was doing or looking at had children with greater language abilities 10 and 16 years later compared to parents who sought to redirect their child away from their focus of attention during initial play interactions. Siller and Sigman proposed that the interaction style most beneficial for supporting the development of social-communication in children on the AS was one that promoted "*child choice*" (p. 87). McDuffie and Yoder (2010) in their study of 32 young children on the AS (who had fewer than 10 words) also reported that the frequency of parents' comments on their child's focus of attention and utterances that build on their child's verbal communication was predictive of the child's language ability six months later. They also found a positive association between follow in commands (telling the child to do something relating to the child's focus of attention) and later language. McDuffie and Yoder argue that these utterances are similar to follow-in comments as they do not redirect the child's attention. Utterances that redirect the child's attention away from what they are focusing on are not significantly correlated with later language (McDuffie & Yoder, 2010). As research supports the use of adult follow-in utterances in promoting initiations, responses and language gains for children on the AS, heightening of the adult participants' awareness to increase the use of such utterances was attended to in the intervention programme constructed for this study.

A more recent study by Haebig, McDuffie, and Weismer (2013) explored the impact of two specific styles of parental utterances, "facilitative" and "directives" on the children on AS's language outcomes a year later. Facilitative utterances included utterances such as follow-in comments and linguistic mapping relating to the child's focus of attention, expansions of the child's utterances and self-talk about what the adult themselves were doing. Two types of directive utterances were explored, behaviour directives (commands & redirects), and communication cues (test questions). The researchers grouped 40 toddler and preschool children on the AS; those who were minimally verbal (mean 7.09 words) and those had a good vocabulary (mean 126.33 words). However, it is not clear how many children had no speech at the beginning of the study. Adult communication strategies

were analysed from 10-minute play interactions involving parent-child dyads. The authors, like McDuffie et al. (2010), found that minimally verbal children had better language outcomes a year later when their parent used “follow in comments” more frequently. However, the highly verbal children in Haebig’s study did not benefit from this type of communication strategy. Haebig and colleagues found no association between the parents’ “self-talk” and the groups’ language acquisition.

Haebig et al. (2013) also explored the impact of four types of directive utterances: directives for behaviour, directives for language, redirects, and introductions. Reflecting findings reported by McDuffie and Yoder (2010), they found that “follow in directives” that sought language (i.e., test questions) were significantly and positively correlated ($p < 0.05$) with later language use. However, unlike the findings of McDuffie et al. there was no positive association between the parents’ use of directives for behaviours and later language outcomes. Additionally, the parents’ use of redirects and introductions were not found to have an impact on the children’s later language abilities. The use of “linguistic mapping” (facilitating utterance) by parents did not have a significant impact on the children’s later language. By way of explanation, the authors maintain that the children in their study were not exposed to this latter type of utterance often enough to benefit their language acquisition. The use of expansion-type utterances was not found to influence later language abilities either, a finding that does not concur with the finding reported by McDuffie and Yoder, (2010) that expansions of the children’s utterances were a predictor of vocabulary size. However, Haebig et al. posit that the infrequency of the children’s verbal communication (average 1-2 utterances per minute) did not provide parents with the opportunity to expand on what his/her child said.

Haebig et al. (2013) conclude that language development of children on the AS may benefit more from adults’ “direct prompts” than from facilitative strategies such as linguistic mapping and expansions. However, the acquisition of language without communicative ability is not enough. The use of direct prompts may support the child to develop responding skills. However, the ability to initiate is also required to become proficient communicators and prompts provide little opportunities for initiations. A limitation of the Haebig et al. study is the lack of naturalistic interactions at follow up. The authors videoed the naturalistic parent-child play interactions and collected data from the parents on their perceptions of the child’s language abilities at the beginning of the study. At the follow up (a year later) the information on the children’s language abilities

was based solely on reports from parents and a standardised receptive and expressive language assessment. Comparisons of the videoed play interactions may have given a richer description of the impact of the adults' communicative strategies (e.g., rate of utterances, length of utterance, new words). Data collection for this current study included video data of naturalistic play sessions before and following the classroom adults' participation in the PD initiative.

The impact of three types of verbal communication strategies used by preschool teachers on the social-communication skills of typically developing preschool pupils was researched by Girolametto et al. (2000). The strategies included the use of behaviour control (behaviour management utterance), response control (commands, test questions, behaviour control (yes/no questions), and conversation control (Y/N conversation questions/ "wh" questions/clarification questions). They also explored the outcomes for the pupil's speech when the adults dominated the conversations. Significant negative correlations were found between the teachers' "Behaviour Control" type utterances and the pupil's use of different words ($p \leq .05$), use of multiword combinations ($p \leq .05$), and average length of the longest utterances ($p \leq .05$). Significant negative correlations were also found between the teachers' dominance of the adults in turn-taking and the number of utterances ($p \leq .01$), different words ($p \leq .05$), and the number of multiword utterances used by pupils ($p \leq .01$). The authors found positive correlations between the use of, "Conversation Control" utterances (Wh-questions, seeking clarification, conversational yes/no questions) and the number of pupil's utterances ($p \leq .05$), different words ($p \leq .05$), and multiword combinations ($p \leq .05$). The findings suggest that giving the pupils more autonomy within interactions will support their use of speech. Acknowledging this study was carried out with typically developing children, the mean chronological age range of the 80 child participants was 33 months and therefore they were not yet proficient talkers. The strategies found to be supportive in encouraging talk in this group of learners could be considered for pupils on the AS who are chronologically older but at this stage of language development.

Chiang (2009a, 2009b) documented the eliciting communication strategies used by teachers during a two-hour observation across a range of classroom routines. He also explored the impact of those strategies on the verbal and nonverbal communication of infrequent communicators on the AS (mean age 7.6 years). Behaviour directives and commands were not documented. Three main types of eliciting strategies were coded,

verbal prompts (questions and direct instructions e.g., what do you want/do you want/say), model (giving a correct response e.g., it is red), and physical prompts. Combinations of these strategies were also coded. The teachers elicited communication from pupils at a very low rate during the observation (mean of 1.14 acts per minute) and the greater the severity of autism the less the teachers sought communication from the pupil. Verbal prompts were the predominant strategy for eliciting communication. The rate of “elicited” pupil communication was very low (on average one act every six minutes) and were mainly used to respond compliantly to the teacher. Pupil requests or rejections were rarely heard following this style of adult communication. Interestingly, the author found that the frequency of pupil spontaneous communication (not prompted by the teacher) was more than double that of elicited communication and that the pupils used their spontaneous communication to request and reject. These latter findings suggest that the pupils communicated more frequently when the adults were not in total control that is, when the pupils had a sense of autonomy. The findings of Girolametto and Chiangs’ studies suggest that creating a context in which directive talk is minimised and where the pupil has a sense of autonomy is more conducive to supporting any interaction component of professional development.

The studies reviewed in the previous sections indicate that parents and teachers tend to accommodate and endeavour to offset the social-interactive difficulties presented by children with disabilities (including those on the AS) by dominating and leading the interactions. They are also observed to use mainly a directive style of interaction. The use of directive interaction communication by adults has been viewed as a logical and perhaps necessary approach to aid the children’s engagement in the types of social, communicative, and play activities that are necessary for developmental learning (Doussard-Roosevelt et al., 2003; Spiker et al., 2002). However, the evidence highlights that directive strategies are not supportive of social-communication development in the main. Wetherby (2008) posits that directive approaches may be effective for the cohort of children on the AS who have greater abilities in responding to an adult’s call for joint attention and in comprehending the adult’s utterances. She suggests that approaches that are responsive to the child’s focus of attention are more suited to the cohort of children on the AS who have great difficulty responding to and initiating joint attention. The National Research Council (NRC, 2001) calls for approaches that focus on developing functional and spontaneous communication of the child on the AS. Therefore, a key component of

this PD initiative is a focus on the adults' awareness of and practices relating to responsiveness in their interactional style with a view to enhancing the functional and spontaneous communication of their child on the AS.

This next section will review empirical research on initiatives for providing professional development to adults in the use of social interaction strategies and on the impact of this training on adult-child social interactions, concluding this chapter and the review of literatures in which this study is situated.

Impact of Providing Parents with Social Interactionist Strategies

While research has found that parents of children on the AS make adjustments to their interaction style to support their child's engagement and contributions, evidence suggests that the parents generally lack the know-how to extend positive interactions with their children and to support their child's language development. Cognisant that parents require a set of specific strategies and tools to engage their child on the AS in responsive interactions, researchers have sought to empower the parents by providing training in such strategies through a range of different child-focused interventions. Interventions for training parents are underpinned by two main theoretical views, those that emphasise a behavioural /didactic approach (adult in control of activity while using direct strategies to teach the absent skills of the child) and those that ascribe to the social interactionist approach (the adult's interaction style seeks to facilitate active child engagement in the learning process). The researcher believed that the enhancement of the classroom adults' knowledge of how best to support prolonged episodes of mutual shared interest would ensure that their pupils on the AS access numerous opportunities for development, including social-communication and language learning.

Studies of adult training initiatives that are underpinned by social interactionist principles are reviewed in this next section. Social interactionist interventions place particular emphasis on the need to establish a positive interaction initially and on the pivotal role of developing shared attention. These are seen as the cornerstones of language learning (Shipiro et al., 1987). Siller and Sigman (2002) in a longitudinal study showed that children on the AS whose parents had the ability to synchronise with the child's focus of attention during episodes of toy play made greater language gains over a 10 year and 16-year period than children of parents who were not as responsive with their child initially. Their subsequent study (2008) indicated that responsive adults play a greater role

in the child's language acquisition than the child's initial IQ, joint attention skills and language level. Subsequent autism studies have verified that when parents responded to their children's actions, utterances and intentions in a responsive and contingent manner, their children had greater social-communication and language skills than did children of parents who did not (Adamson et al., 2009; Baker, Messinger, Lyons, & Grantz, 2010; McDuffie & Yoder, 2010). Social interaction approaches seek to support parents to become more responsive and to develop the skills to consistently interact in a positive, non-directive manner with their child on the AS.

There is a growing body of research exploring the effect of social interactionist interventions on the interactive style of parents of children on the AS and on the social-communication abilities of their children. Aldred et al. (2004) carried out a pilot study of a social-communication intervention. They randomly assigned 28 children (2-5years) on the AS, and their parents, to a treatment (T = 14) group (social-communication intervention + routine care) and or to a control (C) group (routine care). The children in the groups were identified as, Young High Functioning or Young Low Functioning (aged 24–47 months); Older High Functioning or Older Low Functioning, (aged 48–71 months). Parents in the T group were initially taught to use a number of facilitative strategies at group session, followed by a monthly out of home meeting with a therapist for the first six months, and bi-monthly meetings for the following six months. Parents were asked to interact with their child for 30 minutes daily. They received coaching and feedback from the therapists based on video recordings of interactions at the home visits. A pre/post assessment instrument was used with a 12-month interval. Frequency counts within the 30- minute videos of primary carer and child, and a language report completed by parents were used to gather data.

Findings show that the parents in the T group increased their responsive utterances by 7.3 % (in particular comments and statements) while those in the C group decreased such utterances by 7.6%. Further the parents in the T group decreased their directive utterances by 7.1% whereas the parents in the control group increased their use of directive utterances by 7.6% (demands and intrusive comments) over the year. The authors found that the children in the treatment group showed improvement in reciprocal interaction, social engagement with their caregiver and in spontaneous initiation of communication. They reported a 700% increase in the T groups expressive vocabulary with improvements found in all four sets of children while only the Young High Functioning set in the C

group increased their vocabulary. The Young Low Functioning set in the T group made the greatest improvement in the acquisition of speech. However, it is not clear if, and how many of the children in the T group were nonverbal at baseline. They report that four of the 14 children in the C group did not acquire speech suggesting that nonverbal pupils in the T group at baseline were verbal at post intervention. However, the reported increase in the children's expressive vocabulary was derived solely from parental reports using the MacArthur Communicative Developmental Inventory (MCDI) (Fenson et al., 1993). No independent standardised language assessment was carried out. This current study seeks to address this limitation by exploring the impact of the social interactionist strategies on the pupils' vocabulary in an objective manner by analysing their language gathered from the observations of the interaction sessions.

Green et al. (2010) carried out a subsequent large-scale study of the same intervention using the same training protocols and research design (randomised control) with the parents of children on the AS. There were 77 children in the target group between the ages of 2 years and 4 years 11 months. The authors confirmed that the intervention aided the parents in becoming more responsive. Responsive utterances by parents in the T group had increased by almost 20% compared to 1.4% by parents in the C group. Child-initiations increased by almost 12%. The duration of shared engagement between the dyads within the treatment group also increased. In this study the authors assessed the impact of the intervention on the child's language by carrying out a standardised assessment while also gathering information from the parents using the MCDI assessment. The results from the standardised assessment showed no group difference on language while the parental report confirmed that the children from the T group had significantly increased both their receptive and expressive vocabulary. These findings highlight the need for objective assessment and analysis of the child's language when parents are involved as participants in the study. However, a true picture of the abilities of children on the AS is difficult to capture using standardised assessment because of their lack of social motivation to engage in the process. To investigate the impact of the classroom adults' participation the PD on the pupils' language abilities in this current study, the researcher compared the pupils' language use during the pre and post videoed interactions.

Mahoney and Perales (2003) explored the effectiveness of a Relationship-focused intervention on the responsiveness of 20 mothers and the social skills of their young child (mean age: 32 months) on the AS. Each mother was given intensive coaching for an hour

each week in the responsive strategies of reciprocity, contingency, shared control and affect, and in how to match their child's interaction pace. Pre- and post-intervention data were collected using video (5-10 min), questionnaires, and interviews. The videos were analysed to ascertain the frequency of the mothers' "responsiveness" (reacts to what the child is doing or saying), "affect" (accepts what the child is doing or saying), "achievement" (reinforcement), and directiveness behaviours. The Child Behavior Rating Scale was used to analyse children's social-communication behaviours (attention, persistence, interest, co-operation, initiation, joint attention, and affect). The authors found that the mothers made statistically significant improvements in responsiveness and affect but not in achievement and directiveness. There was a statistical significant improvement in all seven child behaviours. They also found that the mothers who made the greatest changes in responsiveness had children who made the most improvement in their social interaction abilities.

A multiple case study carried out by Girolametto et al. (2007) examined the impact of "More Than Words" (MTW) (a social interactionist intervention), on the mothers' use of responsive language (wh-questions, yes-no questions, choice questions, responsive comments) during periods when their children on the AS (aged between 2 years 8months and 3years 2months) were engaged and unengaged. The children's social-communication skills (rate of their communicative acts, initiations, increase in vocabulary, use of different words and engagement with the adult) were also explored. The parents reported their children's initial expressive vocabulary size as 30 words, 90 words and 380 words. Parents were trained during a 2.5-hour weekly group session over an 11-week period in facilitating (e.g., observe the child, follow the child's lead), eliciting (e.g., wait), and language development (e.g., labelling, expansions) strategies. Training activities included interactive presentations, discussions, video tape analysis, and practice of strategies. Three home support visits also occurred during the intervention. Data were collected from pre- and post- videotapes (4 x 5-minute sessions using specific activities) and from pre- and post- parent completed MCDI forms. One mother made great gains in her responsiveness across the two contexts (child engaged and unengaged). The mother of the child who had the least language but was observed to be the most responsive during the initial interactions continued to be the most responsive increasing her responsiveness when the child communicated with her, but her responsiveness remained almost the same when her

child was unengaged. The mother of the child with the most speech (but who was reported to rarely use his words) increased her responsivity when he was unengaged.

A number of positive changes occurred in the children's social-communication skills. All three children made gains in the rate of their communicative acts and two of the three children demonstrated increases in the frequency of their social initiations. The three parents reported considerable increases in their children's expressive vocabulary following the 11-week period. The child who had the least amount of reported vocabulary to begin with, made the greatest gains (+ 44 words; 146% increase). Two of the children doubled their use of unique words during the follow up interactions while those of the third child increased five-fold (albeit from a very low base of three unique words). The child who was least communicative during the initial interactions increased his communicative acts but continued to be least communicative at follow up. Further, he did not initiate at all during the follow up interactions. These findings from this study indicate that some adults will embrace the content of the training they receive more than others and that the impact of the implementation of the content will be more successful with some children than others.

McConachie, Randle, Hammal, and Le Couteur (2005) reported similar improvement in preschool children on the AS as the children's expressive vocabulary had on average, more than doubled (34.7 words to 72.76 word) over the seven months of the intervention while the children on the AS in the wait group were reported to have increased their speech output by 8.17 words during the same period. While the increase in expressive vocabulary is laudable in both studies, it must be acknowledged that the results were gathered from the parent involved in the intervention, using a MCDI form. This current study will seek more objective evidence of the language outcomes for the children through a comparison of the pre and post videoed interactions.

Girolametto and colleagues (2007) also found that the duration of the three adult-child dyads' shared engagement episodes increased following parent training. They based this finding on the increased frequency in shared engagement episodes observed during the post training observations. Oono, Honey, and McConachie (2013) in their meta-analysis of parent mediated responsive approaches with their children on the AS (ages 1 year to 6 years, 11months) and the study by Green et al., (2010) of a social interactionist intervention, also reported that the duration of shared engagement increased. However,

while reporting an increase in the duration of shared engagement following training in social interactionist strategies is laudable, exploring the nature of the shared engagement would offer greater insights on the impact of the intervention on the interactions. A limitation of Girolametto and colleagues study is, that they identify how a cycle within an episode of shared engagement was measured in their study but did not report on the number of cycles observed within each episode of shared engagement. The child with the largest vocabulary in their study engaged in the least number of shared engagement episodes during the post-PD interactions, but perhaps he had longer chains of interaction than the other children. Exploring the nature of the episodes would give greater insight. It could identify the length of each chain, the balance of turns within the shared engagement episode and could also identify what caused the episode to terminate, and in doing so inform future adult training. This current study seeks to address the limitation in Girolametto's study by exploring impact of the adults' participation in the PD on the nature of the shared engagement episodes.

Venker et al. (2011) investigated whether parents of children (aged between 28 and 68 months) on the AS could increase their use of specific social interactionist strategies (follow in comments, linguistic mapping, expansions, communicative prompts, and acknowledge all child's behaviours as communicative) and decrease their use of re-directive utterances during play-based interactions following training. They also explored the changes in the children's prompted and unprompted social-communication. The authors randomly assigned 14 dyads to the treatment group (T) and a wait group (C). Each parent in the treatment group had access to 8-10 hours of group instruction, 1.5 hours of individual coaching and 12-14 hours of small group coaching sessions over an eight-week period. Data were collected from a 10-minute videoed pre and post play interaction session during which the parent was asked to interact with their child as normal using a set of toys provided (no information given as to what they were). The parents in the T group demonstrated greater increases in their use of three strategies: follow in comments ($p<0.03$), communicative prompts ($p<0.01$), and their responsiveness to child communication acts ($p<.03$). These parents also demonstrated greater decreases in their use of redirects ($p<.01$) than the parents in the control group. The children in the T group demonstrated significantly greater gains ($p<.01$) in their communicative acts than the C group, confirming findings reported by Girolametto and colleagues (2007) that children's social-communication acts increase when their caregiver becomes more responsive.

However, there were no significant group differences in verbal or nonverbal initiations, despite the fact that the parents in the T group increased their follow in comments, a strategy identified as supporting the language development of children on the AS (Haebig et al., 2013; Siller & Sigman 2002; 2008).

Siller et al. (2013) carried out a randomised control study of a mother-mediated, focused play intervention. Thirty-six mothers and their children on the AS (mean age 58.3 months) were assigned to a treatment group (T) (focused play) where the mothers were taught strategies to maintain interactions and to support development of their child's social-communication and language. Thirty-four other mothers and children on the AS were assigned to a control group. The T group was provided with 12 one and a half hour, in-home training sessions. Siller et al. found, like Girolametto et al. (2007), that while all of the mothers became more responsive following training, the mothers who were rated as insightful initially demonstrated statistically greater gains ($p < 0.01$) in synchronisation at exit than the mothers who were not rated as insightful. Interestingly, the insightful mothers assigned to the control group showed a significant decrease in synchronisation with their child over time, suggesting the importance of nurturing the innate interaction skills of parents of children on the AS. There were no significant group differences in the children's expressive language as assessed by the researchers a year after the intervention. However, the authors found that the children in the T group with minimal language (<12months) showed a significant gain in expressive language. Carter et al. (2011) also found that parental training in responsive strategies (MTW approach) benefited some children on the AS more than others. A modest effect was observed on the communication of the group of children who had low interest in objects at the beginning of the intervention whereas the use of the strategies by parents of more able pupils was not as evident. The findings of Siller et al. and Carter et al. suggest that the social-communication and language of more able children on the spectrum (those with more language and those with an interest in objects) do not benefit to the same extent as their less verbal peers when their parents are taught responsive strategies. Siller et al. suggest that children with more language require more sophisticated language input from their parents.

Impact of Providing Classroom Adults with Social Interactionist Strategies

There is a dearth of research on the impact of teaching responsive strategies to adults working in classrooms with pupils on the AS despite evidence that positive outcomes arise when parents are taught such strategies. This lack of research is surprising as the numbers of children being diagnosed on the AS is increasing at a rapid rate and the numbers of autism-specific classes being established is increasing. A possible explanation for this may be that school-going children are chronologically older and that the objective in classroom is to address the academic gaps these pupils have compared to their neurotypical peers (Kim & Mahoney, 2005). However, this current study seeks to address this gap as the researcher believes that pupils on the spectrum who are early communicators would benefit from the strategies known to ameliorate the social-communication gaps of chronologically young children on the AS. She believes that ignoring these gaps leads to more and greater difficulty in accessing academic learning and with participation in social interactions.

Only two studies (Kossyvakaki et al., 2012; McAteer & Wilkinson, 2009) were found that focused on teaching social-communication strategies to classroom adults working with pupils on the AS. McAteer and Wilkinson (2009) reported on the efficacy of the training of 18 school staff (with greater emphasis on two classroom adults) and the outcomes for the pupils in an evaluative study. All of the adults were taught 11 social interaction strategies over a five-week period. Data were collected using pre/post self-rating scales from the 18 staff and interviews and videoed interaction clips of the 2 classroom adults. The authors reported that the staff increased their use of waiting, listening to the pupil, commenting on pupil's attentional focus, following the pupil's lead, and allowing the pupil to choose. Additionally, the researchers reported that the pupil-initiated interactions more frequently and were actively engaged with the classroom adults. However, there were a number of limitations with this study: specific information on the strategies taught, and the communicative abilities and ages of pupils involved were not provided. The main findings relied on self-reports from the 18 staff and the analysis of the video was qualitative. Further, specific information on the frequency of the pupil's initiations and length of the interactions prior to and during the observed clips were not reported. This current study seeks to address the methodological limitations of McAteer and Wilkinson's research.

Kossyvaki and colleagues (2012) explored the effects of social interactive training on the interactive style of three adults (teacher and 2 teaching assistants) in an autism-specific classroom and on the social-communication (initiations, form, and function) of six pupils on the AS (age: 45-62 months). Only one of the six pupils had words (10-20 used regularly) all the others had vocalisations. The trainer videoed each of the six pupils for two- hours across four contexts and subsequently, the trainer and the three staff reviewed the video clips together. Thirteen interaction strategies were identified from the clips as being effective in supporting social-communication development. The adults were asked to implement the identified strategies for a month and the interactions were videoed again. During the 4 weeks the researcher visited the class three times each week for brief consultations with the adult participants. A total of 80 minutes of randomly selected clips for each adult was selected (40 pre and post) for event sample analysis. However, it is not clear what tool was used to allow for the micro analysis of the clips or what coding process was used. Further it is not clear if all four contexts for the three members of staff were observed or if clips were randomly selected for analysis. The authors report that the adults increased their use of facilitative strategies and communication temptations and incorporated new strategies into the interactions. The three adults continued to use minimal speech as their main strategy. All of the pupils increased their initiations, the less frequent initiators at baseline making the greatest gains. They doubled their initiations from 71 times on average at baseline to 165 times on average at follow up. The two pupils who initiated quite frequently initially (average: 184 times) increased their initiations to an average of 218. The pupils' initiations increased across all four contexts, with the group initiating more frequently during snack time, followed by academic work. This latter finding is surprising as these are highly structured environments which, according to Chiang and Carter (2008), do not lend themselves to spontaneous initiations. The function of the pupils' initiations prior to classroom training was to request objects or activities and to express feelings. Two months later the pupils were initiating for attention and social interaction as well although non-social requests continued to be the main function of their communication. The pupils increased their use of various forms of communication but continued to use motoric acts most frequently. However, the authors do not report specifically on the impact of the intervention on the verbal pupil's use of words, nor on his verbal initiations. This current study addresses this limitation and reports on the all of the pupils use of speech and their verbal initiations

The research on social interactionist approaches indicates that adults can increase their use of the strategies introduced to them during the training. However, almost all of the studies report on the overall responsiveness of the adults with only one study identifying the specific strategies the adults used most frequently (Venker et al., 2011). Venker and colleagues (2011) advise that providing global outcomes of adult responsiveness may lead to future communication and language interventions using strategies that may not facilitate social-communication and language development. They argue that studies need to extract the specific strategies so that future interventions may be more successful in facilitating the social-communication and language of children on the AS. To address the short comings of previous research, this study, incorporating multiple cases, sought to ascertain the strategies the adults used most frequently within each case and whether there were commonalities of the strategies used across the cases. Significantly, in terms of a potential contribution to research, this study used sequential analysis in seeking to provide the first evidence of the transactional impact of adults using specific interactionist strategies on the quality and nature of social-communication of pupils on the AS.

There are mixed findings in relation to the effects of social interactionist approaches on the social-communication outcomes for children on the AS. Studies that directly assess language gains do not report significant improvement, while those relying on parental reports do. A number of reasons may account for these discrepancies. The use of standardised language assessments by the researchers may not be appropriate for children on the AS because these assessments are administered by adults unknown to the child whose primary diagnosis is social-communication difficulties. Further, the vocabulary in standardised assessments may not be in the pupil's repertoire yet, and words the pupil may use to interact may not be in the assessment. If we are seeking an accurate picture of the changes resulting from the intervention standardised assessment may not be an effective tool. Further, using a parental report may not be an objective method of ascertaining gains in language if the parents are involved in the intervention. Although many of the studies used video to explore the effectiveness of the intervention, only two studies analysed the speech from the clips: Girolametto et al. (2007) explored the children's use of different words and Kossvyavi et al. (2012) explored their use of vocalisations. Building on previous research, this study explores the gains in the pupils' language by examining the frequency, role and length of utterance used during the interactions. This study also seeks to build on the studies that investigated the impact of the intervention on shared

engagement (Aldred et al., 2004; Girolametto et al., 2007) by exploring the nature of the shared engagement in terms of duration of child-initiated episodes of engagement, reciprocity and length of cycles of engagement within those child-initiated episodes.

Chapter Summary

The theoretical and empirical literature reviewed in this chapter informed the model of professional development adopted for this study. The Pedagogical Knowledge Content (PCK) was underpinned by the social interactionist literature on the nature of communication and its development in prelinguistic neurotypical children. The difficulties that participant pupils on the AS had in achieving similar development and the participant adults' role in supporting the development of communication were continually revisited during the professional development sessions. Adults were encouraged to reduce their use of "directive" communication, and to increase their use of interaction strategies that would give the pupils autonomy and support pupil engagement and initiations. The researcher, in the role of More Knowledgeable Other (MKO), drew on theoretically informed content relating to social communication development to scaffold the participants' learning. Daily implementation of the PCK in their classrooms, individual and group reflection and problem solving on the outcomes of that implementation are examples of the learning activities used to enable the participants to assimilate the PCK into their own repertoire. The studies reviewed also informed the observation coding frame used to analyse the adult-child interactions, identified gaps in previous studies and informed the initial analysis of the qualitative data..

Chapter Three: Methodology

Introduction

The acquisition of social-communication skills is a fundamental challenge for pupils on the autism spectrum (AS). Specific early developmental skills that are often absent or delayed in pupils on the AS include the rate of communication, shared attention, initiation of and responding to communication, joint attention and social affect (Stone et al., 1997; Wetherby et al, 1998; 2008). Difficulties in these early social-communication skills impact on their ability to interact and learn from their environment. From the transactional model of social-communication development, the more the child interacts with a responsive adult the more the pupil will learn and the more responsive the adult becomes (Sameroff, 2009; Sameroff & Fiese, 2000; Warren & Brady, 2007; Warren, Brady, Sterling, Fleming, & Marquis, 2010).

The main purpose of this study therefore was to investigate the impact of a Professional Development (PD) initiative that focused on enhancing the communication between classroom adults and their young pupils on the AS. Over the course of an academic year, a group of teachers and SNAs participated in a programme of professional development that addressed the use of social-communication and environmental arrangement strategies. The objective of the initiative was to influence the manner in which these adults interacted with their pupils, by encouraging the adults to implement and reflect on their use of the PD content, thereby deepening their knowledge and understanding of how pupils on the AS can best be supported in developing appropriate social-communication skills.

In this chapter, the design of the study and the multiple methods employed are outlined and a rationale is provided for the particular approaches adopted. This rationale is discussed, with reference to the differing research paradigms that underpin educational research. It is argued that the approach adopted here serves the core purposes of the study. Relevant data relating to the participants are presented, the techniques used in the collection and analysis of data are described, and questions of reliability and validity are examined. An outline of ethical issues that emerged, and the way in which these were addressed concludes the chapter.

The studies reviewed in the previous chapter have shown that a relationship can exist between early social communicative skills of children on the AS and subsequent development of these children's social and communicative functioning. Research carried out with young children on the AS involving parents and school staff have also shown that positive change in the child's social-communication can be achieved when the adult modifies his/her communication by employing a responsive style of interaction. Building on these previous research projects, this study locates the investigation in the context of the Irish primary school setting and investigates whether relevant professional development can be provided using a model developed by the researcher within an Inside/Outside framework (Hoban, 1996). The pupils involved were of school going age and therefore older than the subjects in most previous research. All were described by their teachers as using little or no language.

Philosophical Considerations

Much has been written about the differing philosophical assumptions underpinning research in the field of education and debate goes on as to whether good research requires strict adherence to the tenets of one or other paradigm when formulating one's research design. The concept of paradigm as an underlying philosophical belief about the nature of social phenomena and social structures, influencing, if not dictating, the methods of enquiry that will be used in research, has been a feature in "...the long-lasting, circular, and remarkably unproductive debates discussing the advantages and disadvantages of quantitative versus qualitative research" (Feilzer 2010, p. 1). A personal version of this wider debate occupied the researcher's mind for some time at the beginning of the design process.

When developing an initial overview of the research design, this researcher's starting point was to reflect upon the central aims of the study and to develop a methodology appropriate for the achievement of those aims. Those aims were:

(1) to explore whether changes occurred in the prelinguistic and early linguistic skills of five pupils on the AS which might be attributed to social-communication PD initiative accessed by teachers and SNAs. In particular information was sought on the changes in relation to the role of their communicative acts (responses, initiations, no response), the means of communication (for example, gestures, actions, symbols, words) by which they communicated, the length of utterance and the functions of their communication

(behaviour regulation, social interaction, and joint attention). It was also predicted that the pupils' social reciprocity (turn-taking and shared attention) would increase;

(2) to examine the use of the social-communication promoting strategies introduced to the adult participants during the PD sessions. It was hypothesised that, as a result of their participation in the PD, the adults' use of responsive communication would increase significantly and that there would be a discernible decrease in their use of directive strategies during interactions with pupils:

(3) to determine the perceptions of the adult participants of the initiative as a model of PD, and

(4) to explore the impact of the More Knowledgeable Other in supporting the learning of the adult participants.

It is clear from the nature of these aims that what is sought from the research is a set of outcomes that would have sufficient generalizability to contribute to worthwhile extension of knowledge and improvement of practice for teachers working in the classroom, or indeed those working in the fields of pre-service and in-service teacher education, both ultimately pursuing improved outcomes for pupils. The techniques and approaches used in pursuit of these outcomes would have to be sufficiently flexible to capture a broad spectrum of data likely to include, for example, the frequency and duration of pupils' utterances (quantitative) as well as the perceptions of the adults in relation to their participation in the initiative (qualitative). A methodology with the capacity to allow for the collection and analysis of data from different settings, taken at different times, would be required. The enquiry sought to discover patterns, and where possible to deduce fact from those patterns. Where then does this lie along the paradigmatic spectrum in terms of the ontological and epistemological assumptions underpinning the design?

Elements of the research are post-positivist in nature in that they seek to examine causes that influence outcomes and to test hypotheses in order to refine existing knowledge (Khumwong, 2004). Nonetheless, while some general truths may be confirmed in this study, for example, that responsive interactive strategies are likely to have overall positive effects on the participants, it was also predictable that effects will vary between, and across individuals given that interactions within classrooms are highly complex, influenced by each individual's characteristics, the experiences they bring, and the context in which the

interaction happens. It will be valuable to explore these “multiple realities” (Krauss, 2005) and to seek to develop an understanding of why they occur. The latter would require a more constructivist approach, seeking qualitative data to reveal less obvious meaning. A mixed method approach, offering scope to investigate different aspects of the overall study, to use techniques appropriate to the situation under examination, was required.

Of late, the previously “unbridgeable ontological gap” (Johnson, 2009, p. 454) between proponents of the constructivist (qualitative) and post-positivist (quantitative) paradigms has narrowed considerably with the increasing acceptance of pragmatism as a philosophical paradigm to underpin mixed method research. This approach offers a philosophical resolution to partisan debate about the relative strengths and values of the qualitative/quantitative approaches and brings “epistemological and paradigmatic ecumenicalism within reach” (Johnson & Onwuegbuzie, 2004, p. 15). Pragmatism is based on an acceptance that there are “singular and multiple realities that are open to empirical enquiry and orients itself toward solving practical problems in the “real world”” (Feilzer, 2010, p. 8). In doing so, it allowed the researcher to select modes of enquiry that offer the best chance of obtaining useful answers to research questions without the constraint of “mandatory” adherence to one or other technique based on paradigmatic allegiance to constructivist or post-positivist beliefs (Teddle & Tashakkori, 2012).

Pragmatism takes an explicitly value oriented approach to research, content to accept that current beliefs and knowledge are rarely perfect, certain or absolute, but endorsing practical research in pursuit of finding what works (Johnson & Onwuegbuzie, 2004). It is a philosophy that believes that new knowledge arises out of actions, the situations in which the actions occur, and the results of the actions (Creswell, 2013). Researchers who ascribe to this philosophy begin with a hypothesis in relation to the research question(s) and then seek to understand “what” will work and “how”. Pragmatists look to where they want to go with what they are researching and seek new understandings around it. There is an openness to be flexible in how they go about the collection of data so as to ensure that important elements are not overlooked, and flexible in how they analyse the information collected to ensure superior answers to the question(s).

Research Strategy

In order to achieve sufficient breadth of data to investigate the research questions, a multiple case study approach was selected as the primary design. Stake, (2000, p. 435)

advises that “case study is ...a choice of what is to be studied, by whatever methods we chose to study the case”, either qualitative, quantitative or both. Hartley (2004, p. 323) states that case study research “consists of a detailed investigation, often with data collected over a period of time, of phenomena, within their context”. Yin (2009) adds that a case study strategy is chosen believing that the contextual elements within the case would have an influence on the issue studied. From the researcher’s social constructivist view of the pivotal influence of context in learning, she believed that the use of a case study research framework would provide deeper understanding of the findings. Using multiple data collection tools, the issue can be explored through multiple lenses (Baxter & Jack, 2008), permitting the researcher to delve deeper within the phenomenon studied to achieve a clearer comprehension that a purely quantitative study would not allow (Cohen, Mannion, & Morrison, 2011).

There has been criticism of the case study as a research strategy, with some taking the view that it is a soft science, unscientific and subjective (Denzin & Lincoln, 2000). Hartley (1994) claimed that case studies lack rigour and reliability and that they do not address the issues of generalizability in contrast to quantitative methods. Yin, (2009) counters this stating that the case study offers the opportunity to go beyond just reporting on abstract theories and allows the researcher to explain and describe what was happened, how it happened, and why it happened

Case studies, like experiments are generalizable to theoretical propositions and not to populations or universes. In this sense, the case study, like the experiment, does not represent a “sample” and in doing a case study your goal is to expand and generalize theories (analytic generalization) and not to enumerate frequencies (statistical generalization) (Yin, 2009, p.10).

An objective of this current research was to explore the impact of social-communication strategies within a classroom environment and to describe the ways in which they supported, or differed from, earlier research that had been focussed outside the school context and with younger children on the AS. The findings from a single case study cannot, on their own, be regarded as robust, and conclusions from a single case may be specific to its particular context. Yin (2009) suggests that having 4-6 case studies is similar to conducting the same number of experiments on associated topics, that the conclusions from one case could be compared and contrasted with findings from the

others. If the first case provides evidence supporting the theoretical view underpinning the study, and findings from the other sites highlight similar patterns, this suggests replication of findings and contributes to the strength of the evidence (Yin, 2009). It also allows for greater generalizability (Cohen et al., 2011). For these latter reasons, the impact of the PD content was studied across multiple sites. For the purposes of this study then, five cases were selected, each one consisting of a participating pupil, his/her teacher and the SNA assigned to the class.

Selecting the cases.

In March 2011, 15 teachers replied to an advertisement, placed in “IN TOUCH”, (the magazine published by the Irish primary school teacher union) that outlined briefly the focus of the research (Appendix 2). Subsequently (by phone), each teacher was given a detailed explanation of the study, including the commitment involved. The phone calls identified that 10 of these teachers had a pupil who rarely initiated an interaction and who was either non-verbal or minimally verbal (the criteria for the pupils involved in the study). Six teachers agreed to participate. These teachers were asked to share the information about the study with the SNAs in their classroom and to ascertain whether they would be interested in being involved in the study. By the time ethics approval had been received, two of the teachers had received a place on a post graduate course and could not commit to the study and they withdrew.

Following ethical approval in April, the four teachers were contacted and commitment to participation in the study was obtained. A SNA from each classroom also volunteered to participate. Each SNA was spoken to by telephone and all four joined the study. A plain language statement and letters of consent were sent to the adult participants at the end of May (Appendices, 3 & 4).

Acting on the advice derived from the pilot teacher and following Board of Management approval in each school (Appendix, 5), the class teacher approached the parents with the plain language statement and assent form (Appendices, 6 & 7), she explained the project and in particular the rationale for videoing the interaction sessions. It was thought that parents would seek clarification and greater understanding from a familiar person and make a more informed decision. The parents were offered the opportunity to meet with the researcher to discuss the study further and one availed of the offer. All four gave their consent for their children to participate.

A pilot study was carried out in April-May 2011. On its completion, the parents of the pupil involved in the pilot, and the school management, requested that the pupil would be included in the full study. The pupil was moving to a new classroom in the autumn and neither the teacher nor SNA in the new classroom had been involved in pilot; all three were accepted as participants. This study involves a purposive sample of five teachers, five SNAs and five pupils from classes for pupils on the AS across five different settings. Purposive sampling involves selecting certain units or cases ‘‘based on a specific purpose rather than randomly’’ (Tashakkori & Teddlie, 2003 p. 713). This type of sample is considered highly appropriate for multi-case study design as it had similar characteristics relevant to the research topic (all autism-specific primary classes, all with an infrequent communicator) but were also different in terms of school context and characteristics of the individuals involved allowing for in-depth study of the topic (Stake, 2000; Yin, 2009).

The cases.

This research was carried out with five cases involving a pupil, a teacher and SNA from a special class for pupils on the AS in five primary schools across Ireland. The school context and participants’ profiles are outlined below. In order to preserve anonymity, pseudonyms for schools, adults and pupils are used throughout the thesis. To distinguish each case within the tables and figures, each school and its staff and pupil were assigned a colour. Shanbailey (Ella, Nuala, & Charlie) = Purple; Clonadoo (Síofra, Sunita, & Freddy) = Blue; Windyvale (Yana, Kim, & Elana) = Green; Bridgeport (Violet, Heidi, & Keeva) = Red; Grindstone (Maddie, Donna, & Trevor) = Yellow.

School context.

All the schools (Appendix 8) in this study were co-educational primary. Two were small rural schools, with a staff of six (four teachers and two SNAs). They had two mainstream multi-grade classrooms, a SEN teacher and one class for pupils on the AS. One school was urban with a total of 38 teachers; the others were suburban schools with 15 and 24 teachers respectively. The urban and a suburban school had two classes for pupils on the AS while the other suburban school had three. Three of the classes had the maximum number of pupils (n.6) for the Irish educational system. One class had all boys, three classes had two girls and the other had one girl enrolled. The pupils in four of the classes were between four and eight years of age, while the pupils in Grindstone were between the age of four and twelve years.

The teachers.

Table 3.1 below provides the demographic information on the teachers. Their ages ranged between twenty-five and fifty. Three teachers had less than five years teaching experience, and all the teachers had less than three years' experience teaching pupils on the AS. Two of the teachers had obtained a teaching qualification as their undergraduate degree (Ella & Violet), while the other three teachers completed a post graduate diploma in primary teaching. Yana was Scottish and had a master's in psychology and a Post Graduate Certificate in Autism, Síofra also had a Post Graduate Certification in Autism while Maddie had completed a Post Graduate Diploma in Special Educational Needs.

Síofra had been teaching for four years, the first three were in a mainstream class and she had just completed her first year in class for pupils on the AS. The participant pupil had been in her class. Violet had twenty-nine years teaching experience, ten years in a mainstream class, sixteen years teaching pupils with severe and profound general learning disabilities, and the last three years teaching in a class for pupils on the AS. She had taught the focus pupil for one year. Yana had taught for twelve years in a mainstream primary class and three years in a class for pupils on the AS. The target pupil had been in her class for the past year and a half. Maddie had three years teaching experience: two of them were in a second level mainstream school. She began teaching in her current school in a mainstream class and moved to the class for pupils on the AS after four months. She had been teaching the participant pupil for six months. Ella had spent her six years teaching in a mainstream class. Initially, a pupil on the AS had been included in her class on a partial inclusion basis but by the end of the year he was attending her class fulltime. Ella had just begun teaching the focus pupil when she joined the PD.

Table 3.1: Demographic Information – Teacher Participants

Teacher	School	Age	Experience with pupil	Experience in ASD	Total Teaching Experience	Furthest Qualification
Ella	Shanbailey	30-35	0 months	12 months	6 yrs	PGD Ed
Síofra	Clonadoo	25-30	12 months	12 months	4 yrs	GCASD
Yana	Windyvale	35-40	18 months	24 months	14 yrs	MSc & GCASD
Violet	Bridgeport	45-50	12 months	36 months	29 yrs	B Ed
Maddie	Grindstone	25-30	6 months	12 months	3 yrs	PGDSEN

Teachers' autism-specific training.

Table 3.2 below, describes the autism-specific training received by the teachers. Ella had 2-3 lectures on autism during her undergraduate degree in education ten years prior to the study but had no subsequent training in autism. Violet reported having had no input on autism on her B-Ed course. Yana received no input on autism while completing her undergraduate and master's degree in psychology, nor during the postgraduate diploma in education. The other two teachers who each had a post graduate diploma in education recalled having at least one lecture on ASD. Both Síofra and Yana had recently completed a year-long blended learning Graduate Certificate in the Education of Pupils with ASD. They attended three weeks of face to face lectures and a number of lectures on-line and they were observed and given feedback on their teaching during that year. Maddie had completed a year-long distance learning Post Graduate Diploma in Special Educational Needs that included a module on ASD. Four of the five teachers had either attended or accessed on-line, a number of short courses related to autism since becoming a teacher in an autism class.

Table 3.2: Teachers' Autism-specific Training

Teacher	Autism Content		
	Pre-Service Training	Postgraduate	Short Courses on Autism
Ella	2 - 3 lectures	None	None
Síofra	1 lecture	GCASD	TEACCH (7 days), PEP-3 (1 day), Social Stories (1 day) Intensive Interaction (1 day), ABA (an online module)
Yana	None	GCASD	TEACCH (5 days), PEP-3 (1 day), Social Stories (1 day) Social Interaction (1 day), ABA (5 days)
Violet	None	None	TEACCH (5 days), PECs (2 days), Hanen (1 day) Understanding Autism (an online module), ABA (an online module)
Maddie	1 lecture	Module	TEACCH (2 days), PEP-3 (1 day), Crisis Prevention (2 days), ABA (5 days)

The special needs assistants.

The SNAs were all female and their ages ranged between 35 and 55 years. They had between two and half years to twelve years' experience working as a SNA while their experience working with pupils on the AS specifically ranged from less than a year to seven years. All of Donna's experience was in supporting pupils on the AS. The five SNAs had completed an undergraduate course in Pupil Care at Level 5, while Kim had completed the course at level six and was pursuing a degree with the Open University in Childhood and Youth Studies. Nuala had completed an undergraduate diploma level 6 course in Special Educational Needs. Two of the SNAs had supported their target pupil for less than a year; Nuala had just begun working with her target pupil while Donna and Kim had worked with their target pupil for two years and almost two years respectively. All of the SNAs reported that they had no specific training in autism prior to the PD and none attended any course while participating in the PD (Appendix 9).

The pupils.

Three boys and two girls were selected by their teachers to participate in the study. At the onset of the study Elana and Trevor were six years and two months; Charlie and Keeva were almost six years old, and Freddy was four years nine months. Three of the pupils were beginning their third year of autism-specific provision at the beginning of the study while Freddy and Keeva were beginning their second. Trevor attended an ABA autism preschool before enrolling in his current class and continued to have access to three hours ABA tutoring each week outside school hours during the year of the study. Keeva and Elana also received three hours after-school tuition from qualified teachers each week during the study. All of the pupils had psychological reports and had been diagnosed as having a pervasive developmental disorder, but the language used to describe the pupil's disorder by the diagnosing bodies differed (see table 3.3 below). Four of the pupils were reported to have cognitive delay; Elana's psychological report indicated that her cognitive level could not be ascertained. Charlie had co-existing cerebral palsy, resulting in gross and fine motor difficulties on the left side of his body. Trevor was described as nonverbal; Charlie, Elana, and Keeva were reported to have speech and Freddy had a number of words but all five were reported as infrequent communicators.

Table 3.3: Pupils' Demographics:

Name School	Age at onset	Nature of SEN	Verbal ability	Time in Autism Provision	Home tuition prior /after study
Charlie Shanbailey	70mths.	Autism with mild general learning disabilities and cerebral palsy	Has words, rarely speaks	3rd year	No
Freddy Clonadoo	57mths.	Autism with significant global development delay.	Very few words	2nd year	No
Elana Windyvale	74mths.	Classic childhood autism, unable to ascertain functioning level	Has words, rarely speaks	3rd year	3 -1hr. sessions weekly
Keeva Bridgeport	70mths.	Autism with significant cognitive disabilities	Some words rarely speaks	2nd year	3 -1hr. sessions weekly
Trevor Grindstone	87mths.	Autism with moderate general learning disability	Vocalises, No words	3rd year	2 -1 ½ hr sessions weekly (ABA)

Stages of Study

Table 3.4 below describes the four stages of the study and the data collection instruments used at each stage of the study. The stages included a pilot, pre-Professional Development (pre-PD), the Professional Development programme (PD) and Post-Professional Development (post-PD). The pilot was conducted during April, and May of 2011. Baseline data collection took place during the months of June and July prior to the beginning of the PD initiative. The adult participants attended PD meetings on six occasions over a seven-month period beginning in September 2011 and ending in April 2012. Post-PD data were collected in June and July of 2012.

Stage one: Pilot.

The pilot was carried out in an autism-specific provision classroom in a primary school known to the researcher over a number of days during late May and early April prior to the professional developmental (PD) initiative. The principal identified a pupil in a class for pupils on the AS who had speech but rarely spoke, never initiated interactions with others and whom she described as being a loner. She sought permission from the Board of Management on the researcher's behalf to carry out the pilot in the school. The principal also approached the classroom staff to gauge their interest in becoming involved in the pilot study. Both the teacher and a SNA offered to participate, and the consent documentation was sent to them. On receipt of their consent forms I (the researcher) interviewed them and sought their opinions on the plain language statement, consent and assent forms. The teacher offered a number of language changes to the plain language statement. She also suggested that she, as the pupil's teacher should approach the parent to explain the study and seek permission for the pupil's involvement. The researcher met with one of the parents (the father) of the pupil subsequently to explain in more detail the nature of the study. Seeking of permission from the parents for the main study followed the same procedure.

Table 3.4: Stages of Study:

Timeline	Stage	Participants	Data Collection Instruments
April-May 2011	Pilot	1x teacher	<ul style="list-style-type: none"> • Interview • 3 x 10 minutes video clip of 1:1 interaction with pupil to elicit communication
		1 x SNA	<ul style="list-style-type: none"> • Interview • 1 x 10-minute video clip of 1:1 interaction with pupil to elicit communication
		1 x child	<ul style="list-style-type: none"> • PEP-3 • 4 x10 minute video clips (3 clips of 1:1 interaction with teacher & 1 clip of 1:1 SNA)
June-July 2011	Pre-PD	5 x teachers	<ul style="list-style-type: none"> • Interview • 3 x 10 minutes video clip of 1:1 interaction with pupil • Questionnaire on pupil's communication strengths and needs
		5 x SNAs	<ul style="list-style-type: none"> • Interview and • 1 x 10-minute video clip of 1:1 interaction with pupil • Questionnaire on pupil's communication strengths and needs
		5 x Pupils	<ul style="list-style-type: none"> • PEP-3 (social communication elements) • 4 x 10-minute video clips (3 clips of 1:1 interaction with teacher; 1 clip of 1:1 interaction with SNA)
Sept-April 2011 Sept: PD 1 Oct: PD 2 Nov: PD 3 Jan: PD 4 Feb: PD 5 April: PD 6	PD	5 Teachers & 5 SNAs	<ul style="list-style-type: none"> • Transcripts of discussion of observations of the implementation of PD Content Learning Log after each PD meeting • Weekly Reflective diary • Questionnaire evaluation of PD
June 2012	Post PD	Teachers	<ul style="list-style-type: none"> • Interview • 3 x 10 minutes video clip of 1:1 interaction with pupil
		SNAs	<ul style="list-style-type: none"> • Interview • 1 x 10-minute video clip of 1:1 interaction with pupil
		Pupils	<ul style="list-style-type: none"> • Pep-3 (communication elements) • 4 x10 minute video clips of 1:1 interaction with teacher (3 clips); SNA (1 clip)

The adults in the pilot were interviewed. A camcorder was provided, and the adults were asked to video themselves interacting with the pilot pupil. The teacher was asked to video three 10-minute sessions, the SNA was asked to video one ten-minute session. The only guidance given to the adults was to elicit as much communication and language as possible during the session. The pilot pupil was assessed by the researcher using the Psychoeducational Profile-Third Edition (PEP-3) (see section below on research techniques). This session was videoed for interrater reliability testing. The researcher also interacted with the pupil using the strategies which would underpin the PCK of the PD and used items thought by the staff to be highly motivating for the pupil, resources derived from the literature on motivating pupils on the AS and activities for developmentally young pupils. These sessions were all videotaped.

The piloting procedure was a pivotal stage of the study for a number of reasons. Arising from the pilot teacher's suggestions, modifications were made to the language in the plain language statement. The protocol of approaching the parents was changed, with the teachers explaining the nature of the study to the parents before the researcher met with them. Analysis of the initial interview transcripts identified the need for additional questions to provide a fuller description of the communication and language occurring between the adults and the pupils in the classroom. Appendix 10 presents the pre-PD and the post-PD interview schedule, with the refinement of the pre-interview schedule arising from the pilot noted. The difficulties experienced during the assessment of the PEP-3 led the researcher to use tangible pupil reinforcers (identified over the phone with class teacher) during the four subsequent PEP-3 assessments to achieve greater co-operation. The PEP-3 data were collected over a school day as the pupil was given breaks when his/her motivation to engage with the assessment waned.

The interaction clips provided by the teacher and SNA allowed for the piloting of the codes, leading to amendments to the code definitions; for example, initially an "initiation" was coded only if the pupil looked to the face of the adult, however the clips identified that the pupil frequently reached towards the adult or said something without looking towards her face, thus the code was amended to any action directed towards an adult. These clips were used for training the interrater in the coding procedure. The videos of the researcher in interaction with the pupil were used to model the strategies to the adults during the PD meetings.

Stage two: pre-professional development.

In order to establish a point of reference for comparison of data before and after the intervention, baseline data were gathered in relation to each participant. Information on the pupil was gathered by questionnaire completion, interviewing the classroom adults, using the PEP-3 Assessment and observation of adult-pupil interactions which was recorded on video. Data on the adults were collected using interviews and analysis of the interaction video footage.

During June and July, pre-PD data were collected in the four other settings. A camcorder was supplied to four of the five settings to record the video-footage. The fifth school had a camcorder in the class already and did not require another. Instructions on the use of the camcorder were provided. Each teacher was asked to record three 10-minute video clips of her interacting with the focus pupil over the course of the subsequent week. Each SNA was asked to record one 10-minute interaction clip. The only direction given to the participants was to try to elicit as much communication and language as possible from the pupil. The footage from these clips provided data on the participants' current modes of interaction and was used for comparison purposes following the intervention. The researcher returned to each setting a week or more later and spent a day there. Each school had a small, quiet room where interviews with the adults, and the PEP-3 assessment were carried out. The interviews were held either before the pupils arrived or when they departed for home. The teachers were also asked to fill in a short questionnaire based on the pupil's social-communication behaviours.

The pupil was assessed using the PEP-3. Breaks were given when required and a range of material reinforcers suggested by his/her teacher for their motivational value were used during the breaks to maintain the pupils' interest in continuing the assessment. These included items such as bubbles, jig-saw, spinning top, edibles, and wind-up toys. If the pupil did not wish to sit on the chair during the PEP-3 assessment, the assessment item was brought to the pupil and carried out wherever the pupil was happy to complete the task. Some of the items were therefore completed under the table, lying on the floor, and at a windowsill. The assessment of the PEP-3 was videotaped in each setting so that scoring could be done at a later stage. It also enabled inter-observer reliability to be carried out.

Stage three: The professional development programme.

Six PD meetings were held between September 2011 and April 2012. Table 3.5 below gives the timetable for each PD meeting. The meetings were held on Saturdays in the college where the researcher worked. Coffee and scones, lunch (sandwiches, hot & cold drinks), fruit, and sweets were supplied by the researcher at each meeting. The coffee and scones were available on arrival each morning and a half an hour was given to the participants to chat informally. During this half an hour at the second and subsequent PDs the researcher uploaded the videos which the adults had brought along for the group discussion session to her laptop. The first PD began at 9.30am with scones and coffee and finished at 3.00 pm with a break of half an hour for lunch. One of the participants was coeliac and food was bought to suit her diet for each PD. Each participant was given travel expenses calculated using the Irish public service travel rate for each day they attended the PD.

The first day was led by the researcher. The content of the morning session related to the concept of a collaborative PD, and the prelinguistic milestones typically developing pupils acquire when developing social-communication and language were also discussed. An outline of what was required from the adults during their participation of the study (Appendix 11) was also identified.

Input on strategies that facilitate social engagement was given after lunch (Appendix 12). Hand-outs were given for all teaching sessions throughout the PD and teaching was supplemented with video-clips of the researcher implementing the strategies during the pilot. The participants were consistently encouraged to implement the strategies throughout the school day. Teachers were asked to set aside ten minutes each day to implement the strategies during one to one interactions with the pupil participant. The teachers were asked to video one of these sessions each week and bring the weekly clips to the subsequent PD meeting. The SNAs were asked to implement the strategies when interacting with the pupil throughout the day and, if they had opportunities to interact with the pupil on a one to one basis, to plan for using the strategies learned at the PD in those one-to-one sessions. The SNAs were asked to video their interactions for the third meeting of the PD programme.

Teachers and SNAs were asked to complete a reflective diary at the end of each week on the template provided. This template was modified as the year progressed

(Appendix 13). A *Moodle* page had been set up by the researcher for participants' use. This online facility provided a platform for participants to maintain easy contact with each other and to upload materials for sharing, including the reflective diary. Alternatively, they could send the diary by post each week to the researcher. All participants elected to upload it to *Moodle* as they all had access to the internet in their schools.

Acting on feedback from the participants, subsequent sessions began at 9.00a.m. The group worked through lunch and finished as close to 2.00 pm as possible. Each PD meeting ended with the participants identifying their new learning in a learning log (Appendix 14).

Between each PD meeting, every teacher made an average of four video recordings of interactions with the focus pupil. Each teacher selected one of these video clips to share with the group at the subsequent meeting. During the second and all subsequent PD days, on average, one and a half hours was allocated specifically for review and discussion of these recordings. The participants were given scribble sheets and encouraged to list the communication strategies they observed and to note what worked well and why. They were also asked to offer suggestions on how the interaction might have been improved. At the third and subsequent meetings the owner of the clip began the discussion, talking about her aims for the interaction session, naming the strategies she had used and relaying to the group her overall perception of the session. This was followed by a plenary session during which the other participants articulated what they had observed and suggested ways to enhance subsequent similar interactions. Usually five video clips were viewed and discussed in this fashion during each PD session.

The role of the researcher during these discussion sessions was to facilitate the participants' contributions, to summarise major points and to encourage the participants to reflect on theirs and others' practice. However, as advised by Johns (1994), if information discussed was distorted or if pivotal elements of the interaction were not noticed, then the researcher highlighted this to the group. These group discussions were video-taped for later transcription and analysis. At the November PD meeting, the SNAs provided video clips for review by the whole group.

New PCK was introduced to the group during the second, fourth and fifth PD days (Appendices 15, 16, 17), while the strategies were constantly reviewed during all of the PD days. At the third meeting a lesson plan template was provided (Appendix 18) and each

school dyad was asked to write a plan together for a joint interaction session and to share the plan with the group. In January they were invited to discuss the outcome of the lesson and to share a 10-minute clip of this pre-planned interaction session if they wished. At the February meeting, each dyad was given 20 euro to purchase a resource(s) and was asked to bring it/them to the April PD meeting.

At the final PD, the dyads brought and discussed classroom resources they had purchased and which they had found to be motivating when eliciting communication and language from their pupil. They based an interaction plan on the use of a particular resource which they had selected and shared this plan with the group. At the end of this final PD, the participants were encouraged to continue using the strategies they had learned during the sessions. They were no longer required to upload their reflective diaries and the teachers were no longer required to video the interaction sessions. The post-PD protocol was explained; the teachers were again asked to record three 10-minute clips of interaction with their pupil and the SNAs, similarly, were asked for one 10-minute clip to be recorded in the week prior to researcher's return to the school at the end of June. The adults were advised once more to elicit as much communication and language as possible from the pupil. The last meeting concluded with the completion of the learning log and an evaluation of the PD process (Appendix 19).

Table 3.5: Timetable for Professional Development Meetings

	Time	Agenda	Content
September	09:30 - 10:00	Welcome, Tea, coffee and scones.	
	10:00 -10:30.	The PD Context	Appendix 11
	10:30 -12:30	Communication and Language (Typical Development & ASD)	Appendix 11
	12:30 - 1:00	Lunch	
	1:00 - 2:30	Facilitating Social Engagement	Appendix 12
	2:30	Learning Log- Reflective Diaries	Appendices 13, 14
October	09:00 - 09:30	Tea, coffee and scones (uploading of videos)	
	09:30 - 10:00	Revision of previous PD Content Group-Discussion & Reflection of Video brought by each teacher	Appendix 15
	10:00 -12:00	10:00 -10:30.	10:00 -10:30.
	12:00 - 1:30	PD Learning Logs	
November	09:00 - 09:30	Coffee & Scones (uploading of videos)	
	09:30 - 10:00	Revision of Strategies	
	10:00 -12:00	Discussion & Reflection of Video (SNA)	
	12:00 - 1:30	Discussion, Writing & Sharing of Lesson plans	Appendix 18
	1.30	Learning Logs & New Reflective Diaries	
January	09:00 - 09:30	Coffee & Scones (uploading of videos)	
	09:30 - 10:00	Types of Talk	Appendix 16
	10:00 -12:00.	Discussion of Video	
	12:00 - 1:30	Eliciting Strategies	
	1:30	Learning Logs	
February	09:00 - 09:30	Coffee & Scones (uploading of videos)	
	09:30 - 11:30	Discussion of videos	
	11:30 - 1:00	Bringing it all together	Appendix 17
	1:00 - 1:30	Learning Logs & New Reflective Diaries	
April	09:00 - 09:30	Coffee & Scones (uploading of videos)	
	09:30 - 11:30	Discussion of videos	
	11:30 - 1:00	Share the resources you bought – in pairs from each school Write an interaction plan for the resource - Share the plans with the whole group	Appendix 18
	1:00 - 1:30	Learning Log & Overall Evaluation	Appendix 19

Stage four: Post-professional development meetings.

The final visits to each setting occurred in late June and early July. The researcher visited each setting for the duration of a school day and the agenda and protocol were similar to that used at pre-PD phase. The camcorder was gifted to each teacher to use in their future work with all the pupils in their class.

Research Techniques

Multiple approaches to data collection were used to explore the research questions. The research tools used included questionnaires, interviews, social communication elements from the PEP-3 assessment, video, documents, and discussion fora. Interviews, videos, reflective diaries, PD discussion transcripts and learning logs were used to collect data on the adults' learning, while information on the outcomes for the pupils' social-communication and language skills was assembled from interviews, adults' reflective dairies, social-communication questionnaires, direct assessment using the PEP-3, and from videos clips recorded by the teacher and SNA. Documents (reflective diaries, learning logs, PD discussion transcripts, & overall evaluations) and post intervention interviews were used to explore the adults' experiences of the PD programme and the impact of the PD on their knowledge, skills and attitudes in relation to social-communication. The PD discussion transcripts and the adults' interviews provided the data for the impact of the MKO on the adults' learning. These data collection instruments will be discussed in the following sections.

Social-Communication teacher questionnaire.

A two-page social-communication questionnaire (Appendix 20) was developed, informed by the literature that highlights the behaviours and skills observed in very young, typically developing communicators but which may be absent in pupils on the AS (Buckley 2003; Cumine, Leach, & Stevenson, 2000; Rogers & Dawson, 2010). A questionnaire was used in the main study for a number of reasons. The pilot study indicated that, when interviewed, the teachers did not give many specific examples of their pupil's social-communication abilities and difficulties. The researcher was conscious of the time commitment that would be required to seek comprehensive information on the pupil's strengths and needs during the interview and was also mindful that continuing to seek information on one particular topic could cause the interviewee to become defensive

(Yin, 2009). There was also a risk that the researcher might inadvertently overlook some highly relevant information for the research or fail to gather it in the same manner from all participants, across all five settings. A further risk was that interviewees might not answer the questions in a consistent manner due to the way in which the questions were posed (McNamara, 2014). A questionnaire was judged to be an appropriate means of collecting the data. Yin (2009) suggests this type of questionnaire may be considered an interview. The questions were written in a Likert scale format, and opportunities were given to the teachers throughout the questionnaire to give examples or to otherwise elaborate on their answers. The questionnaire was administered to the teachers before the intervention and was repeated almost a year later, after the intervention.

Interviews.

Semi-structured interviews were audio recorded with the adult participants before and after the interventions (Appendix 10). The initial interviews focused mainly on gaining an understanding of how each adult was supporting the development of the focus pupil's social-communication and language at that time. Information was sought on the adults' knowledge of communication and language development, how they interacted with the participating pupil, what worked well during interaction with the pupil and what was challenging. How the teacher addressed the pupil's social-communication and language difficulties was explored and, finally each interviewee was asked to state what she hoped to achieve from participation in the intervention and what she hoped her pupil would benefit from her participation. Interviewing the two adults in each setting allowed for richer information, corroboration and contrary evidence to be collected during the interviews (Yin, 2009). Responses to the interview questions also yielded a richer description of the focus pupil which enabled the researcher to identify subtle characteristics that might not have been harvested from responses to questionnaires or from the PEP-3 formal assessment (Stake, 2006). Participants were asked to describe the pupil, and to talk about his/her social-communication abilities. Information about anything that strongly motivated the pupil, his/her likes and dislikes or anything that caused an *ah-ha* moment during interaction, could be pivotal during the intervention. Many of the pre-PD questions were posed again at the post-PD interviews and, in addition, post-PD interviews included a number of items seeking the respondents' perceptions of the PD initiative.

PEP-3.

In selecting the assessment for use with the pupils in this study, consideration was given to their age, their verbal ability, and whether the assessment addressed the specific measures that were predicted to change as a result of the intervention. The Psychological Profile-third edition (PEP-3) (Schopler, Lansing, Reichler, & Marcus, 2005) is a standardised assessment tool revised from previous versions, designed specifically for pupils with Pervasive Developmental Disorder (PDD) between the ages of six months and seven years. This assessment was deemed particularly useful for the cohort of pupils in this study who were known to be minimally verbal or nonverbal and were reported as being difficult to engage with. The assessment includes many nonverbal items, it is untimed, and administration is flexible in that the assessor does not have to adhere to a specific sequence. It uses concrete and interesting materials and language items are assessed separately from the other items which allows the nonverbal pupil to be assessed across all the other domains (Chen, Chiang, Tseng, Fu, & Hsieh, 2011; Mesibov, Shea, & Schopler, 2005). A further advantage of this assessment was that the researcher is very familiar with administering and scoring the PEP-3. This ensured that time was not spent seeking out assessment items and administration protocols, allowing her to concentrate on supporting the pupil to cooperate with, and complete the assessment.

The assessment uses both direct testing and observation and consists of 10 subtests, six of which measure developmental abilities, the other four measuring maladaptive behaviours. Six of the ten subtests were used in this study. These were Expressive Language (EL), Receptive language (RL), Cognitive Verbal/Preverbal (CVP), Visual-Motor Imitation (VMI), Social Reciprocity (SR) and Affective Expression (AE). The first four items are scored using direct assessment while SR and AE are scored using observation the pupil's behaviour during the assessment session (the recordings of the observations allowed for verification of these scores). A composite score was obtained in communication by combining the scores received in EL, RL, and CVP. All items are scored using, 0, 1, 2. The pupil scores at 0 if s/he does not make any attempt to achieve or does not achieve the stated criteria. The pupil is given a score of 1 if s/he is observed to partially complete the required behaviour and 2 when the criterion is fully achieved. The scores are added to give a raw score for each subtest which can be converted to give developmental ages, percentile ranks and developmental/adaptive levels. The

developmental levels are described as adequate, mild, moderate and severe. Appendix 21 gives a brief description of the items.

The PEP-3 assessment has been used as an outcome measure by researchers when evaluating intervention programmes (Ozonoff & Cathart, 1998; Panerai, Ferrante, & Zingale, 2002; Panerai et al., 2009). Using the raw and development scores of the elements of the PEP-3 has been found to be effective in measuring outcomes (Chen et al., 2011).

Use of a standardised assessment tool allowed the information collected through the classroom adults' interviews and questionnaires to be corroborated and compared. Using a formal assessment instrument also provided objective data and enabled the researcher to address the issue of bias when scoring the assessment by recording the sessions and allowing a psychologist (familiar with the assessment) to select and independently score one set of the pre and post assessment video clips for verification purposes.

Observations of adult-pupil interactions.

To explore the use of the PD content by the classroom adults and to evaluate the impact of the strategies on the pupils' social-communication and language, the adults were asked to video themselves interacting with the focus pupil during one-to-one sessions. The only guidance given to them was, to endeavour to elicit as much communication and language from the pupil as possible. Three different 10-minute sessions were requested from the teacher, and one 10-minute session from the SNA. Eighty minutes of observations were collected from each of four cases while sixty minutes were submitted from Grindstone as Maddie (teacher) submitted only one of the three ten minute post PD clips (Table 3.6 below). The teachers were also asked following the first PD to submit a 1x10 minute video of an interaction session each week between each PD where possible. The teachers submitted on average 25 x10 minute videos in total and on average 19 during the intervention.

Table 3.6: Video Data Collected X Participating Adult**Number of 10-Minute Video Clips Submitted**

Adult Participant	At Baseline	During Professional Development	At Post Intervention	Total
Síofra	3	4, 3, 2, 5, 4	3	24
Violet	3	3, 4, 2, 5, 5	3	25
Yana	3	3, 5, 2, 5, 3	3	24
Maddie	3	4, 4, 2, 5, 3	1	22
Ella	3	3, 5, 2, 5, 5	3	26
Sunita	1	1	1	3
Heidi	1	1	1	3
Kim	1	1	1	3
Donna	1	1	1	3
Nuala	1	1	1	3

Stake (2006) suggests that observational data provides the most meaning in a case study as the greatest understanding of the workings within that specific context comes through direct observation. Dallos (2012) highlights the value of observation as a means of “revealing what people do; how they do it and how this is influenced by and in turn influences the social setting within which their actions take place” (p. 346). As the researcher believed in the transactional nature of social-communication and language learning, observation was regarded as a highly appropriate means of revealing the impact of the PD content across and within the cases. Recording the interactions offered an understanding of context that may have been missed in interviews and questionnaires. Video allows what is being observed to be viewed from both the adult and the pupil’s perspective (Brophy, 2003). Using video across the five settings allowed the researcher to collect “thick descriptions” (Schuck & Kearney, 2006) of the participants and their behaviours, to articulate what was occurring within each setting and to draw comparisons and conclusions. While data collected in each setting may be different, the thickness of the data gathered overall may allow for conclusions to be drawn (Schuck & Kearney, 2006)

In this study, digital camcorders were used to record footage of both the adults and pupils as they participated in an interaction session. The teachers were asked (a) to place the camcorder in a discreet position so that it would not interfere with the interaction; (b)

to record each of their interaction sessions to ensure the pupils became familiar with the routine and to reduce the possibility of the “camera effect” through habituation; and (c) to delete the clips that were not presented to the researcher at the subsequent PD meeting.

Benefits of video-recordings as data collection instruments.

The benefits of using video to collect data in this study were manifold. As the focus of this research was to explore the verbal and non-verbal communication between the adults and the pupil, the use of video recording was considered highly pertinent as the minute details of the interaction could be captured. It allowed for both the verbal and non-verbal communication to be collected simultaneously (Erickson, 1992). The evidence thus collected could be used for triangulation by supplementing and cross checking against data collected using other means (Schuck & Kearney, 2006) thereby increasing the validity of the study. Video footage could be slowed down and revisited for clarification and verification of what had been observed, enabling the researcher to check validity (Hollingsworth, 2005; Schuck & Kearney, 2006). By having the footage viewed by another competent person findings can be checked and used as an inter-reliability tool.

The use of video as a data collection instrument was particularly appropriate in this research. It allowed for the collection of observational data from five settings across Ireland overcoming the logistical challenge of personally observing in all the five settings within the timeframe of the data collection phase. Allowing the adult participants’ autonomy about when to record their footage gave them a sense of ownership and authority. They could delete what they did not want to share with the researcher which possibly reduced any stress that may have been caused by visits from the researcher. Allowing the participants to video their interactions allowed for more interactions to be observed thus allowing for thicker data to be collected, giving a deeper understanding of what was taking place within each setting. As the focus was the social interaction between the adults and the pupils, observation of verbal and nonverbal cues is equally important when analysing the data. Often nonverbal communication is so subtle and fleeting, it is lost to the observer. Having the facility for “retrospective analysis” of the interaction as often as is needed, allows for those nuances to be collected (Carey, 2012). While Plowman (1999) cautions that video does not capture unobservable behaviours such as thoughts, perceptions and attitudes of the participants, Collier (1967) cited in Rosenstein (2002) contends that video captures many of these behaviours because “the language of

motion” (p.129) defines them. In other words, observation of the body movements of the individuals in the video will indicate their thoughts. However, other research techniques (interviews, questionnaires and documents) were used to supplement the collection of that information. Finally, four of the pupil participants in the study were minimally verbal while one pupil was nonverbal. Using video to observe nonverbal behaviour during the interactions helped give the pupil “a voice” and provided a balance when interpreting the findings.

The collection of the vignettes of what was happening in the adults’ classroom was an integral method of supporting their learning during the PD. The use of video allows the viewers to experience what is happening in contexts similar to their own without having to actually be there (Schuck & Kearney, 2006; Sherin, 2003). Viewing of recorded classroom practice is an effective way of supporting the development of deep reflection (deMesquita, Dean, & Young, 2010; van Es, Stockero, Sherin, Van Zoest, & Dyer, 2015) as the vignettes afforded multiple opportunities for collaborative analysis (Dallos, 2012) and they prompted discussion (Carey, 2012; Hollingsworth, 2005). The adults in this study were encouraged to reflect on their own and others’ implementation of the PD content, to identify effective teaching and to offer suggestions on the best course of action when they identified problems at a number of the PD meetings. The ethical considerations of using video in this research will be discussed in the ethics section.

Reflective diaries.

In order to establish the impact of an intervention there must be evidence of what was actually implemented (Mertens & McLaughlin, 2004). The writing of a diary (Appendix 13) was a useful and cost-effective approach to gathering data regularly over the lifetime of the PD (Breakwell, 2012). Breakwell suggests that self-reporting is an easy method for “gaining detailed access to events in an individual’s life” (p. 393). The writing of the weekly diary allowed the adult to self-report on “how” they had implemented the PD content. However, the writing of a diary may be seen as onerous, and the “temptation to leave the task for a while and then catch up later” (Breakwell, p. 399) would impact on authenticity of the entries. The requirement to write a diary could lead to participant dropout. Providing the participants in this current study with a one-page template in conjunction with the opportunity to upload their diary to a specifically developed “online” platform was a means of minimising these possibilities.

Informed by Sandar's (2009) argument that reflecting on what actually occurred would promote more informed actions going forward, a decision was taken to go beyond just recording what was happening in their classrooms and to emphasise reflection. The writing of a reflective diary encouraged the adults to think about the process they had been through, to self-report on their perceptions (Breakwell, 2012), and to identify what worked well and what, if anything could be improved. Thus, the main aims of the participants' reflective diary were to support deep reflection on the implementation of the PD content and to become independent problem solvers.

Recording this reflection in diary form created a source of documentary data which could be analysed for evidence of change over time in how the adults interacted with the pupil following each PD session (Breakwell, 2012). In turn, the adults' level of understanding of the information given at the PD could be investigated. To support the adults' reflection, a number of prompt questions were given in the template (Appendix 13). Breakwell cautions against the danger of lack of veracity in diary entries. However, used in conjunction with the other data collection instruments in this study they were seen as a valuable means of triangulation.

Discussion of participants' video clips at professional development sessions.

Time was set aside during the second, third fourth and fifth PD meetings for group discussions of the video clips brought to the meeting by the adults. The discussions served several purposes. They were a means of deepening the adults' knowledge and understanding of the social-communication content and strategies. They provided multiple opportunities for group and individual reflection and problem-solving skills (Sherin, 2003). In particular, they were to safeguard against adults using reflection on their own practice as their only source of learning. Day (1993) suggests that, for true learning to occur, others need to listen, to discuss, and confront the thoughts articulated by the reflector. It was felt that learner to learner confrontation of the thoughts would be less threatening for the reflector. Being engaged in the process of shared reflection would not only encourage these adults to critically observe and appraise the practice that they had viewed but would develop their ability to do so effectively.

These discussions were audio recorded, transcribed and analysed as a means of exploring the impact of the PD initiative. Similar information could be gathered through interview, that is, by asking the participants directly how beneficial they viewed their

experience, but that method has limitations for example, they might say what they feel the interviewer wants to hear. Borko (2004) suggests that investigating the elements of the PD is an additional method of exploring this question. Analysis of the transcripts enabled the researcher to explore the adults' approach to reflection on their own and others' practice, their problem-solving skills and how the adults' learning developed over time.

Learning logs and overall evaluation.

Each PD meeting ended with the adult participants completing an individual learning log (Appendix 14). The log was designed to embed the PCK and support the participants' learning by encouraging them to reflect about what they had heard and seen during the PD and to make links with their own practice in their settings. The adults were invited to write brief notes describing the new information they had learned at that PD session and what they already knew about the topic of discussion that day with the aim of embedding the learning. They were asked to describe what they would now do differently in their own setting arising from the information they received at the PD. This information was gathered to supplement the data derived from the PD discussions, from the questions relating to their perceptions of their learning derived from the PD initiative during post intervention interviews and from their overall evaluation of the PD.

An overall evaluation questionnaire was given to the participants at the final PD face to face meeting (Appendix 19). Questions informed by the overall aims of a collaborative PD model and derived from the literature were used. Seven of the questions sought to elicit the participants' observations about the impact of the involvement of the initiative on their ability to develop the social-communication and language skills of pupils on the AS. Views on the overall PD process were sought in three of the questions.

All items in the questionnaire included a rating scale (very true, true, not at all true), with the facility included to expand on each response. This information, combined with data on the PD process gathered during the post intervention interviews, PD video discussion, learning logs and reflective diaries, was analysed in relation to the third research question.

Data Analysis Procedures

This section reports on how the data collected throughout the study were analysed.

PEP-3 and Social-Communication Questionnaire Analysis

The Psychological Profile-third edition (PEP-3) (Schopler et al., 2005) was administered at the pre- and post-intervention stage by the researcher. The items were scored in accordance with guidelines from the manual. Video recordings of the assessment sessions were given to an independent psychologist, who was blind to the outcome, for rescoring (see internal validity section below). The Social-Communication Questionnaire, items were numerically scored using the code Never = 0, Sometimes = 1, Often = 2 and Always = 3. Comparison was made between the pre- and post- results.

Observation Data Coding and Analysis

All of the interaction clips to be coded were uploaded to INTERACT (Mangold Interact™ version 2012), a commercially produced software package which enables synchronised viewing and analysis of video footage and audio files used for observational research. This platform allowed the researcher to use her own observation schedule for content coding and event logging. It also allowed utterances to be transcribed within the platform. (Fig. 3.1)

Figure 3.1: INTERACT Coding Interface

The screenshot displays the INTERACT Coding Interface, a software tool for coding video data. The main window features a menu bar (File, Edit, Data, View, Analysis, Definitions, Extras, Window, Help) and a toolbar with various icons for file operations and editing. Below the toolbar is a tab labeled 'Y_K Pre_Post'. The main area is a large table with columns for coding categories: Teacher, Teacher's, Child, Con, Directive, Facilitat, Eliciting, S, Directive, Facilitat, Eliciting U, Non-Ver, Role, Teacher, Dyadic, Speech, Behaviour, Tune Out, Joint Atter, and SNA Strat. The table contains rows of data, with the row for 00:01:51:20 to 00:01:52:10 highlighted in blue. To the right of the table is a 'Control panel' with a video player showing a scene of two children. The control panel includes a timer (00:01:52:10), a 'Live observation' checkbox, a 'Watch several videos simultaneously' checkbox, and buttons for 'Log new events', 'Refine events', and 'Lexical (N Codes per Event)'. The video player shows a scene of two children, one of whom is wearing a blue shirt and the other a red shirt, sitting at a table. The video player has a title bar that reads '00:01:52:10 TC <- 00...' and a 'Baseline 3' label at the bottom.

	Teacher	Teacher's	Child	Con	Directive	Facilitat	Eliciting	S	Directive	Facilitat	Eliciting U	Non-Ver	Role	Teacher	Dyadic	Speech	Behaviour	Tune Out	Joint Atter	SNA Strat
47					Speech								Response			Imitation	three word			
48					Directive St							Non verbal								
49					Non-verbal								Action	Non-interac				ignore		
50					Directive U				Test questi											
51					Non-verbal								Looks to tal	Response				Compli		
52					Eliciting Stra				Waiting											
53					Non-verbal								Action	Non-interac				ignore		
54																				
55					Directive U				Test questi											
56					Eliciting Stra				Waiting											
57					Non-verbal								Action	Non-interac				ignore		
58					Directive U				Behaviour C											
59					Non-verbal								Looks to tal	Response				Compli		
60					Directive U				Test questi											
61					Speech															
62					Facilitating				Recast & E											
63					Speech															
64					Facilitating				Social com											
65					Directive U				Yes/No Q											
66					Non-verbal															
67					Directive St								Blocking							
68					Non-verbal															
69					Directive U				Command											

tin of meat

Adult communication codes.

All adult utterances and behaviours were coded as either “directive”, “eliciting” or “facilitating” communication. Appendix 22 provides the full list of definitions and descriptions.

- Directive communication included *Behaviour Directives* and *Communication Cues*. The former sought “to direct/control the pupil’s behaviour” and the latter “expected a response”. *Behaviour Directives* included behaviour control utterances, verbal and nonverbal commands, blocking, and removing. *Communication Cues* included yes/no questions, test questions, and verbal prompts.
- Eliciting utterances and behaviours were prompts which sought to cajole the pupil into communicating either verbally or non-verbally. Examples of *Eliciting Utterances* included open ended and choice questions, playful mislabelling, and seeking of clarification, while *Eliciting Behaviours* included gestural prompts, waiting, deliberate ignoring, playful obstruction, missing items, control access, requiring assistance, funny situation, inadequate portions, providing choice, and mixing up routines.
- Facilitating/maintaining utterances and strategies sought to maintain the pupil’s interest in the social interaction. *Facilitating Utterances* included imitation, social comments, linguistic mapping, self-talk, expansions, recasts, fill-the-pauses, and agreement. *Facilitating Behaviours* included imitation, following lead, turn-taking, reinforcement, acting silly, musicality, exaggeration, animation, switching activity, modelling, and seeking assistance.

Codes and definitions used to analyse the adults’ communication were derived from codes and definitions previously used by Hwang and Hughes, (2000), Aldred, Green and Adams, (2004), Ingersoll, Dvortcsak, Whalen, and Sikora (2005), Masur, Flynn, and Eichorst (2005), Girolametto, Sussman and Weitzman, (2007), Ingersoll and Dvortcsak, (2010), and Leach and LaRocque, (2011), with some additions and modifications.

Pupil Social-Communication codes.

The codes to analyse the pupils’ utterances and behaviours were informed by the Modified-Classroom Observation Schedule to Measure Intentional Communication (M-COSMIC) (Clifford, Hurdry, Brown, Pasco, & Charman, 2010). The M-COSMIC was

developed to measure the social-communication behaviours of young pupils on the AS. Three main codes (form, role, & function) were used within the analysis and each major code was an umbrella for sub-codes (Appendix 23).

The *form/means* by which the pupil communicated was classified as either Speech or Non-Verbal Behaviour. The *function* of the communication was sub-coded as Behaviour Regulation, Dyadic Social Interaction and Joint Attention. Finally, the *role* of the communication was categorised as Initiation/Response or Non-interactive/no response. This coding frame was used to analyse the pilot video clips and a number of additions were made to the subsequent coding frame. A code for “ignore” was added within the *function* category under behaviour regulation definitions as the researcher believes that all behaviours have a communicative purpose or intention. Two additional codes, “imitation” and “turn-taking”, were added to the social interaction category as these are regarded as pivotal in early social-communication (Bochner & Jones, 2003; Nadel, Guérini, Pezé, & Rivet, 1999; Uzgis, 1999) but are often absent in pupils on the AS (Williams, Whiten, & Singh, 2004). The additions are identified on the coding template in italics. Other modifications were made to definitions to provide greater clarity.

To explore the changes in the adults’ and pupils’ social-communication behaviours a comparison was made between the pre and post-PD videos using the two coding frames (Appendices 22 & 23). Three pre and three post teacher-pupil, and one pre and one post-SNA-pupil videoed interactions from each of the cases were micro analysed using observational coding software called Mangold Interact™. This software is used to link user developed codes to specific points on the video clip which allows for microanalysis of adult and pupil behaviours in real time. The adult or pupil behaviours or utterances were coded sequentially within the software using the definitions and guidelines outlined in the coding frameworks (Appendices 22 & 23).

Analysis of interactions.

The recorded sessions were analysed for the frequency of the adults and pupils’ behaviours outlined in the coding scheme. The duration of the “ignoring” behaviours were measured to assess the percentage of time the adult participants were engaged. All of the pupil’s utterances were transcribed from the video for analysis of function, role and length of the utterance. The nature of adults’ interactive style was identified by the predominantly used communication strategies. The ratio of adult to pupil communication

within the interaction was used to identify the communicative balance. The adults' ability to sustain the pupil's engagement in the interaction was measured by comparing the percentage of time the pupil spent ignoring the adult with the time s/he spent attending to them. Sequential analysis was used to ascertain the impact of adult behaviours on the pupil and pupil behaviours on the adult.

If the participant said and did something simultaneously, each element was coded separately, one being an utterance, the other a behaviour. If the adult added an additional utterance within a second of their original utterance, both were coded as one utterance. If two types of utterance occurred in speech, the final type was coded.

The duration of pupil-initiated interactions was also measured using the following formula.

A social interaction episode began when the pupil initiated an interaction using a verbal/nonverbal communicative act and it was terminated by the pupil or the adult. The interaction was terminated by the pupil when s/he either, (a) protested/ refused, or (b) s/he became non-interactive (NI). The adult terminated the social interaction when she either (a) redirected the pupil through the use of "directive" communication (Behaviour Directive (BD) or Communication Cue (CC)) or (b) she initiated a change in topic (Switch Activity (SA)). Each interaction contained a sequence of turns. A turn within the interaction could include both initiations (I), (if the initiations were related to the topic) and responses (R). A turn within the interaction could include an utterance and action or both. A turn could begin with an initiation or a response but always terminated with a response. The length of the social interaction was based on the frequency of turns within an episode and was calculated using the following format (Fig. 3.2 below).

Figure 3.2: Measuring Duration of Interaction Episodes

I → R / I → R / I → R / BD = 3 turns

II → RI / RR → R / R → R / CC = 5 turns

I → RR / R → R / NI = 3 turns

I → RR / II → R / Prot./Ref. = 2 turns

I → R / RI → R / I-I (SA) = 3 turns

I → R / I → I / R- NI = 2 turns

(Note: two letters (II; RR; RI; IR) occurring together refer to two communicative behaviours occurring simultaneously or almost simultaneously e.g., following the pupil's initiation (I) the adult linguistically maps (utterance) and gives what the pupil requests (action) and is coded as (RR)).

The outcomes for all three participants in each of the cases are reported within their case. However, a cross case analysis of the five cases was also carried out adhering to the coding frames used for the individual cases. The cross case analysis sought to identify and discuss commonalities, patterns and differences that occurred across the cases and to explore the overall impact of the social-communication strategies on that small group of specific educators and pupils.

Coding and Analysis of Interviews, Discussions and Documents

Qualitative data were gathered throughout the lifetime of the study in the form of interviews, reflective diaries, discussion fora, learning logs and an overall evaluation, for

the purpose of exploring all four research questions but in particular, the third and fourth research questions.

- What are the adults' perceptions of their participation in the social-communication professional development initiative?
- How did the presence of an "external More Knowledgeable Other" impact on the adult participants' learning within this model of PD?

All of the qualitative data were transcribed by the researcher. Ten percent of the transcriptions of each qualitative data collection instrument were verified by the interrater. She identified the ten percent she wished to review independently of the researcher.

Rationale for Qualitative Data Analysis Methodologies

In keeping with the researcher's view that outcomes for this particular study would differ across and within the cases (because of the differing personal characteristics, and differing contexts) there was a need to select a method of analysing the qualitative data gathered from the adult participants that would allow individual insights from the PD experience to be heard, while also gaining a deeper understanding of the impact of the particular model of PD adopted for this study through the exploration of patterns across the cases.

The transcripts were analysed for "units of meaning" (Maykut & Morehouse, 1994, p. 118) that is, the researcher sought to interpret and understand the adults' reflections rather than coming with a predefined group of themes. Having data from a number of sources from each of the adults strengthened the credibility of these interpretations and safeguarded the possibility of subjective analysis. However, the volume of data required an approach that would allow efficient management of the data.

Qualitative data analysis software.

The researcher used NVivo (SQR International Pty LTD. Version 9, 2011) to support the systematic analysis of the data to answer both research questions; the perceptions of the adults of their PD experience and the MKO's role in supporting the learning of the adults. This software provided a well-organized way of housing the quantitative data in a manner that the different approaches to analysis (required for the questions) could be accommodated. The software tools supported efficient exploration of

individual experiences, identification of patterns and comparisons within and across cases. It also allowed for the mapping of thought processes across the lifetime of the study in a manner that would have been highly time consuming had manual mapping been used. The software accommodated searching for questions, comments, suggestions used by the MKO and the discourse that followed, in an organised and expedient manner.

The use of NVivo also served as a means of producing an audit trail. It tracked evidence of the various stages of coding and in doing so facilitated clear demonstration of the rigorous approach taken within the study. Transparency is vital for the trustworthiness of the study (Maykut & Morehouse, 1994)

Using the data analysis software.

Two approaches were used in analysing the qualitative data. To identify the adults' perceptions of the PD initiative, their thoughts were explored, reflected on and interpreted. The impact of the MKO on the adults' learning was sought through the categorisation of the questions posed and the comments made during the PD discussion session and an analysis of the adults' subsequent talk.

In exploring the adults' perceptions question, all of the qualitative data (interviews, learning logs reflective diaries, overall evaluations and discussion fora) were explored and the "units of meaning" were coded into non-hierarchical general codes and definitions were given as to why they were included. These general codes were revisited to identify patterns of meaning occurring across the codes resulting in the general codes being reordered into four main categories (Appendix 24). These categories were informed by the researchers' understanding of the participants' experiences, by the literature and by what the researcher identified as being significant in terms of addressing the research question. Within these categories, subcategories were identified to ensure more in-depth understanding of the adults' perceptions.

In answering the question on the impact of the MKO in supporting the learning of the adults during the PD initiative, the transcripts of the PD discussion sessions were explored for indication a of the nature of the MKO's talk and these were coded. These general codes were regrouped into four main categories of talk. The participants' subsequent talk was analysed for evidence of learning.

Throughout the process of analysis, the researcher kept memos, mainly to clarify her thoughts about a “unit of meaning” and to note comparisons and make connections. It was a means of cognitively interacting with the data and the foundations of the analysis (Charmaz, 2012; Howitt & Cramer, 2011), noting these thoughts ensured that they would not be lost. It was also a useful way of “charting the course of interpretation” of the data (Henwood & Pidgeon, 2012, p. 476).

Validity

Validity is defined as “whether a test measures what it is intended to measure” (Howitt & Cramer, 2011 p. 272). According to Yin (2009), there are four tests that establish the validity of social studies research: construct validity, internal validity, external validity and reliability.

Construct validity.

Construct validity relates to how well the researcher understands the theory and concepts that underpin what is being studied so that the measures used in the study answer the questions (Howitt & Carmer, 2011; Mertens & McLaughlin, 2004). Yin (2009) cautions that a common criticism of case study research is that the researcher “fails to develop a sufficiently operational set of measures and that ‘subjective’ judgements are used to collect the data” (p. 41). An extensive search of both theoretical and empirical literature informed all stages of the study. The search established which early social-communication behaviours were absent or deviant in pupils on the AS. Likewise, decisions on what data to collect on the adult participants was informed by the theoretical literature and empirical data pertaining to the influence of adults in supporting social-communication and language of pupils on the AS. Further, the definitions used to code the quantitative data were modified forms of previously used definitions. Decisions on the model of PD to develop the adult participants’ skills and ability to enhance pupils’ social-communication, were also informed by the literature on professional development. A chain of evidence also adds to the validity of the study, Yin, (2009) suggests that the reader of the case study should be able to trace steps taken by the researcher from the research questions to the conclusions and vice versa, i.e. that the data collected is the data reported on.

Internal validity.

To achieve internal validity the researcher must ensure that the effects seen in the participants are due to the intervention, while considering rival explanations that may have impacted on the findings (Mertens & McLaughlin, 2004; Yin, 2009). Triangulation and inter-observer reliability were used to ensure the robustness of the findings.

Triangulation.

Ways of ensuring internal validity include minimising researcher bias and ensuring that findings have been transparently derived from the data collected. To address this within the current study, triangulation of information (Appendix 25) occurred while collecting the information. Howitt and Cramer (2011) identify triangulation as using “multiple measures of a concept” (p. 277). Different methods of data collection provide different viewpoints which the researcher can compare, contrast, and use to identify anomalies in relation to the research. Data were collected using a wide range of data collection tools over the course of this current study. Some tools captured the adults’ spontaneous thoughts and actions (interviews, discussion fora, learning logs, interaction observations) while others allowed the adult to plan and reflect upon their actions/responses (reflective diaries, interaction observations). Teachers, SNAs, and pupils all contributed to the data allowing for comparisons across informants. Using different methods of analysis also ensures the data are viewed from different viewpoints. If similar findings are established from different data sources and /or analysis validity of the findings is strengthened.

Interrater reliability.

The analysis of the data were conducted independently by the researcher and by one other where possible and the two sets of results were compared. The Social-Communication Questionnaire was scored numerically and errors in calculations were easily rectified. The PEP-3 assessment had been videoed and both researchers scored the assessment items independently of each other while viewing the clips. They compared the results, and the differences were discussed until agreement was reached. The use of an observation software package allowed for avoidance of researcher bias when analysing the interaction clips. The researcher and research buddy together analysed a ten minute interaction session submitted by the teacher who was involved in the pilot. During this

analysis discussions were held, and the definitions of the codes were agreed. Subsequently the research buddy randomly selected a ten-minute video clip to code independently. Cohen's Kappa analysis was performed within the software Mangold Interact™ between her coding of this clip and the researcher's coding of that same clip. The results are presented in the table below.

Table 3.7: Results of Kappa Analysis

Code	<i>Value of Kappa</i>	<i>Strength of Agreement</i>
Child Communication	0.77716	Good
Teacher Strategy	0.74780	Good
Teacher Utterance	0.93587	Very Good
Child Speech	0.82927	Very Good
Child Non-Verbal Communication	0.81913	Very Good
Role of Child Communication	0.81545	Very Good

The interrater also randomly selected ten per cent of the interview, discussion, learning logs and reflective diary transcriptions and agreed the transcriptions reflected the data collected.

As there was no control group in this study, consideration must be given to the possibility of the “maturation effect” on the pupils (Cohen et al., 2011) that is, whether an identified improvement resulted from the pupils becoming older, or from other outside influences (three pupils continued to have home tuition for the duration of the study) rather than as a result of the intervention under investigation here. Some gains are likely to occur without this intervention. However, the findings show the intervention resulted in significant changes in the adult's interactive strategies and the analysis of the adult-pupil interactions shows a relationship between the adults' strategy use and developments in the pupils' social-communication behaviours. These findings will be outlined in the following chapters.

External validity.

External validity is the extent to which a study's findings are generalizable beyond the immediate study (Yin, 2009). The main aim of this study was not to be able to generalise but rather to explore the impact of the PD initiative within five similar yet different autism-specific contexts and to understand how the findings relate to previous research carried out with caregivers and young children on the AS. This is one of the few

studies of this nature carried out in educational settings; while the findings from each case were unique similarities were also identified across the cases. These findings provide insights about what is happening and what we can learn about staff-pupil interactions in autism-specific classes; in particular, for classroom adults working with pupils who are minimally- or non-verbal. The findings from this multiple case study inform the literature (Gustafsson, 2017) in a way that studies with larger samples cannot.

Reliability.

Reliability arises from the process of ensuring your study is solid from beginning to end so that it could be carried out again with similar conclusions (Hammersly, 1987). A number of mechanisms were used to ensure this study was robust. Morse, Barrett, Mayan, Olson, and Spiers, (2002) emphasise that the participants need to be appropriate for the purpose of the study. The participant sample in this current study was purposively selected to ensure the data collected were highly relevant to the research questions. Data were collected across a number of contexts so that thick and sufficient data were obtained to address all aspects of the topic. Morse et al. also suggest that the methodology should address the research questions. A mixed method approach was adopted in this current study as the micro-analysis of the classroom interactions (quantitative) was seen as pivotal in understanding the impact of the PD initiative within the classroom while the collection and analysis of the adult participants' talk (qualitative) was required for exploration of their experience of the PD model. A thick descriptive account was provided at each stage of this study (Maykut & Morehouse, 1994), that is, the purpose of the study, how the participants were recruited, the data collection instruments and analysis and the findings and outcomes.

Reliability was also sought through a system of verification, i.e. a system of checking and making sure (Morse et al., 2002). A pilot study was carried out to trial the methods of data collection and analysis. The process identified flaws in the data collection instruments which led to changes and additions for example, questions were modified and added to the interview schedules, and the social-communication questionnaire was included as an additional collection instrument for the subsequent study. The pilot study also provided a relevant forum to familiarise the researcher and the interrater with the coding frame and to ensure agreement on what each code meant. The pilot interaction clips also ensured an objective but similar forum in which the use of the software was

practised and fine-tuned. During the study, the checking of the adults' reflective diaries led the researcher to incorporate a visual of the range of social-communication strategies to act as a trigger for participants while they reflected on their sessions. The interviews and discussion fora were audio taped and transcribed and the interrater randomly selected and verified the transcriptions of those and the other transcribed documents (learning logs, reflective diaries, and evaluations). Triangulation of data collection also served as a means of checking and making sure.

Ethics

This study was conducted in accordance with the guidelines for research obtained from the Research Ethics Committee at St. Patrick's College, Drumcondra, Dublin 9. The main aim of this study was to explore the effect of an interactive social-communication intervention on non-verbal and minimally verbal pupils on the AS and the adults who received professional in the interactive social-communication strategies intervention. The main corpus of observational data collected in this study was through video. However, the researcher also sought to develop her own practice as a lecturer within an ASD course, thus she sought permission at the outset from the participants to use video clips collected during the research, as part of future work associated with the education of pupils on the AS.

Article 12 of the United Nations Convention on the Rights of the Child (United Nations (UN), 1990) clearly states children's rights to express their views on all matters that affect them. As the pupils involved in this research all had ASD, and were reported to have severe communication difficulties, the researcher sought consent from their parents for the pupil's involvement. The rationale and outline of the study, and consent forms were given to the adult participants and to the parents of the pupils (Appendices 4 & 7). The adults and parents were clearly made aware that video would be used to collect the data for the research and that clips would be used in the future for teaching and presentations.

When assessing the pupils' social-communication and language abilities the researcher took all the necessary steps to put the pupil at ease and took breaks regularly to ensure the wellbeing of the pupil (British Educational Research Association, (BERA), 2011).

The British Education Research Association guidelines (BERA, 2011) also identify the right of the participants to anonymity. While all efforts to ensure this were made in the written accounts by using pseudonyms, a dilemma arose with the video clips. Video would make the participants easily identifiable. Although there is software readily available to obliterate the relevant faces from the clips, the nonverbal behaviours captured in the clips would be imperative for teaching and learning. This ethical dilemma was discussed in great detail with the adults within the pilot school. The adults gave their own consent to use video recordings and on their recommendation they in-turn explained the process and implications of the research and in particular the use of video for analysis and teaching purposes to the pupil's parents. It was felt that the teacher could explain the process more clearly to the parents and more importantly the parents could refuse permission more easily to the teacher. The teachers explained to the parents that anonymity could not be guaranteed.

Power differential was also considered at the outset of this study. The researcher realised that being a lecturer in a college of education working with a group of school staff could lead to the adults carrying out exactly what the researcher suggested without question, viewing the researcher as a keeper and provider of knowledge (Davis, 2003). However, a social constructivist stance was taken by the researcher. She adopted a "guide on the side" role allowing the adults to actively engage in critical examination of the PD content in action and to make suggestions and comments about their own and their peers' practice. The researcher contributed to the discussion adopting the role of a group member. Having two groups of school staff with very different roles could have also impacted on the learning within the group with the possibility that the SNAs deferred to the teachers' opinions and comments because of the relationship between the teachers and SNAs with the teachers being in a position of power. Cognisant of this possibility the researcher allowed the discussions to develop but invited input from adults who were reticent in contributing. The researcher also modelled the collaborative relationship she wished the group to adopt by acknowledging and affirming everyone's contribution throughout the duration of the study.

Almost all of the teachers had six pupils in their classes and all of the pupils would have benefited from being participants in the study. However, to ensure greater and more nuanced understanding of the PD content it was necessary to limit the number to one pupil from each setting. The findings show that the adults were using the PD strategies with the

other pupils as the study progressed. The possibility that the expected daily 1:1 ten-minute teacher-pupil interaction sessions could have impacted on the time spent with the other pupils was considered prior to the study. However, the practice in the majority of autism-specific classrooms is to take each pupil for individual teaching at some stage during the day and for the duration of this study, the teachers were encouraged to use 10 minutes of the participant pupil's individual time for the interaction sessions thus ensuring time was not taken from the other pupils. Further, the SNAs were encouraged to implement the strategies during the daily course of their work and when the opportunity arose to implement them while interacting with the pupil during 1:1 sessions. It had not been intended that the pupil who participated in the pilot would be a participant in the study. However, since the parents approached the researcher to request his inclusion, it was considered ethical to involve him.

Conclusion

In this chapter, the methodological issues relating to the study have been outlined and discussed. In the opening sections, the philosophical view that underpinned the approach to the research strategy was discussed. The recruitment process of the study's informants was outlined. A description of the data collection methods, how they were used and with whom was also provided. The rationale for the different approaches for analysis of the data and the process of analysis were outlined. The mechanisms used to ensure the robustness of the study were also included. The findings drawn from the data gathered will be reported in chapters four, five, and six.

Chapter Four: Social-Communication Outcomes for Adults and for Pupils

Introduction

The focus of this study was an investigation of the effectiveness of a professional development (PD) initiative in influencing the interaction styles used by classroom adults as a strategy for developing their pupils' social-communication skills. The literature highlights that evaluation of professional development requires exploration on three fronts, the extent to which the learning outcomes have been achieved, the participants' views on their overall experience, and the impact of components of the professional development on the participants' learning (Bubb and Earley, 2010; Guskey, 2002; Kirkpatrick, 1979). The findings for the evaluation of the model of PD developed for this study will be reported over three chapters. This chapter reports on the impact of a social-communication professional development (PD) programme, on the quality of social interactions between classroom staff who were participating in the programme and their five young pupils on the autism spectrum (AS). The views of the participants on their overall experience, and the role of the MKO in the adults' learning, will be reported in chapters five, and six respectively.

The findings in this chapter are based on data taken from pre and post-PD interviews, from questionnaires, from formal assessment of the pupils, and from micro analysis of interactions between each adult and her pupil. Interactions were recorded prior to and following the adults' participation in the professional development initiative. Table 4.1 summarises the objectives of the PD and the methods used to explore the extent to which the strategies were implemented.

Table 4. 1: Objectives of PD and Measures Methods

Objectives of PD	Measurement of Adult Behaviour	Measurement of Pupil Behaviour
To introduce communication strategies to support the adults to prolong their positive engagement with the pupil	<ul style="list-style-type: none"> • <i>The rate at which the adults communicated with the pupil</i> • <i>The style of their communication</i> • <i>Their use of facilitative and/or eliciting communication strategies to re-establish the communicative interaction</i> 	<ul style="list-style-type: none"> • <i>The length of time the pupil attended to the adult's actions and utterances</i> • <i>The reduction in frequency and duration of "non-interactive" behaviours</i>
To increase social reciprocity within the adult-child interactions		<ul style="list-style-type: none"> • <i>The frequency of pupil's initiations</i> • <i>Pupil affect</i>
	<ul style="list-style-type: none"> • <i>The length of social interaction cycles following the pupil's spontaneous initiations and</i> • <i>Evidence of reciprocity within the interactions</i> 	
To develop the adults' abilities in supporting and encouraging their pupil's language	<ul style="list-style-type: none"> • <i>Use of facilitative and eliciting communication strategies.</i> • <i>The impact of the adults' strategies on subsequent language</i> 	<ul style="list-style-type: none"> • <i>The impact of the nondirective communication on the pupil's language in terms of frequency, initiations, function and length of utterance.</i>

Chapter Layout

A wealth of data were collected and analysed from the five cases (Shanbailey, Clonadoo, Windyvale, Bridgeport and Grindstone). The findings from the individual cases are extensive with findings in common across the five cases and also findings which are individual to each. In this chapter one set of individual, "within case" findings is presented while the findings for commonalities and differences across the cases is presented as a cross case analysis. The findings for the other four cases are included as appendices. Each case was assigned a colour which was used as an identifier in the tables and appendices.

Shanbailey	Purple
Appendix 26 = Clonadoo	Blue
Appendix 27 = Windyvale	Green
Appendix 28 = Bridgeport	Red
Appendix 29 = Grindstone	Yellow

Each case begins with a brief description of the case members. The “within-case” findings are presented in two sections, following a pre/post format. Section one begins with a description of the resources used during each 1:1 interaction session. The findings on the duration of positive shared engagement during the sessions will follow. The adults’ style of communication and the subsequent impact on the pupil’s social-communication will then be reported. How the adults sought to repair interactions when they broke down will also be presented and the section concludes with a report of the role, function and nature of the pupil’s speech.

Section two includes the findings on the reciprocal nature of the interactions in terms of the pupil’s spontaneous initiations and the length of and balance of turns within the subsequent social interactions. Findings for the pupil’s affect within the interaction are also presented. Vignettes are included to provide tangible evidence of the interactions and to illustrate the findings outlined in the section. This chapter concludes with a cross-case analysis.

Case Study One: Shanbailey

The Case Participants: The Classroom Adults

Ella, a teacher, was in her early thirties. She had a B.Ed. qualification and had six years’ teaching experience in mainstream primary classes. She reported some experience of teaching pupils on the AS, as a pupil from the autism-specific classroom had been included in her mainstream class on a gradual basis the previous year. She began to teach Charlie (the participant pupil) the September she joined the study. She had not accessed autism-specific professional development (PD) (Table 4.2).

Nuala was in her early forties and had worked as a SNA in Shanbailey School for 12 years. Eleven of those years were spent supporting pupils in mainstream classes. She had

worked in one of the school's three autism-specific classrooms for a year prior to joining the study. Charlie had not been in that particular class, although she had seen him during breaks in the school yard. Nuala reported having no PD in autism (Table 4.2).

Table 4.2: Demographic Information of Classroom Adults

Shanbailey			
	Teacher		SNA
Name	Ella		Nuala
Age	30+ years		40+ years
Highest Qualification	B-Ed		FETAC Level 5
Experience	6 years		12 years
Experience ASD	1 year		1 year
Autism PD	None		None

The Case Participants: Pupil

Charlie was 5 years 10 months old at the beginning of the study. He had cerebral palsy which caused fine and gross motor difficulties on his left side. He was diagnosed with autism and a mild general learning disability at 42 months. Both classroom adults reported that Charlie did not present with challenging behaviour. However, his teacher stated that he was, “happy to just sit there and let the world go by ... he needs to be pushed and encouraged an awful lot ... He is lazy to a point” (Pre-PD Interview). The pre-PD PEP-3 assessment identified that he had the expressive and receptive language ability of a 22-month neurotypical child and that his social reciprocity ability was in the severe range. The teacher reported that Charlie had a very large bank of words, but he only used them when prompted or if he felt really strongly about something. He never sought interactions with peers but occasionally requested motivating items (book/computer) from the adults. He was quite content on his own both in class and the playground. Charlie was withdrawn from class once a month for a 30-minute session with a Speech and Language Therapist. He did not access autism-specific support outside school hours for the duration of the study.

The post-PD PEP-3 assessment indicated that Charlie's abilities in receptive and expressive language skills and reciprocity had improved greatly (Table 4.3). His

expressive language ability almost mirrored that of his neurotypical peers. He scored as having mild difficulties in understanding what is being said to him and in interacting with others in his environment.

Table 4.3: Pupil Age, Nature of SEN and PEP-3 Assessment Results

Shanbailey						
Name	Charlie					
Age	70 months at beginning of study					
Nature of SEN	Autism with Mild General Learning Disability and Cerebral Palsy					
	Pre PD			Post PD		
PEP3 Results	Developmental Level	Percentile Rank	Age Equivalent	Developmental Level	Percentile Rank	Age Equivalent
Expressive Language	Moderate	50%	22 months	Adequate	94%	66 months
Receptive Language	Moderate	58%	21 months	Mild	89%	64 months
Social Reciprocity	Severe	18%		Mild	86%	

Section One: Interactions Prior to Professional Development

Context and Duration of Positive Shared Engagement

Table 4.4 below gives a brief description of the context of the pre-PD one-to-one interaction sessions and the percentage of time the dyads spent in positive shared engagement prior to the professional development initiative. On average only 29% of the three interactions sessions between Ella and Charlie were spent in positive shared engagement, while Nuala and Charlie engaged in a positive manner for more than half of their session. Forty-nine percent of the actions and utterances used by Charlie with Ella were interactive, (initiations 5% and responses 44%) while 53% were interactive with Nuala (initiations 6% and responses 47%) (Appendix 30).

The context of each interaction session was selected by the adults and was categorised for analysis according to the nature of the activities used. The categories included “**Co-operative Activities**” (activities that required input from an adult) (CA), “**Solitary Activities**” (activities the pupil could do independently) (SA) and “**Academic Activities**” (activities that involved teaching) (AA). Ella had one CA and two SA sessions with Charlie. The dyad spent more time in positive engagement during the

CA session than in the other two sessions (Table 4.4). Least time spent in positive interaction occurred during the “Big Books”/ “Jenga” blocks SA session. A possible explanation for this latter finding may be that Ella used more “behaviour directives” during the “Big Books”/“Jenga” than during the “Play dough/Nuts and Bolts” or “Blocks/Computer session” (Appendix 32), perhaps causing a negative social spiral, where the more directive the adult became the less the pupil interacted with her and the less he interacted with her the more directive she became. The nature of the activity may also have had an impact on the length of time spent in shared interaction. Video analysis highlighted that during the SA sessions Charlie tried to look at the books and play with the blocks on his own and Ella had great difficulty gaining his attention. It was similar during his time on the computer whereas during the CA session, the nature of the resources meant that Charlie required Ella’s help, hence the increased engagement.

Nuala brought an academic task to her session. This was a class reader pitched at Charlie’s reading level and his positive engagement for more than half of the session may be explained by the fact that he had just begun to read and was motivated to read the words and sentences requested by the SNA. Further, Nuala used more “communication cues” (utterances that conveyed an expectation that the pupil will respond) than “behaviour directives” (actions and utterances that “redirect” the pupil’s attention and “demand” actions from him/her) during the session (Appendix 32).

Table 4.4: Pre-PD Context, Resources and Percentage of Session Spent in Positive Shared Engagement

Shanbailey Pre PD			
	Interaction Context	Resources	Percentage of Session in Positive Shared Engagement
Ella and Charlie	Session 1 Co-operative Activities (CA)	Different coloured play dough, play dough utensils and a big box of coloured plastic nuts and bolts	38%
	Session 2 Solitary Activities (SA)	A large container of coloured blocks and a computer programme based on letters	26%
	Session 3 Solitary Activities (SA)	Two “big” books “Dear Zoo” and “Pop up” Pets Books a set of “Jenga” style blocks	22%
Nuala and Charlie	Session 1 Academic Activities (AA)	An English Reader test book pitched at Charlie’s level	51%

Adults’ Style of Communication and Pupil’s Subsequent Engagement

Appendix 31 (purple) outlines the communication strategies and the frequency with which they were used by adults during the interactions. The adults worked hard at maintaining their interactions with Charlie as they used verbal and nonverbal behaviours more than twice as often as he did. Ella and Nuala communicated with Charlie at a rate of 18.4 and 21.4 verbal and nonverbal behaviours per minute respectively. Charlie was observed to communicate at a rate of 8.0 times a minute with his teacher and 8.5 times a minute with his SNA (Appendix 38, purple). The adults were observed to dominate the pre-PD interactions with a teacher-pupil communication ratio of 2.3:1 and a SNA-pupil ratio of 2.5:1.

Both adults used a predominately directive style of communication’ (communication that sought to control and direct the pupil’s behaviours and utterances) during the interactions (Ella, 50%, Nuala, 72%). They used slightly more “communication cues” (actions and utterances that expected a response) than “behaviour directives” (actions and utterances that sought to direct the pupil’s behaviour). The directive communication used

by the adults in order of frequency included, Ella, *Yes/No Questions*, *Commands*, *Test Questions*, and *Behaviour Control* utterances, while Nuala used *Test Questions*, *Nonverbal Commands*, *Verbal Prompts* and *Behaviour Control* utterances (see appendix 22 for definitions).

The findings from a sequential analysis of Charlie's communication following his adults' use of directive actions and utterances are reported in appendix 33 (purple). Over half of Ella's directive communication was immediately followed by "ignoring" and "protesting" behaviours. Charlie only complied with 38% of Ella's directives in comparison to 54% of those used by Nuala. A possible explanation for this latter finding may be that Charlie was more motivated by the resource which Nuala used that is, the class reader. Charlie had just begun to read and was motivated to comply when Nuala directed his attention to the words and pictures, commanded him to read and asked him test questions. Charlie ignored the adults more frequently when they used "communication cues" suggesting that when the directive was "softer", Charlie choose not to engage with his classroom adults. More than half of Charlie's 32 protests followed his teacher's use of directive communication, suggesting he did not like to be told what to do. Thirty two percent of Ella's and 20% of Nuala's pre-PD communication was observed to be "facilitative" (actions and utterances which seek to support rather than "demand" or "tempt" communication from the pupil). *Social Comments* and *Linguistic Mapping* were the facilitating strategies most frequently used by both adults. "Wait" was the only eliciting strategy used by the adults with any frequency.

Repairing interaction breakdowns.

A sequential analysis (Appendix 34, purple) identified that 53% of Ella's and 83% of Nuala's communication following Charlie's "ignoring" behaviours were "directives". Both adults used more "communication cues" than "behaviour directives" in attempting to repair the interaction. In addition to ignoring the adults, 13% and 6% of Charlie's interactive communication with Ella and Nuala respectively were "*refusal/protests*" (Appendix 38, purple). Ella followed the majority (74%) of his protests with "directive" communication using "*commands*", "*behaviour control*" and "*yes/no*" (n.6) utterances most frequently. The five protests used by Charlie during his interaction with Nuala were all followed by "directive" communication (Appendix 35, purple).

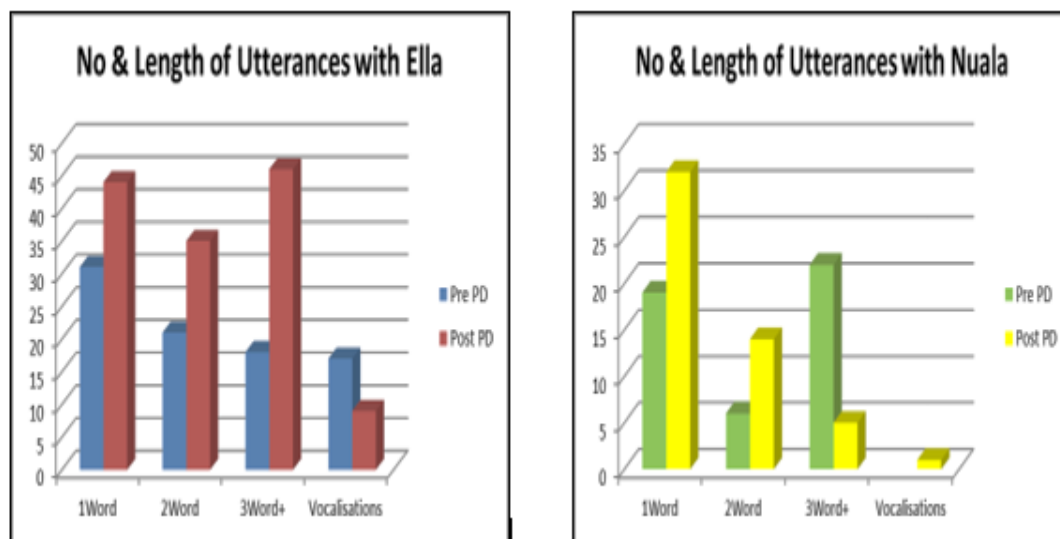
Pupil utterances.

Appendices 36 (purple) and 39A inform this section as they report on the frequency nature and function of Charlie's utterances with his classroom adults. Charlie was heard to speak on 87 occasions across the three interaction sessions with his teacher and on 48 occasions during the 10-minute session with Nuala (Appendix 36, purple). He used 87 utterances: 31 one-word, 21 two-word, 18 three-word+ and 17 vocalisations with Ella (Fig 4a below). Two of his utterances were not directed at her. The majority of his utterances with her were used for "behaviour regulation" purposes, 2% for social interaction and 11% for joint attention purposes. The majority of his behaviour regulation utterances were complying with the teacher's directives (n.43), 16 were protests and 6 were to request an action/item. Only two of his utterances were for social interaction (He imitated two of her utterances without prompts). On nine occasions he spoke for joint attention purposes, responding to her choice or open-ended questions on eight occasions, and on the other occasion Ella commanded him to, "Tell, Ella, I don't know", Charlie retorted "It's a horse" (giving her information). Only seven of Charlie's utterances with his teacher were initiations (5 were protests, 1 to request an action and 1 to give information). Ten of his 17 vocalisations were either whines or screams directed at Ella, two were whines while ignoring her and five were animal sounds made when the teacher asked, "what does the ... say?" Interestingly, although Charlie spent less time interacting with Ella during the "Book/ Jenga" session (Table 4.4 above), none of his 21 verbal protests occurred during that session (Appendix 36, purple) and the majority (n.23) of Charlie's "compliance" utterances with Ella occurred during this session particularly during the book sharing section. This may suggest that the nature of the activity used during an interaction session has an impact on the pupil's affective engagement. Charlie enjoyed looking at the book and was amenable to responding to the Ella's "communication cues" but the book sharing context did not encourage his social-communication abilities.

Charlie used 48 utterances with Nuala: 19 one-word, 6 two-word and 23 three-word utterances (Fig 4.1 below). Only two of his utterances were initiations. Almost all his utterances were for "behaviour regulation" purposes: 44 utterances to comply with what Nuala expected him to say and on the other three occasions he protested. Charlie used his speech on 1 occasion to seek "attention" by labelling a picture "This is Helen". The low frequency of Charlie's protests during the session may be accounted for perhaps by the nature of the activity used, Nuala brought a book pitched at Charlie's reading level to the

session and video analysis revealed that Charlie was very interested in the book (ignoring Nuala as he tried to look at the book) but complied when she asked him “test questions” about it.

Figure 4.1: Frequency and Length of Charlie’s Utterances with Classroom Adults



Impact of adult communication on pupil utterances.

A sequential analysis of the impact of the adults’ communication on Charlie’s speech (Appendix 37A) indicated that the majority of his utterances followed their use of directives (Ella, 77%, Nuala, 94%), mainly following “communication cues”. He spoke most frequently when the teacher asked “*yes/no questions*” and when the SNA asked “*test questions*”. Interestingly, while “directives” were the adult’s predominant style of communication, only 24% of Ella’s and 29% of Nuala’s “directives” were followed by speech from Charlie. “*Verbal prompts*” were the adults’ most successful “directive” strategy as 37% of Ella’s and 42% of Nuala’s verbal prompts were followed by speech from Charlie. This latter finding confirms his teacher’s report that Charlie spoke mainly when he was prompted.

Charlie rarely spoke following the adults’ use of facilitative communication. Furthermore, five of his seven utterances following Ella’s facilitative communication were “protests”. The adults used eliciting communication least often, Nuala did not use any and Ella seldom used “eliciting utterances”, (38 such utterances across the three interaction sessions, Appendix 32). Yet Charlie responded verbally to 10 of his teacher’s “eliciting” utterances (5 choice and 5 open ended questions) suggesting they were quite effective in

supporting Charlie's use of speech. "*Waiting*" was the only eliciting strategy used with any frequency by the adults. However, Charlie only spoke on two occasions when each of the adults waited for him to communicate, suggesting that it was not the most effective strategy for supporting Charlie's language use.

Section One: Interactions Post Professional Development Initiative

Context and Duration of Positive Shared Engagement

Co-operative Activities (CA) were used during all of the post-PD sessions. The dyads spent most of the sessions in positive shared engagement with Ella and Charlie more than doubling the time they spent positively interacting (Ella and Charlie 79%, Nuala and Charlie 68%). Charlie's interactive actions and utterances with Ella and Nuala respectively increased considerably (Charlie and Ella, 85%, Charlie and Nuala, 72%) (Appendix 30, purple).

The time spent in positive shared engagement decreased somewhat during the third session between Charlie and his teacher (Table 4. 5 below). Further, Charlie initiated less often during the third session (Appendix 30, purple). Video analysis reveals a possible explanation for these findings. Ella brought the same "bird" game (CA) to all three sessions and Charlie's interest in the game was waning by the third session. This finding strengthens the finding from the pre-PD interactions that the context of the interaction impacts on the pupil's motivation to socially interact, highlighting the need for classroom adults to be aware of the influence of interaction contexts and to have the ability to construct interaction contexts that provide social motivation for the pupil.

Table 4.5: Post-PD Interaction Context, Resources and Percentage of Session Spent in Positive Shared Engagement

Shanbailey Post PD			
	Interaction Context	Resources	Percentage of Session in Positive Shared Engagement
Ella and Charlie	Session 1 Co-operative Activities (CA)	Two bird-shaped “felt” mittens (one for Charlie and one for herself), there was a strip of “velcro” the palm of each mitten. The bird mitts were used to “catch” a range of “felt” insects.	84%
	Session 2 Co-operative Activities (CA)	Two bird-shaped “felt” mittens. The insects and different coloured “felt” shapes were caught.	83%
	Session 3 Co-operative Activities (CA)	Two bird-shaped “felt” mittens - some coloured “felt” “transport” shapes, a spinning top gun and a number of different spinning tops.	70%
Nuala and Charlie	Session 1 Co-operative Activities (CA)	Three different coloured shaving foam canisters, two different coloured bottles of paint, a miniature plastic horse.	68%

Adults’ Style of Communication and Pupil’s Subsequent Engagement

The adults’ rate of verbal and nonverbal communication increased during the post-PD interactions (Ella r.21.9; Nuala r.22.7 per minute). However, Charlie’s rate of interactive communication within the interactions had more than doubled (r.17.2) with his teacher and almost doubled with his SNA (r.15.1) indicating the adults’ communication dominance within the interactions was decreasing. Charlie’s verbal and nonverbal initiations increased five-fold with Ella and three-fold with Nuala (Appendix 30, purple) and his protests with his teacher decreased (Appendix 38, purple).

The adults’ interaction style had changed during the post-PD interactions. Fifty-six percent of Ella’s and 45% of Nuala’s communication were facilitative. “*Linguistic Mapping*”, “*Self-Talk*” and “*Acting Silly*” were Ella’s most frequently used facilitative strategies while Nuala used mainly “*Model*” and “*Linguistic Mapping*”. The adults increased their use of “eliciting” verbal and nonverbal strategies (Ella, 28%’ Nuala, 24%) albeit they continued to use them at low rates. Nevertheless, Ella used “*Deliberate Ignore*”, and “*Control Access*” at least once a minute (Appendix 31, purple). Both adults had reduced their use of directive communication considerably (Ella, 16%, Nuala, 31%)

(Appendix 31, purple). However, Nuala continued to use three directive strategies at least once a minute: “*Verbal Prompt*”, r.2.3, “*Test Question*”, r.1.1, and “*Commands*”, r.1.2. Nuala had been absent from the third and fourth PD meetings which may explain the less dramatic decrease in her use of directive communication.

There was a dramatic decrease in the incidences of Charlie’s “*ignoring*” behaviours during the post-PD. However, a sequential analysis indicated that 26% of the Ella’s and 49% of Nuala’s post-PD directive communication were immediately followed by ignoring or protesting behaviours by Charlie (Appendix 33, purple). This finding highlights the importance of eliminating directive communication to ensure even greater positive shared engagement.

Repairing interaction breakdowns.

Only 2% of Charlie’s post-PD interactive communication with Ella was “*refusal/protests*”, although they remained at 6% with Nuala (Appendix 38, purple). Analysis of the video identified that Charlie protested on 6 occasions when Nuala tried to interact as he tried to explore the shaving foam independently. The adults became predominantly “non-directive” following Charlie’s non-interactive behaviour. Seventy-one percent of Charlie’s “*Ignoring*” behaviour with Ella and 58%, with Nuala were followed by “facilitative” or “eliciting” adult communication (Appendix 34, purple). Ella also followed six of Charlie’s 10 “*refusal/protests*” with non-directive communication, while Nuala continued to use more “directives” (n.5) of nine occasions (Appendix 35, purple). Nuala’s absence from the two PD meetings may have impacted on her strategy knowledge and interaction skills.

Pupil utterances.

The frequency of Charlie’s utterances increased (n.134) as did the length of his utterances with his teacher (Figure 4a above). The frequency of his utterances had increased only very slightly (n.52) and he used 1-word utterances mainly with Nuala. All of his utterances were directed at the adults. Charlie’s vocal initiations had increased more than 7-fold (Appendix 36, purple) and his use of longer utterances (3words+) had more than doubled (Figure 4a above) in the post-PD interactions with his teacher. Appendix 39A reports the frequency, nature and function of Charlie’s utterances with the adults. The longest utterance used was “I want to go to computer now”. Forty-six percent of his

utterances were for “Joint Attention” (JA) purposes. Nineteen of his JA utterances with Ella were initiations. On 9 occasions he spontaneously gave information to Ella (mainly about what he wanted to happen), on another occasion he asked a question “*Can I have it?*” on the other 9 occasions he commented spontaneously e.g. “*Ouch, it hurts*”. Of his 43 verbal responses that had a “Joint Attention” function, 28 were responding to Ella’s choice and open-ended questions while he commented on what was happening on 15 occasions. Twenty-eight percent of Charlie’s utterances were for “behaviour regulation” purposes (9 were initiations). 11% were “*request action/item*” while 13% were “*compliance*” Only 4% of his 134 utterances were “*protests*”. Twenty-six percent of Charlie’s utterances were used for social interaction purposes with Ella. 18 were used to request an action within the game they were playing. All of Charlie’s nine vocalisations with Ella were laughter. Charlie spoke and verbally initiated most often during the first interaction session, his verbal initiations decreased during the subsequent sessions (Appendix 36, purple). These latter two findings taken with the finding that there was more positive shared engagement during the first session strengthens the suggestion that the novelty of the activity had an impact on Charlie’s interaction with the teacher.

Charlie’s utterances and verbal initiations increased slightly during his post-PD interaction with Nuala. However, the majority were one-word, and the frequency of using longer utterances had decreased considerably (Figure 4.1 above). A possible explanation for the discrepancy in the length of utterance between their pre- and post-PD sessions may be the nature of the activity; during the pre-PD session, Charlie and Nuala shared a text book and Nuala asked him to read, and therefore much of his speech was reading the script or labelling pictures in the book. Charlie used his longest sentence when identifying the characters of the book as Nuala pointed, he said “Mammy and Daddy and Granny, Helen and Zip and Conor” while during the post-PD session his longest utterance was four words when he sang “Hey Ho, My Daddeo”. A possible implication of this finding may be that the use of scripts could be used to support Charlie in using longer utterances. Charlie had not used his speech for joint attention purposes during the pre-PD session with Nuala but did so on 24 occasions during the post-PD session (Appendix 39A). Five of his seven verbal initiations were for “joint attention” purposes. On three occasions he gave Nuala information spontaneously, twice about what she was holding and on the other occasion he told her it was “home time”. He also commented on what he was doing and on what he saw happening outside the window. On the 19 other occasions he responded to her

“eliciting” communication to inform her of what he wanted, giving her information about the letters she was writing and clarifying what he wanted.

Impact of adult communication on pupil utterances.

Although facilitating communication was used almost twice as frequently as eliciting actions and utterances by Ella, a sequential analysis (Appendix 37A) indicated that 40% and 38% of Charlie’s utterances followed his teacher’s use of “facilitating” and “eliciting” communication respectively. Twenty-two percent of his utterances followed her use of “directives” (mainly following “communication cues”). However, 28% of Ella’s “eliciting” compared to 14% of her “facilitating” communication was followed by speech from Charlie, strengthening the pre-PD finding that eliciting communication was more effective in supporting Charlie’s use of speech. Furthermore, he used longer utterances (3+ words) following her “eliciting” actions and utterances. Although “*linguistic mapping*” was Ella’s most frequently used strategy, only 12% of such utterances were followed by speech from Charlie. Ella’s most successful communicative actions and utterances for supporting Charlie’s use of speech were “*acting silly/exaggeration*”, “*deliberate ignore*” and “*choice questions*”. Charlie responded to 57% of Ella’s choice questions, indicating how effective they were in supporting his use of speech. “Facilitating” communication was Nuala’s main style of interacting with Charlie during the post-PD interactions. However, only 29% of his utterances followed this style. Thirty-six percent of his utterances followed Nuala’s “directive” communication and 35% followed her use of “eliciting” communication. Charlie spoke most often when Nuala used the directive strategy “*verbal prompts*” and the facilitating strategy “*model*”. Nuala’s most successful style of communication for supporting Charlie’s talk was also “eliciting” utterances as 46% were followed by speech from him.

Section Two: Pupil-Initiated Interactions

The Nature of the Pupil-Initiated Interactions

This section reports the findings of the pupil initiated “social” interactions evident in the pre- and post- sessions in terms of frequency and length. The findings on the development of reciprocity within the interaction are also presented. Reciprocity is measured by the number of turns each communication partner leads within an interaction.

The findings of positive shared affect observed within the interactions are also presented. This section concludes with a report of the pupil's shared affect during the interactions.

During the PD meetings, the adults were advised to support prolonged social interactions by minimising their directive communication while responding to the pupil's initiations. The data from the one-to-one observations pre- and post- were explored for evidence that pupil-initiated interactions were acted on and prolonged through the adults' use of facilitating and eliciting communication related to the pupil's communication. The interactions were considered "social" if the adults did not use "directive" communication. The social interaction was terminated if the adult used "directive" communication or she changed the topic completely. The interaction was terminated by the pupil only if s/he ignored the adult (see methodology chapter for a comprehensive explanation). The autism literature highlights the difficulty children on the AS have in turn-taking (Mundy et al., 1986; Wetherby et al., 1998) and the dominance of their communicative partners within interactions (Adamson et al., 2001; Girolametto et al., 2000; Lemanek et al., 1993; Sigman et al., 1988). This study sought to support communicative balance (reciprocity) within classroom adult-pupil interactions by encouraging the adults to support longer interactions through the use of responsive actions and utterances.

The Nature of Spontaneous Social Interactions Initiated by Charlie

During the pre-PD sessions, Charlie spontaneously initiated (Appendix 23 for definition) on 21 occasions with Ella, and on 10 occasions with Nuala (Table 4.6 below). Fifty-seven percent of Charlie's spontaneous initiations developed into social interactions with Ella. However, Ella halted the interaction before it began on all of the other nine occasions as she followed it with "directive" communication (mainly "behaviour directives"). The 12 initiations that developed into social interactions were very short in duration with only one of them continuing for more than 2 turns (see vignette 4.1 below). Fifty percent of these interactions were terminated by each communicative partner, as Charlie became "non-interactive" and on the other 6 occasions Ella followed with "communication cues". Only five of Charlie's 10 spontaneous initiations developed into a social interaction with Nuala because she immediately followed the other five with "directive" communication. The five that did develop terminated after one turn. Nuala was observed to halt four of those interactions with her use of "directive" communication.

Table 4.6: No. of Spontaneous Initiations and No. of Turns within Subsequent Interactions with Ella and Nuala

No. of Turns following Charlie's Spontaneous Initiations	No. of Spontaneous Initiations by Charlie Pre-PD		No. of Spontaneous Initiations by Charlie Post=-PD	
	Ella	Nuala	Ella	Nuala
0	9	5	10	3
1	6	5	9	7
2	5	0	10	2
3	0	0	6	1
4	0	0	6	3
5	1	0	6	0
6	0	0	1	0
7+	0	0	14	2
	12/21	5/10	52/62	15/18

Vignette 4.1

Longest Interaction Spontaneously Initiated by Charlie with Ella Pre-PD Sessions

Charlie and Ella had finished playing with the blocks. Charlie was putting the blocks back into the container then...

Charlie got up from his chair walked to the front of the desk, picked up a block and put it in the container (III) Ella watched and said, "Oh thank you Charlie, I didn't know that was there" (RR). Charlie gave her eye contact (R). Ella smiled at him saying "Thank you for doing that" (RR). Charlie put another block into the container (R) Ella waited, then picked up a block and put it into the container (RR). Charlie ignored her as he moved to a book lying on the table and began to look at it (NI).

III-RR/R-RR/R-RR/NI (Duration 5 turns: Charlie, 1 initiation and 2 responses, Ella, 0 initiations and 3 responses)

** Note only initiations followed by a response are considered a "completed initiation" within the interaction. (See methodology chapter for detail on how duration of interactions was measured)*

The frequency of Charlie's spontaneous initiations had almost tripled with Ella and almost doubled with Nuala during the post-PD sessions (Table 4.6 above). The majority developed into social interactions (Ella, 84%, Nuala, 83%). Almost all of his initiations that did not develop into a social interaction with Ella were halted prematurely because of

Ella's use of "directive" communication. More than half of the interactions arising from Charlie's spontaneous initiations with Ella continued for three turns or more. The longest interaction continued for 45 turns with Ella (Vignette 4.2 below). Both Charlie and Ella were equally responsible for terminating the social interactions as each halted the interaction on 26 occasions. The social interactions between Charlie and Nuala during the post-PD session continued to be brief with the majority only lasting one or two turns, the longest interaction continued for 10 turns (vignette, 4.3 below). Nuala halted the majority of the social interactions by using "directive" communication"

Vignette 4.2

Longest Interaction Spontaneously Initiated by Charlie with Ella Post-PD Sessions

Ella stuck a felt shape to the side of her face without Charlie noticing. She showed him the shapes on the desk as she asked him "Which one would you like to get"? Charlie ignored her question but then spotted the shape on the side of her face.

Charlie reached for the shape on Ella's face while giving her eye contact (II) Ella ignored his outstretched hand (R) and put another shape on her leg (I). Charlie watched as she did so (R). Ella gave a loud cry "Oooh" (I). Charlie gave her eye contact (R). She asked, "what happened" (I). Charlie reached for the shape on her face (I) she covered the shape with her hand (R). Charlie tried to pull her hand away (R) she allowed him to do so (R). Ella said in a frightened voice "oh my face, my face what is it" (I)? Charlie looked at the shape (R), then gave her eye contact (I) and laughed heartily (I). Ella said, "oh dear what could it be" (I), Charlie replied "a red circle" (R) and reached for the circle (I). Ella said, "yes Charlie, oh I need help" (R). Charlie removed the circle (R). Ella exclaimed in an exaggerated manner "ouch" (R). Charlie gave Ella eye contact (R) and said, "that hurts" (R). Ella agreed "it did hurt ow, poor Ella" (R). Charlie gave her eye contact and smiled (RR). Ella then showed him the shape on her leg (I). Charlie looked at it (R) and Ella screamed "aah" (I). Charlie tried to take the shape off Ella's leg (R), but Ella playfully obstructed him (R). He gave her eye contact and laughed (RR). Ella exclaimed "oh it's stuck it's stuck, I think I need help" (I). Charlie tried to help (R) she says "Pull! Pull", as he did (R) but she playfully held the shape down (I) Charlie tried to pull the shape off (R) Ella said "pull" as he continued to pull (R). Ella allowed him to pull the shape away (R) she exclaimed loudly as he did "oooh" (I). Charlie gave her eye contact (R). Ella said, "you got it, thank you Charlie, oh thank you, you got the yellow star and the black circle" (R), showing Charlie the red circle (I). Charlie reached for it

(R). Ella deliberately ignored his outstretched hand (R) Charlie took his hand away (R). Ella mislabelled the shape again “it’s a black circle” as she showed him a red circle (II). Charlie reached for it (R) but Ella deliberately ignored his outstretched hand (R). Charlie said, “can I put it on please” (R)? Ella replied “of course” (R) and gave him the circle (R). Charlie put the shape on the side of his face as he had seen Ella do earlier (I) and then shook his head (I) and it fell to the floor. Ella exclaimed “oh it fell off” (R) and picked it up (I). Charlie watched her as she did so (R). Ella put the shape on the side of Charlie’s face (I) as Charlie sat patiently (R). Ella said, “oh Charlie there is a red circle on your face” (I). Charlie put his hand up to remove the shape (R) but she playfully obstructed him (R). He gave her eye contact (R). Ella said, “oh I wonder what I should do” (I)? Charlie put his hand to his face (I), but she playfully obstructed him (R) and said, “get it” (R) Charlie allowed his hand to be taken away (R). Ella modelled “get it off, Ella!” (I). Charlie put his hand to his face (I) and Ella allowed him (R) saying “get it off Ella” (R). Charlie removed the shape from his face (R) and gave Ella eye contact (I) as he said, “Ouch that hurts” (I). Ella agreed “it did” (R). Ella put a shape on her nose (I) and said, “oh Charlie it did it again, oooh” (I). Charlie reached to help Ella take it off (R) but the shape fell off and Ella caught it and showed it to Charlie (II). Charlie said “ouch” (R) and gave Ella eye contact (R). Ella agreed “ooh that hurt that hurt” (R). Charlie took a shape from the desk and ignored Ella for more than 3 seconds as he wrapped the shape around his fingers.

II-RI/R-I/R-I/I-R/R-RI/R-II-I/RI-R/R-R/RR-R/RR-I/R-I/R-R/RR-I/R-RI/R-RR-I/R-RI/R-R/R-II/R-R/R-RR/II-RI/R-I/R-I/R-R/R-I/I-RR/R-I/I-RR/R-II-R-II/R-I/RR-R/Igore (Duration 45 turns: Charlie 8* initiations, 26 responses, Ella, 19* initiations, 17 responses).

Vignette 4.3

Longest Interaction Spontaneously Initiated by Charlie with Nuala Post-PD Sessions

Nuala placed shaving foam canisters on the desk, labelling as she did “Red, blue and white”

Charlie pointed to the canisters that were in sight but out of reach and said, “shaving foam” (II). Nuala replied, “you want shaving foam, which one Charlie” (R)? Charlie responded, “this one” and pointed in the direction of the canisters (RR). Nuala sought clarification “which one” (R)? Charlie responded “this one” pointing to the canisters once more (RR). Nuala sought clarification, “what colour would you like” (R) to which Charlie replied “white” (R). Nuala responded, “Oh the white one” (R), Charlie

agreed “white one” (R). Nuala took the white canister up (R) and shook it (I). Charlie watched as she did (R). She then labelled as shook “shake, shake, shake” (I). She gave the canister to Charlie (I) and commanded him saying “you do it”

*II-R/RR-R/RR-R/R-R/RI/R-II-command (Duration 10 turns: Charlie, 1*initiations, 5 responses, Nuala, 1 initiations, 5 responses.*

Reciprocity within the interactions.

Evidence was sought for communicative balance (reciprocity) within the pupil-initiated interactions of two turns or more. Reciprocity was measured by rate of “complete initiations” achieved by each communicative partner during each interaction. For this study a “complete initiation” was defined as “an initiation followed by a response from the other participant”. Table 4.7 below outlines the findings on the reciprocity within the interactions.

Six of Charlie’s initiated interactions with Ella and none with Nuala continued for 2 turns or more during the pre-PD sessions (Table 4.6 above). Charlie led four of the six interactions while the other two interactions were balanced as both Charlie and Ella initiated once within the interaction. Charlie led the longest interaction he initiated (vignette 4.1 above) as only one initiation occurred during that interaction (Fig. 4.2).



Fig 4.2 *Turns within a Pupil Initiated Interaction*

Table 4.7 below reports the evidence of reciprocity within pupil-initiated post- PD interactions. Of the 43 social interactions arising from Charlie’s spontaneous initiations that continued for 2 turns or more, Charlie led 18, Ella led 11 of them and 14 were now observed to be balanced. Balance was evident mainly within the social interactions that continued for three, four, and five turns. The findings indicate that reciprocity was developing within the interactions. Only eight social interactions between Charlie and Nuala continued for two-turns or more and Charlie led five of them while the other three were balanced.

Table 4.7: Reciprocity within the Pupil Initiated Interaction Cycles Post-PD

Turns	Leads the Interaction Charlie - Ella				Leads the Interaction Charlie - Nuala			
	Number of Interactions	Charlie	Ella	Balanced	Number of Interactions	Charlie	Nuala	Balanced
2	10	7	1	2	2	1	0	1
3	6	1	2	3	1	0	0	1
4	6	1	1	4	3	3	0	0
5	6	1	1	4	0	0	0	0
6	1	0	0	1	0	0	0	0
7+	14	8	6	0	2	1	0	1
Total	43	18	11	14	8	5	0	3

Positive Shared Affect

During the pre-PD sessions with Ella, Charlie communicated his dissatisfaction with what was being said or done by protesting to her on 32 occasions (Appendix 38, purple) of which 21 were verbal protests. On 12 occasions Charlie whined (n.11) or screamed (n.1) in protest at what his teacher asked or said and on the other nine occasions he used utterances such as “No/I don’t want...”. On the 13 other occasions Charlie protested nonverbally by banging his fists together (n.2), turning his back on the teacher (n.3), knocking and throwing items (n.3), pushing the teacher (n.3) and putting items away (n.2.). Charlie was not heard to laugh during any of the three pre-PD sessions with Ella.

The frequency of Charlie’s protests had decreased to 10 during the post-PD sessions with his teacher, he protested verbally on six occasions saying, “No” on three occasions, “I don’t want ...” on two occasions and whining at Ella on another occasion. The frequency and duration of Charlie’s eye contact with his teacher had increased dramatically during their post-PD sessions. He gave Ella eye contact on seven occasions which lasted a total of 19.8 seconds during the pre-PD sessions however during the post-PD session the frequency had risen to 59 incidences and the overall duration of his eye contact with her had increased to 202.0 seconds. He was also heard to laugh at what the teacher did or said on nine occasions.

Charlie did not laugh or give eye contact to Nuala during the pre-PD sessions and he protested to her on five occasions. Although he looked briefly at Nuala giving eye contact on four occasions during the post- PD sessions, his protests increased to nine incidences and he was not heard to laugh. The less positive changes observed between Nuala and Charlie compared to the teacher and Charlie may be accounted for by Nuala’s absence

from two of the six face-to-face meetings (the third and fourth) when much of the PCK was being addressed and her lack of engagement in diary writing for a number of weeks as the opportunities for greater understanding of the PCK were minimised.

Summary

The findings in this case indicate that although the adults worked hard at maintaining the pre-PD interactions with Charlie, they used directive communication mainly to do so. The pupil rarely initiated verbally or non-verbally within the sessions. When he spontaneously initiated the majority of his initiations did not develop into interactions mainly because of the adults' use of directive communication and the duration of those that did was very brief as the adults did not have skills to positively maintain the interaction. The overall duration spent in positive shared engagement was low, particularly with his teacher. The majority of Charlie's ignoring behaviours immediately followed the adults' use of non-directive communication, suggesting that Charlie did not interact with his classroom adults if given a choice. Charlie mainly used his communication for behaviour regulation purposes.

The adult's style of communication was predominately non-directive following their participation in the PD initiative, with the teacher making greatest changes to her interaction style. The duration of positive shared engagement increased considerably with both adults. The pupil's initiations increased considerably, particularly his verbal initiations. The frequency and duration of pupil-initiated spontaneous interactions increased and there was evidence of reciprocity developing within the interactions. The pupil's use of speech also increased. He mainly used his speech for joint attention purposes.

The context of the interaction was found to impact on the duration of positive shared engagement with the use of Co-operative Activities (CA) supporting maximum adult-pupil engagement. The use of eliciting communication was more effective in supporting the pupil's use of speech than the more frequently used facilitative actions and utterances. These findings suggest that adult engagement with the PD activities influenced the positive changes in the adults' interaction style and adult pupil interactions.

The findings from the other cases are presented as Appendices 26-29 inclusive. The cross-case analysis is presented in the next section of this chapter.

Cross Case Analysis

This section describes the pre- and post-PD cross case commonalities and differences in the adults' and pupils' communicative behaviours. The section begins with a brief summary of the participants' pre-PD demographic information (Table 4.8 below). The findings are presented in pre-PD / post-PD sequence following a similar format to that used for the individual cases. The context in which the interactions took place is presented first, the nature of the participants' communication follows, the section concludes with the findings on the impact of the adults' communication style on the pupils' engagement and on the pupils' use of speech.

Table 4.8: Participant Demographic Information

Shanbailey	Ella (teacher); limited experience of autism - no PD in autism. 6 years teaching experience. Nuala (SNA); 1 year in ASD class - no ASD courses. Charlie (pupil); 70 months ASD & Moderate General Learning Difficulties, has a wide repertoire of vocabulary, heard in one-word responses mainly. Tolerates but shows no interest in interacting with adults or peers, occasionally requests a highly motivating item from the adult.
Clonadoo	Síofra (teacher); 4 years teaching experience (1 year in ASD class). Post Graduate Certificate (Autism) and a number of short ASD courses. Sunita (SNA); 18 months in ASD class, no ASD courses. Freddy (pupil); 57 months, ASD & Global Developmental Delay, has a few words and routine phrases that were mainly heard in response. Likes adults, tolerates but shows no interest in interacting with peers. Occasionally requests help non-verbally from adult when unable to access a motivating item independently.
Windyvale	Yana (teacher); 14 years teaching experience (2 years in ASD class). She has a master's in psychology, a Post Graduate Certificate (Autism), and a number of short ASD courses. Kim (SNA); 2 years in ASD class, no ASD courses. Elana (pupil); 74 months, ASD & Global Developmental Delay. She has a wide repertoire of vocabulary, heard mainly when stressed or highly motivated. Shows no interest in interacting with peers or classroom adults. She makes great efforts to meet her own needs.
Bridgeport	Violet (teacher); 29 years teaching experience, the majority spent in a special education setting (3 years in ASD class). A number of short courses on ASD. Heidi (SNA); 2 years in ASD class, no ASD courses. Keeva (pupil); 70 months, ASD & Moderate General Learning Difficulties. She has a range of single words that were mainly heard in response. She shows no interest in interacting with peers, occasionally requests help non-verbally from adult when unable to access a motivating item independently.
Grindstone	Maddie (teacher); 3 years teaching experience (1 year in ASD class). A number of short courses on ASD. Donna (SNA); 7 years in ASD class, no ASD courses. Trevor (pupil); 87 months, ASD & Moderate General Learning Difficulties, no speech. Tolerates adults, shows no interest in interacting with peers, occasionally requests help non-verbally from adult when unable to access a motivating item independently.

Context of the Interactions

Table 4.9 below describes the context and nature of the activities / resources used within the interactions prior to and following the professional development. The adults decided what resources / activities to use during the sessions and the only direction given to them was to elicit as much communication as possible from their pupil. Academic Activities (AA) were used during 30%, Solitary Activities (SA) during 45% and Co-operative Activities (CA) during 25% of the pre-PD sessions. Five adults (3 teachers and 2 SNAs) used AA during the pre-PD sessions, and the teacher from Windyvale brought them to two of her three sessions. Six of the adults (4 teachers and 2 SNAs) used SA and four of the teachers and one SNA brought CA. None of the adults used AA during the post-PD interactions, CA were used in 11 of the 18 sessions by six of the adults. Two teachers used them in their three sessions. Five adults used SA. The teacher from Bridgeport used them in all three of her post-PD interactions.

Table 4.9: Context of Pre- and Post-Professional Development Interactions

Context of Interactions	Sessions Pre-PD	Sessions Post-PD
Academic Activities (AA) (activities where there was an academic objective).	Yana (1 categorisation, 2 labelling), Violet (labelling), Maddie (fine motor skills task), Donna (matching activity) Nuala (text book shared reading).	
Solitary Activities (SA) (pupil could do independently)	Ella (1 blocks, 2 book sharing), Siofra (1 jig saw & book sharing, 2 cupcake making), Kim (blocks), Violet (doll & clothes), Maddie (1 lunch, 2 train set & jigsaw), Heidi (sensory toys).	Kim (bubbles), Yana (bubbles), Violet (painting a picture in all 3 sessions), Donna (trampoline), Heidi (water play), Sunita (drawing), Yana (messy painting).
Co-operative Activities (require input from adult)	Yana (shopping), Violet (singing), Síofra (singing), Sunita (playdoh), Ella (playdoh).	Nuala (shaving foam), Siofra (1 spaghetti string, bubbles & balloons, 2 spaghetti string, car run, xylophones, 3 spaghetti string, bubbles & popgun), Yana (1 bubbles, 2 shaving foam), Ella (3 sessions involved same turn-taking game), Maddie (swing), Kim (bubbles).

The Nature of the Adults' and Pupils' Communication**Rate and ratio of communication within the pre and post-PD interactions.**

Table 4.10 below reports the rate and ratio of communication that occurred during the pre-PD and post-PD interactions. The adults communicated (verbally and nonverbally) on average 20.02 times (range, 13.8-31.6) per minute with their pupils during the pre-PD interaction sessions. The SNAs were observed to communicate more frequently with the

pupil than the teacher in each of the settings. The adults of the pupil who had no speech (Grindstone) communicated more frequently than the adults in the other settings. The pupils used communicative behaviours on average 11.37 (range 8.0-18.5) times per minute. Interestingly, Charlie, the pupil in Shanbailey who was reported to have a great bank of expressive vocabulary, used the least amount of communicative behaviours, while the nonverbal pupil from Grindstone used the most. All of the adults dominated the interactions with the ratio of adult-pupil interactive communication ranging from 2.5:1 to 1.3:1 actions/utterances per minute across the settings. The Shanbailey adults were observed to be the most dominant as communication partners (Teacher 2.3:1; SNA, 2.5:1). The findings show that the SNA and pupil from Windyvale were closest to a balanced communication relationship (1:3:1). However, this latter finding may be explained by the pupil's motivation to leave the interaction. The majority of her communication comprised of ignoring behaviours, protests/refusals about what was occurring within the interaction and non-social verbal and nonverbal requests to be allowed to play alone (Appendix 38, purple).

Post-professional development interactions.

Although all of the adults continued to communicate more frequently than their pupils, and seven of the adults had actually increased their rate of communication during the post-PD interaction sessions, the ratio of adult-pupil communication had decreased across all of the settings. This increasing communicative balance was due to the marked increase in interactive communication by four of the five pupils' during these sessions. There was also a considerable decrease in the adults' use of directive communication. There was almost equality in the rate of communicative contribution from the adults and their pupil in Windyvale during the post-PD interactions. The participants in Shanbailey were observed to have the greatest change in the ratio of their communicative contributions. The rate of the adults' and pupil's communication from Grindstone decreased during the post-PD sessions. However, this may be accounted for by the context in which the interactions took place; the pupil had to travel to retrieve his communication symbol each time he wished to communicate with the adults thus reducing his, and the adults', opportunities for communication.

Table 4.10: Rate and Ratio of Participants' Communication Pre- and Post-PD

	Shanbailey		Clonadoo		Windyvale		Bridgeport		Grindstone	
	Teacher	SNA	Teacher	SNA	Teacher	SNA	Teacher	SNA	Teacher	SNA
	Ella	Nuala	Siofra	Sunita	Yana	Kim	Violet	Heidi	Maddie	Donna
Pre										
Adult	18.4*	21.4	15.7	19.0	18.5	23.8	16.0	16.3	19.2	31.6
Pupil	8.0	8.5	8.5	10.4	11.6	17.8	10.4	8.7	11.3	18.5
Ratio	2.3:1	2.5:1	1.8:1	1.8:1	1.6:1	1.3:1	1.5:1	1.9:1	1.7:1	1.7:1
Post										
Adult	22.9	22.7	25.1	22.4	21.0	23.4	21.4	21.9	10.9	13.9
Pupil	17.2	15.1	16.6	14.4	18.8	21.4	15.8	16.1	8.1	9.4
Ratio	1.3:1	1.5:1	1.5:1	1.6:1	1.1:1	1.1:1	1.4:1	1.4:1	1.3:1	1.4:1

*Rate per minute

Style of Adult Communication within the Interactions

This section reports on the style(s) of communication used by the teachers and the SNAs during the classroom interactions that were recorded before (pre-) and after (post-) those adults engaged in professional development. It is followed by an account of how the adults' communication influenced the pupils' engagement within the interaction.

Adult communication pre-professional development.

Table 4.11 below summarises the styles of communication used by the adults across and within the cases during the pre- and post-PD interactions. The predominant style of communication in four of the five cases was directive in nature prior to the adults' involvement in the PD. In the fifth setting, Clonadoo, the adults used more positive communication that included "facilitative" and "eliciting" actions and utterances. The temperament of Freddy, the Clonadoo pupil, may offer a possible explanation for this finding, as the adults described him as, "lovely/easy to work with". At the same time, on average, 40% of the adult's communication was directive in Clonadoo. Five of the adults (three teachers and two SNAs) from three of the five cases (Clonadoo, Grindstone and Windyvale) used "*Behaviour Directives*" (directive actions and utterances that sought to control pupils' behaviour/attention) with considerably greater frequency than any of the other communication strategies. One possible explanation for this finding is that two of the pupils had either minimal (Clonadoo pupil) or no speech (Grindstone pupil) and the adults may have resorted to directing the pupil's behaviour to gain and maintain her/his attention rather than endeavouring to facilitate or encourage her/his social-communication.

The pupil from the third case (Windyvale) had a repertoire of speech, yet the teacher from this case was observed to use four “behaviour directive” strategies at least once a minute during the pre-PD interactions. Similarly, the SNA was observed to use three “behaviour directive” strategies per minute with the same pupil. The adults’ use of “behaviour directives” may be accounted for by their reports during the pre-PD interviews that they found the pupil difficult to work with, “She can be wilful but that sounds as if she is sitting just deliberating trying to think of something to annoy you and she’s not, but she can be so determined obviously to have her own way all the time” (Windyvale class teacher, pre-PD interview), “She is very wilful, yeah I find that she is very wilful, it’s her way or no way. She just won’t emm, you have to be persistent, it’s not just patience, you also need persistence to make sure, because she has to learn...” (Windyvale SNA, pre-PD interview). The adults from the other two cases, Shanbailey and Bridgeport used, “communication cues” (directive utterances that convey an expectation that the pupil will respond) more frequently than any of the other strategies during their pre-PD interactions. Their pupils had speech and the adults were observed to rely mainly on “*test questions*”, “*verbal prompts*” and “*yes/no*” type questions when interacting with their pupil.

Almost all of the adults were observed to use two “facilitative” strategies at least once a minute during their interactions prior to joining the PD. Two teachers (Windyvale and Bridgeport), used only one with any great frequency. The most frequently used facilitative strategies were “*Linguistic Mapping*” and “*Social Comments*”. Five of the adults (one teacher and four SNAs) used “*Follow the Child’s Lead*” at least once a minute suggesting, perhaps that they were facilitative by nature. An interesting anomaly occurred within two of the cases; in Windyvale, the SNA used four types of facilitative strategies at least once a minute including “*Follow the Child’s Lead*”. However, she also used directive communication (three behaviour directives and one communication cue) at least once a minute. Taking this finding with the finding that the teacher from the same case used mainly behaviour directives and rarely used facilitating communication, it is possible to suggest that the SNA may have been innately facilitative but that she may have been adopting the strategies used by the teacher. A similar anomaly occurred in Clonadoo as the teacher used one only “directive” strategy (albeit with high frequency) whereas she used three facilitative communication strategies including “*Follow the Child’s Lead*”, at least once a minute while the SNA from this case, used four directive strategies and five communication strategies (including “*Follow the Child’s Lead*”) at least once per minute

during her 10-minute interaction. This finding suggests that the SNA may have been “directive” by nature but was adopting the interaction style of the teacher. Both SNAs had reported learning from the teacher during their pre-PD interview. These findings suggest the influence teachers may have on support staff within their classrooms.

“Eliciting communication” (actions and utterances that sought to tempt the pupil to communicate) was used least often during their pre-PD interactions by nine of the adults and the only strategy used with any frequency by them was “*Waiting*” for the pupil to communicate. Interestingly, one teacher (Windyvale) used more directive and eliciting than facilitative communication suggesting that she may not have been “facilitative” by nature.

Table 4.11: Style of Adult Communication X Rate and Percentage of Overall Communication

		Shanbailey		Clonadoo		Windyvale		Bridgeport		Grindstone	
		Ella		Síoira		Yana		Violet		Maddie	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Directive Style	Behaviour Directives	4.4* 24%	1.5 7%	4.4 28%	1.3 6%	7.9 43%	0.7 3%	3.8 24%	0.9 4%	9.9 51%	1.9 17%
	Communication Cues	4.7 26%	2.0 9%	1.6 10%	1.5 6%	3.8 20%	2.5 12%	4.4 27%	2.2 10%	1.3 7%	0.2 2%
	Total	9.1 50%	3.5 16%	6.0 38%	2.8 12%	11.7 63%	3.2 15%	8.2 51%	3.1 14%	11.2 58%	2.1 19%
Facilitative Style	Facilitating Utterances	3.8 20%	7.2 33%	2.6 17%	7.9 34%	1.8 10%	5.3 25%	3.5 22%	7.4 35%	5.9 31%	3.7 34%
	Facilitating Actions	2.1 11%	5.2 23%	4.0 25%	9.1 40%	0.7 3%	7.2 35%	0.7 5%	5.6 26%	1.1 6%	2.0 18%
	Total	5.9 31%	12.4 56%	5.6 42%	17.0 74%	2.5 13%	12.5 60%	4.2 27%	13.0 61%	7.6 37%	5.7 52%
Eliciting Style	Eliciting Utterances	1.3 7%	1.4 6%	0.1 1%	0.2 1%	1.2 7%	0.8 4%	0.4 3%	0.7 3%	0.0 0%	0.0 0%
	Eliciting Actions	2.2 12%	4.8 22%	3.0 19%	3.1 13%	3.2 17%	4.5 21%	3.1 19%	4.7 22%	0.9 5%	3.1 29%
	Total	3.5 19%	6.2 28%	2.4 20%	3.3 14%	4.4 24%	5.3 25%	3.5 22%	5.4 25%	0.9 5%	3.1 29%
		Nuala		Sunita		Kim		Heidi		Donna	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Directive Style	Behaviour Directives	6.7 31%	2.6 12%	5.9 31%	4.2 19%	9.4 40%	1.9 8%	3.2 20%	0.4 2%	13.1 41%	2.4 18%
	Communication Cues	8.8 41%	4.4 19%	1.5 8%	0.7 3%	3.5 15%	1.6 7%	3.6 22%	1.8 8%	1.5 5%	0.2 0%
	Total	15.5 72%	7.0 31%	7.4 39%	4.9 22%	12.9 55%	3.5 15%	6.8 42%	2.2 10%	14.6 46%	2.6 18%
Facilitative Style	Facilitating Utterances	3.2 15%	3.7 16%	3.7 19%	7.0 31%	4.2 17%	5.5 23%	3.1 19%	8.3 38%	7.2 23%	5.5 40%
	Facilitating Actions	1.0 5%	6.6 29%	6.3 33%	7.9 35%	3.3 14%	9.4 41%	2.6 16%	6.0 27%	6.7 21%	3.3 25%
	Total	4.2 20%	10.3 45%	10.0 52%	14.9 66%	7.5 31%	14.9 64%	5.7 35%	14.3 65%	13.9 44%	8.8 65%
Eliciting Style	Eliciting Utterances	0.0 0%	2.4 11%	0.1 0%	0.0 0%	0.5 2%	0.7 3%	1.0 6%	1.0 5%	0.0 0%	0.0 0%
	Eliciting Actions	1.7 8%	3.0 13%	1.7 9%	2.7 12%	2.8 12%	4.3 18%	2.8 17%	4.4 20%	3.1 10%	2.3 17%
	Total	1.7 8%	5.4 24%	1.8 9%	2.7 12%	3.3 14%	5.0 21%	3.8 23%	5.4 25%	3.1 10%	2.3 17%

*Rate per minute

Analysis of the adults' communication across the settings (Table 4.12 below) indicated that, of the ten most frequently used strategies during the pre-PD interaction sessions; six were "directive" in nature with verbal and nonverbal commands being used

most often. The facilitative strategy of following the child's lead, identified as pivotal in the literature for supporting engagement, was 10th of the most frequently used strategies.

Table 4.12: Rank, Nature and Frequency of the Adults' Communication Pre- and Post-Professional Development

Rank	Pre-Professional Development			Post-Professional Development		
	Interaction Strategy	RPM*	Nature of Interaction	Interaction Strategy	RPM*	Nature of Interaction
1	Command	4.40	Directive	Linguistic Mapping	6.70	Facilitative
2	Nonverbal Command	3.60	Directive	Follow Child's Lead	5.34	Facilitative
3	Waiting	3.50	Eliciting	Waiting	2.80	Eliciting
4	Behaviour Control	3.30	Directive	Self-talk	2.60	Facilitative
5	Linguistic Mapping	3.30	Facilitative	Control Access	2.20	Eliciting
6	Social Comments	2.90	Facilitative	Acting Silly	1.90	Facilitating
7	Yes /No Q.	2.60	Directive	Yes/No Q.	1.70	Directive
8	Test Q.	2.10	Directive	Switch Activity	1.50	Facilitative
9	Verbal Prompt	2.00	Directive	Deliberate Ignore	1.50	Eliciting
10	Follow Child's Lead	1.80	Facilitative	Verbal Prompt	1.40	Directive

***Average rate per minute across cases**

Adult communication post professional development.

Following participation in the PD, the use of “directive” communication by all of the adults had decreased dramatically (Table 4.11 above). Analysis of recorded interactions showed that the predominant style of communication observed across all of the cases was “non-directive”. The adult who used “directive” communication most frequently in the post-PD interactions was the only participant who was unable to attend on two days of the six PD meetings (3rd and 4th) which may account for the less dramatic decrease in her overall “directiveness”. The use of facilitative actions and utterances in particular had increased across all of the settings; 52%-70% of the adults' overall communication was now “facilitative”. All of the adults were observed to “*Follow the Pupil's Lead*” at least once per minute in their post-PD interactions. The adults from Clonadoo, who used facilitative communication most frequently during the pre-PD interactions continued to be the most frequent users of this style of communication during the post-PD observations.

Significant changes to interactive style.

There was evidence of participants making significant changes to their interactive styles. The strongest example of change was in Windyvale where the teacher quadrupled her use of “facilitative” communication and in that same setting the SNA doubled her use of “facilitative” communication behaviours. Almost all of the adults increased their use of eliciting communication and increased their use of different eliciting strategies (albeit at low rates). Interestingly only one adult (SNA-Shanbailey) used “eliciting” utterances with any great frequency during the post-PD interactions. The other adults relied mainly on actions to elicit communication from their pupil. The adults from the cases with the two least verbal pupils continued to rely heavily on one strategy that is, “*waiting*” to elicit communication, while the adults with the more verbal pupils used actions such as “*control access*”, “*show*” and “*deliberate ignore*” at least once per minute.

Of the ten most frequently used strategies across the settings during the post-PD interactions (Table 4.12 above), only two were “directive” in nature. Both strategies were “communication cues, “*yes/no*” questions and “*verbal prompt*”. Two of the most frequently used “facilitative” strategies across the setting were labelling what the pupil was attending to or doing and following the pupil’s focus of attention.

Engagement within the Interactions

Cross-case findings relating to the duration of shared engagement between the adults and their pupils are reported below. Findings for the impact of the adults’ style of communication on the pupils’ engagement and what the adults did to repair the interactions when they broke down are also reported. The impact of the adult’s communication on the pupils’ speech will also be described.

Impact of the adults’ communication on the pupils’ engagement pre-PD.

During the pre-PD interactions, seven of the adults (all of the teachers and two of the SNAs) and their pupil spent less than half of their sessions in positive shared engagement because of the time the pupils spent ignoring or protesting at what the adults did or said (Table 4.13 below). A sequential analysis revealed that the majority of the “*ignoring*” behaviours of the three more verbal pupils (Shanbailey, Windyvale and Bridgeport) followed their adults’ use of “directive” communication, suggesting that they did not like demands placed on them. Almost half of the “ignoring” behaviours of the pupils from

Clonadoo and Grindstone who had minimal or no speech followed their adults' use of "facilitative" communication, perhaps indicating they ignored the adult because of their limited receptive understanding. All five pupils ignored more of the adults' "communication cues" than their "behaviour directives", suggesting that if communication wasn't demanded from the pupil they were more likely to refrain from interacting. The adults from three of the cases (Shanbailey, Windyvale and Grindstone) and the teacher from Bridgeport followed their pupil's ignoring behaviours mainly with "directive" actions or utterances, while both adults from Clonadoo and the SNA from Bridgeport used mainly non-directive communication.

Pupil protesting behaviours.

The pupils were observed to protest at a rate ranging from 0.42-4.6 incidences per minute during the pre-PD phase (Appendix 40). A sequential analysis indicated that the majority of the "protests" used by all five pupils immediately followed their adults' "directive" communication, suggesting that they did not like demands and expectations placed on them. The pupil from Grindstone used protest/refusals least often while the pupil from Windyvale used protest/refusal behaviours with the most frequency. Interestingly, both sets of classroom adults were highly "directive" in their communication with all four adults using "behaviour directives" as their predominant communication style. Difference in learning temperament was a possible explanation for the differences in the pupils' use of "protest/refusals" with their classroom adults as was highlighted in the pre-PD interviews. The pupil from Grindstone was described by his teacher as, "... *easy to work with as he mainly sits for us when we are doing our table top work*". The Windyvale adults had suggested that Elana was difficult to work with, both adults referring to her need to have her own way "...*she is very strong willed when she doesn't wish to do something*" (Teacher, pre-PD interview), "...*if Elana doesn't like to do something Elana is very strong willed and won't do it*" (SNA, pre-PD interview). Directive communication was the main response to their pupils' protest/refusal behaviours by eight of the adults while the SNAs from Clonadoo and Bridgeport followed their pupils' protests with nondirective communication mainly.

Impact of the adults' communication on the pupils' engagement post-PD.

During the post-PD sessions, the duration of positive shared engagement had increased considerably across the cases. The adults and pupils spent on average 75% of

their interaction sessions engaging positively with each other (Table, 4.13 below). There was a noticeable decrease in all of the pupils' "ignoring" behaviours and the duration of each "ignoring" episode had also decreased. The overall average rate of the pupils' protest/refusals had also decreased. The protests of the pupil who protested most frequently during the pre-PD session had decreased by almost 75%. However, there were anomalies within the cases as the frequency of protests increased during the interaction sessions of two SNAs (Shanbailey and Clonadoo) and a teacher (Bridgeport).

The Shanbailey SNA used Co-operative Activities during the interactions (as did the teacher). However, although she reduced her use of "directive" communication, almost a third continued to be directive while only 16% of the teacher's communication was directive. These findings suggest the need for the SNA to reduce her directive communication further to decrease the frequency of her pupils' protests. In Bridgeport both adults brought Solitary Activities to their interactions. Both adults had reduced their use of directive communication considerably. However, the teacher brought a similar activity (painting) to all of three of her sessions and the pupils' protests had increased considerably in the third session suggesting the importance of considering the motivational aspect of the resource when endeavouring to prolong positive interactions. In the other case (Clonadoo), the teacher brought Co-operative Activities to all of her interactions while the SNA brought a Solitary Activity, and the pupil sought to engage with the activity on his own protesting when the SNA tried to engage with him. However, it must be noted that while the incidents of protests increased in these three adult-pupil interactions the duration of the protests had decreased, suggesting the adults had developed the ability to mend the interactions following their participation in the PD (Table, 4.13 below).

The changes in relation to the increased positive engagement observed across the settings may be attributed to a number of factors. As reported above, all of the adults had reduced their use of "directive" communication considerably, adopting instead a more facilitative interaction style. The adults also adopted new ways of facilitating communication with all of the pupils and the teachers used different strategies to elicit communication from the more verbal pupils. These changes placed less demands on the pupils and gave them more control within the interactions, which in turn may have impacted on the attitude of the pupil towards the adults.

Table 4.13: Ignoring, Protesting and Shared Behaviours Pre- and Post-PD

		Ignoring Behaviours						Protesting Behaviours						Shared Behaviours			
		Rate per Minute		Duration in Minutes		% of Session		Rate per Minute		Duration in Minutes		% of Session		Duration in Minutes		% of Session	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Shanbailey	Teacher	8.2	3.1	19.8	5.9	66.0%	20.0%	1.1	0.3	1.6	0.4	5.0%	1.0%	8.7	23.3	29.0%	79.0%
	SNA	7.5	5.9	4.7	3.0	47.0%	30.0%	0.5	0.9	0.2	0.2	2.0%	2.0%	5.2	6.8	51.0%	68.0%
Clonadoo	Teacher	5.8	3.2	16.6	7.2	58.0%	24.0%	0.9	0.6	1.4	0.5	5.0%	2.0%	10.6	23.4	37.0%	74.0%
	SNA	4.6	3.1	5.1	3.2	46.0%	30.0%	1.2	2.0	0.3	0.8	2.0%	8.0%	4.8	6.6	52.0%	62.0%
Windyvale	Teacher	6.0	2.7	16.0	5.8	57.0%	19.0%	2.0	0.8	2.7	0.8	10.0%	3.0%	9.1	23.8	33.0%	78.0%
	SNA	6.8	3.2	3.6	1.5	41.0%	17.0%	7.2	0.9	2.1	0.2	23.0%	2.0%	3.2	7.1	36.0%	81.0%
Bridgeport	Teacher	7.5	4.0	17.9	13.7	59.0%	43.0%	0.9	1.3	1.3	1.2	4.0%	4.0%	11.2	16.7	37.0%	53.0%
	SNA	5.6	3.7	6.8	2.4	73.0%	24.0%	1.5	0.7	0.4	0.2	4.0%	2.0%	2.1	7.6	23.0%	74.0%
Grindstone	Teacher	5.4	2.5	17.2	2.4*	57.0%	24.0%	0.4	0.1	0.5	0.0*	2.0%	0.0%	12.5	7.6*	41.0%	76.0%
	SNA	7.3	0.7	4.1	0.7	41.0%	6.0%	0.5	0.5	0.2	2.0%	2.0%	2.0%	5.7	9.7	57.0%	92.0%

Note Teacher- Pupil Post-PD Session =10 minutes

Context of the Interaction Sessions and Positive Shared Engagement

Interesting findings arose across the cases in relation to the duration of positive shared engagement when the interaction sessions were analysed separately. There was evidence that the context of the interaction may have had an influence on the duration of shared engagement prior to and following the adults' participation in the PD.

The adults in this study selected the contexts in which all of their interactions took place. During the pre-PD interaction sessions Solitary Activities (pupil could carry out without any adult input) were most frequently used and were used across the five cases. Academic Activities were used in six of the sessions across four cases. Co-operative Activities (allowed the pupil have control but required the input of an adult) were used least often (n.5) and in four cases. On average more time was spent in shared engagement during the Co-operative (56.6% of the session) compared to when the Solitary or Academic activities were used (35% and 51.6% respectively). Further, duration of positive shared engagement was greatest during the Co-operative contexts in each of the cases where they were used. However, the nature of the resource/activity within the session also seemed to have an impact. The most prolonged duration of positive shared engagement (72%) observed during the pre-PD sessions occurred during the Co-operative session in Windyvale, where the teacher-and pupil interaction involved "shopping". The teacher used "directive" communication least frequently during that session which may have accounted for the high level of shared engagement. However, video analysis indicated that the pupil was highly motivated to interact with the teacher as she was allowed to walk around the room and approach the teacher (who acted as the shopkeeper) when she wished during that session. A possible explanation for this high level of positive shared engagement may be the combination of the decreased levels of directive communication and the highly motivating context of the interaction for the pupil. The pupils in two of the cases (Shanbailey and Clonadoo) spent least time in positive interaction during the pre-PD session when their teacher used story books as the resource (Solitary Activity) as they were observed to try and explore the book on their own ignoring the adults' attempts to engage with them.

There were different outcomes observed when different tasks were used during the *Academic* activities. The adults of the nonverbal pupil (Grindstone) brought *Academic* tasks that involved "action on objects" (e.g., lacing, stacking, matching objects), the

teachers from Windyvale and Bridgeport sought language from their verbal pupils using a “labelling” activity and the SNA (Shanbailey) brought a reading task. The duration of shared engagement was longer during the “action on objects” *Academic* tasks than during the reading or language tasks. Shared positive engagement was also longer during the reading compared to the labelling tasks.

These findings emphasise the importance of using the interests of the pupils as a forum for supporting pupil engagement.

Impact of context during the post-professional development sessions.

In the post-PD interactions although the duration of positive engagement increased considerably across the cases, differences occurred within the individual sessions. The SNA and pupil from Grindstone were observed to positively interact for almost all (94%) of their session. The context may account for this finding as the session involved the pupil and the SNA jumping with each other on a large trampoline. Further evidence that the context impacted on the duration of positive shared engagement was the finding that 86% of the Bridgeport teachers’ communication was “nondirective” during the post-PD sessions yet the duration spent in positive shared engagement had not increased to the same extent as the other adults (only 53% of her sessions were spent in positive shared engagement). The teacher used “painting a picture” as the activity during all three of her interaction sessions and, both teacher and pupil had a picture to paint (parallel play). While the pupil was motivated to gain access to the paints and items available, once she acquired the resources she became engrossed with them and her picture, ignoring her teacher. However, the teacher in Shanbailey also brought the same resource to the three sessions but in this case, it was an interactive game and the average overall duration of positive shared engagement was 80%. The Windyvale teacher brought items that required her input (CA) to two of the sessions: bubbles (requiring her to blow), and shaving foam (requiring her to squirt). Painting (SA) was the activity used in the other session. The latter activity had the least duration of joint engagement as the pupil was observed to explore the paint while ignoring the teacher. The findings highlight the need to consider the forum in which the interaction takes place; activities that require the input of another person supported more joint engagement. Interestingly in Shanbailey, the duration of the teacher-pupil positive shared interaction decreased somewhat in the third session

suggesting that the pupil was tiring of the activity and that the adult also needs to be mindful of the diminishing attractiveness of the resource /activity.

Pupils' Social-Communication

The pupils' social-communication will be discussed below. The function and role of the pupils' communication overall will be reported first, the duration of pupil initiated-interactions and evidence of the reciprocity within these interactions will follow. The frequency, length, and function of the pupils' utterances will then be presented. The influence of the adults' communication style on the pupils' use of speech will also be reported. This section will conclude with a summary of the findings presented in this chapter.

Function of the pupils' social-communication.

Table 4.14 below reports the function and frequency of the pupils' social-communication. The main function of the pupils' verbal and nonverbal communication during the pre-PD interactions was for behaviour regulation purposes. Four of the pupils complied with what was asked of them mainly. However, the majority of the "behaviour regulation" actions and utterances of the Windyvale pupil were used to seek control of her environment by requesting to have her needs met and protesting/refusing what was asked/demanded from her. Three of the pupils (Shanbailey, Clonadoo and Windyvale) used more protest/refusals than requests suggesting they did not want to communicate with the adults even to have their needs met. The nonverbal pupil was observed to be the most compliant pupil during the pre and post interactions. During the post-PD sessions four of the pupils (Shanbailey, Clonadoo, Windyvale and Bridgeport) were observed to take more control within the interactions as they requested to have their needs met and protested at what was asked from them more frequently than they complied with their adults' communication. However, they made more non-social requests than protests suggesting that their understanding of "what communication is" was developing.

On average, 30% of the pupils' social-communication during the initial interactions was used for social interaction purposes: mainly to acknowledge the adults by shifting/focusing attention on what the adults were doing or saying. The Clonadoo pupil, who was more socially engaged with the adults during the pre-PD interactions continued to be the most social in the group confirming his teacher's description of him "Oh he is

lovely everyone falls in love with him, he is really nice". The predominant function of the pupils' social-communication during the post-PD interactions was for social interaction purposes, mostly to acknowledge their classroom adults' communication although their ability to imitate, seek attention, turn-take and seek social routines with their classroom adults also increased considerably. However, there were differences across the cases, the pupil from Bridgeport increased her use of non-social requests considerable but rarely made social requests. The context of the post-PD interaction sessions may offer an explanation for this finding. All of the adults had reduced their use of directives however the Bridgeport adults were the only adults to use Solitary Activities during all of the post-PD interactions while Co-operative Activities were used mainly across the other cases. The Bridgeport pupil was observed and heard to request the items she needed during the sessions while the other pupils requested their adult to do something *with* them. The pupils rarely communicated for joint attention purposes during the pre-PD sessions and although communication for joint attention remained quite low in the post-PD sessions, the pupils' communicative abilities in this area improved considerably

Table 4.14: Pupils' Social-Communication: Function and Frequency Within and Across Cases

		Shanbailey		Clonadoo		Windyvale		Bridgeport		Grindstone*		Total (Avg.)	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post*	Pre	Post*
Behaviour Regulation	Compliance	172	68	105	53	164	43	154	36	300	41	895 (4.47)	241 (1.33)
	Refuse/Protest	39	19	36	40	125	31	42	49	16	6	258 (1.29)	145 (0.80)
	Non-social Request	27	82	23	42	90	87	51	226	67	4	258 (1.29)	441 (2.27)
Social Interaction	Request social	0	45	23	87	12	106	2	1	2	43	39 (0.19)	282 (1.55)
	Imitation	2	15	11	59	9	20	29	22	7	0	58 (0.29)	116 (0.64)
	Seek attention	2	29	13	38	18	76	6	13	10	25	49 (0.24)	181 (1.00)
	Turn taking	4	15	3	14	1	40	13	11	22	0	43 (0.21)	80 (0.44)
	Acknowledge	71	289	138	270	60	280	96	249	100	48	465 (2.32)	1136 (6.26)
Joint attention	Give/Request Information	10	73	3	18	26	21	6	44	1	0	46 (0.23)	156 (0.86)
	Comment	0	31	4	22	5	50	8	10	1	12	18 (0.09)	125 (0.69)

*Post-PD findings in Grindstone are based on 20-minute observations

Role of pupil's social-communication.

Almost a fifth of the pupils' interactive verbal and nonverbal communication across the settings during the pre-PD interaction sessions was initiations. However, only one twentieth was verbal initiations. The verbal pupil from Shanbailey (reported by his classroom adults as having a large repertoire of expressive vocabulary) initiated least frequently, while the verbal pupil from Windyvale initiated considerably more frequently than any of the other pupils (Table 4.15 below).

The context of the interactions seemed to impact on the pupils' initiations. In two of the cases (Clonadoo and Bridgeport) higher rates of pupil initiations were observed during one of the three teacher-pupil pre-PD interaction sessions. The session involved singing (CA) in both cases. Both pupils were observed to initiate more than twice as frequently during that session than in the other two interaction sessions with their teacher. Analysis showed that the overall rate and style of Clonadoo teacher's communication did not differ considerably during the singing session compared to her other interaction sessions, while the Bridgeport teacher communicated considerably more often and used more "directive" communication during the singing session in Bridgeport. These findings suggest that perhaps the ingredient that was common to both sessions and which may account for the higher pupil initiations was the use of singing, suggesting that this activity may be effective in supporting the development of initiation abilities of pupils on the AS.

During the post-PD interactions, the frequency of pupil verbal and nonverbal initiations more than doubled. The pupils' verbal initiations tripled. The pupil from Shanbailey made the greatest gains in his overall ability to initiate as he now initiated almost five times more frequently than he had during the pre-PD interaction sessions (his verbal initiations had increased 7-fold). The Clonadoo pupil's verbal initiations increased 11-fold (albeit from a very low base) and the nonverbal pupil's vocalisations increased seven-fold. The pupil (Windyvale) who initiated most frequently during the initial sessions continued to be the most frequent initiator. Her nonverbal initiations more than doubled and her verbal initiations increased by 44%.

Table 4.15: Mean Rate of Pupils' Non-Verbal and Verbal Initiations per Minute

	Shanbailey			Clonadoo			Windyvale			Bridgeport			Grindstone*		
	Non Verbal	Verbal	Total	Non Verbal	Verbal	Total	Non Verbal	Verbal	Total	Non Verbal	Verbal	Total	Non Verbal	Verbal	Total
<i>Pre</i>	0.7	0.2	0.9	1.6	0.2	1.8	2.1	1.6	3.7	1.1	0.5	1.6	2.0	0.0	2.0
<i>Post</i>	2.7	1.5	4.4	2.7	2.2	4.9	4.6	2.3	6.9	3.6	2.2	5.8	2.8	0.7	3.5
<i>Gain</i>	2.0	1.3	3.3	1.1	2.0	3.1	2.5	0.7	3.2	2.5	1.7	4.2	0.9	0.7	1.5

**Post PD findings are based on 20-minute observations while findings in other cases are based on 40 minutes*

Duration of and Reciprocity within Pupil-Initiated Interactions

The numbers of pupil initiations that developed into social interactions and the duration of each of the interactions (i.e., the number of turns within the interaction, a turn included an initiation and a response) are reported in table 4.16 below. As it was important that the adults have the ability to sustain a pupil-initiated topic in a social manner, the use of responsive communication was emphasised, therefore pupil-initiated interactions were considered terminated if directive communication was used. The findings from four of the cases are reported as only one ten-minute post-PD interaction video (instead of an expected 3x ten minutes) was provided by the teacher from Grindstone and this case was omitted from this element of the cross case analysis.

During the pre-PD sessions the adults had difficulty sustaining interactions initiated by their pupils. The majority of the pupils' initiations from Windyvale and Bridgeport halted before they could develop (59% and 65% respectively) while 45% and 35% of pupil initiations in Shanbailey and Clonadoo respectively also did not develop into social interactions. These communicative breakdowns occurred mainly because the adults directed their pupils to do or say something. Further, the majority (54%) of the interactions that did develop were very brief only lasting one turn. Thirteen percent of the 104 pupil-initiated interactions continued for four or more turns of positive engagement with only 3% continuing for six turns or more. Reciprocity was not evident within the pupil-initiated interactions that developed beyond two turns or more as almost all of them were led by the pupil. These findings that is, the small number of pupil initiations that developed into social interactions, the small number of more prolonged interaction episodes and the lack of reciprocity within the interactions would suggest that prior to PD, the adults did not have the communication strategies to respond/ initiate within the

interactions in a non-directive manner, resulting in infrequent and short interactions between themselves and their pupils.

The pupil-initiated interactions that developed into cycles of social interaction had almost tripled during the post-PD sessions with only 13% on average halting before they began, suggesting that the adults had developed the ability to recognise more of the pupil initiations and to act on them in a responsive manner. The dyads from Shanbailey and Bridgestone made the greatest improvement as the frequency of pupil-initiated interactions quadrupled. The duration of the interactions had also increased considerably as 40% on average continued for four or more turns. Twenty five percent of the pupil-initiated interactions continued for six turns or more. These findings provide evidence that the adults' abilities to identify and act on their pupils' initiations using responsive communication had improved. Further, the findings indicate that the use of non-directive communication supports prolonged episodes of positive shared engagement.

All of the pupils continued to dominate the interactions they initiated. However, there was evidence of growing reciprocity within three of the four cases but particularly in Shanbailey. The initiations by the pupil in Bridgeport had increased almost six-fold, however, she was observed to lead 84% of the interactions. The growth in the pupil initiations and subsequent interactions continuing for longer durations as well as evidence of reciprocity developing within the interactions suggests that the adults were becoming more proficient at using facilitative and eliciting communication strategies. This finding was particularly evident in Windyvale.

4.16: Pupil Initiated Social Interactions: Frequency, Duration and Reciprocity

Number of turns in interactions	Shanbailey		Clonadoo		Windyvale		Bridgeport	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
0*	14	13	19	15	53	8	33	9
1	11	16	21	16	13	16	11	15
-2	5	12	4	10	7	18	4	11
3	0	7	5	15	7	15	2	10
4	0	9	2	4	7	6	1	6
5	0	6	1	6	0	8	0	7
6	1	1	1	4	0	4	0	6
7+	0	16	1	15	0	21	0	17
	17/31	67/80	35/54	70/85	34/90	88/96	18/51	72/81

Evidence of Reciprocity within Pupil Initiated Interactions

No. of Interactions	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Pupil Led	4	23	12	44	17	51	6	48
Adult Led	0	11	2	0	1	8	0	4
2Balanced	2	17	0	10	3	13	0	5

*These initiations did not develop because the adults did not respond, or they used directive communication following the initiation

The improvement in the reciprocity identified from the observations across the four cases, was supported by the post PEP-3 results with all of the pupils making significant gains in this skill. The pupil from Shanbailey who made the greatest gains in reciprocity during the observed adult-pupil interactions was also identified as making the greatest gains in the reciprocity element of the PEP-3.

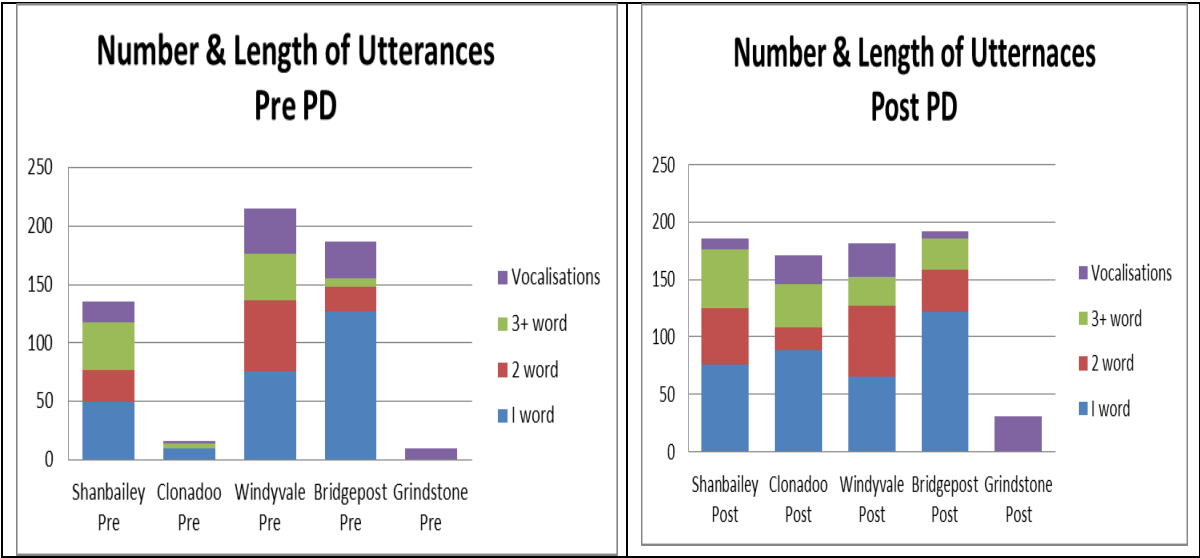
Nature of the Pupils' Speech Pre-Professional Development

Figure 4.6 below summarises the number and length of the utterances used by the pupils across the cases. During the pre-PD sessions, the pupils were heard to verbally communicate an average of 2.8 utterances per minute (n.563) across the cases. The pupils from Windyvale and Bridgeport spoke most often. Analysis of the sessions from these cases highlighted that these two pupils spoke considerably more frequently in one of the three interaction sessions with their teacher (Windyvale, r.7.4, Bridgeport, r.8.0 per minute). The pupil from Windyvale also spoke with high frequency (r.8.0 per minute) during her session with the SNA. The context of the interaction seemed to impact on the rate of pupil speech. The Windyvale pupil spoke considerably more frequently during the “shopping” activity than either of the two other sessions with her teacher. Video analysis

indicated that the pupil was highly motivated to shop for items. The SNA-pupil session in the same case was observed to be fraught as the pupil wished to lie down on the floor and to play with the blocks (session resource) on her own. She was motivated to continually express her needs and to protest verbally when they weren't being met. These findings suggest that the key to this pupil's use of speech is motivation and the challenge for the adults is to identify contexts / activities that positively motivate the pupil to interact with them. The teacher-pupil interaction sessions in Bridgeport and Clonadoo that elicited considerably more language than the other two was a singing session where the teacher verbally prompted the pupil to finish sentences in songs. Each song was supported by "visuals". Both adults reported that their pupil loved singing but perhaps the use of "visuals" also had an impact.

The utterances used across the cases during the pre-PD interactions were mainly 1-word utterances. However, two of the pupils (Shanbailey and Windyvale) used more phrases than single word utterances with both classroom adults.

Figure 4.2: Number and Length of Pupil Utterances Pre and Post-PD



*Grindstone post vocalisations are based on 20 min interactions as opposed to 40 minutes.

Adult Communication and Subsequent Pupil Utterances Pre-Professional Development

Table 4.17 below reports the 10 communicative actions and utterances used most frequently by the adults, the percentage of these communicative behaviours that were followed by pupil speech and the numbers of pupil utterances that followed each of the frequently used behaviours. Six of the 10 most frequently used strategies during the pre-

PD sessions were “directive”, three were “facilitative” and one was “eliciting” in nature. Interestingly, the ninth most frequently used strategy, “*Verbal Prompts*”, was followed by the greatest number of utterances (n.84). The third most frequently used strategy “*Waiting*”, was not followed by as many utterances as the less frequently used strategies of “*Behaviour Control*”, “*Yes/No Questions*” and “*Test Questions*”. Interesting findings were also revealed when the frequency a strategy was used was compared with the number of utterances that immediately followed. Only 14% of the most frequently used strategy “*Nonverbal Commands*” was followed by speech and only 8% of “*Waiting*” (the 3rd most frequently used strategy) was followed by speech. Further, although “eliciting” strategies were used least often, analysis showed that 50% (n.6) of the adults “*Seek Clarification*” utterances, 36% (n.12) of their “*Choice Questions*”, and 33% of the occasions “*Control Access*” was used, these strategies were followed by speech. These findings suggest that the strategies most frequently used by the adults were not always the most effective in encouraging speech from the pupil.

Nature of the Pupils’ Speech Post-Professional Development

During the post-PD observations, the average number of pupil utterances heard across the cases increased to 4.2 per minute. However, this finding is skewed by the pupil from Clonadoo (who had minimal speech pre-PD), as he made the greatest gains. His rate of speech increased almost 10-fold with both classroom adults (Figure 4.6 above). Two of the pupils’ utterance use increased slightly while the utterances of the Windyvale pupil decreased overall (they increased during the sessions with her teacher but decreased considerably while interacting with her SNA). The vocalisations of the Grindstone pupil increased but he did not develop words. These findings suggest that the use of predominately “facilitative” strategies impacts positively on the speech use for pupils with minimal speech but is not as effective in supporting pupils who have speech, to increase its use significantly. Further, the use of “facilitative” strategies was not effective in supporting a nonverbal pupil to develop speech. The findings do show that there was a noticeable increase in the use of phrases (2words+) by the pupils from Shanbailey, Clonadoo and Bridgeport during their post-PD interactions. There was no significant difference in the number of phrases used by the pupil in Windyvale prior to and following the adults’ participation in the PD. However, the function of her phrases changed suggesting that the adults’ style of communication impacted more on the function of this pupil’s social-communication than on her length of utterances.

The post PEP-3 results indicated that three of the pupils (Shanbailey, Bridgeport and Grindstone) made improvements both in their expressive and receptive abilities over the duration of the PD. The pupil from Shanbailey made significant gains in both areas. This latter finding may be accounted for by his lack of engagement with the assessor during the pre-PD assessment which may have masked his true abilities in these areas. There was also a significant improvement in his post-PD reciprocity score. The Windyvale pupil achieved a slight improvement in her expressive ability in the post-PD PEP-3 score. She ranked in the 13% percentile and her expressive language was considered at an 18-month level. These scores contrasted starkly to what was observed during the interactions as she was observed to be the most vocal during the pre-PD observations and continued to be highly verbal during the post-PD observations. This pupil's reciprocity scores in the PEP-3 may offer an explanation for the low score in the formal assessment; she scored the lowest score in reciprocity across the cases during both pre- and post- assessments highlighting that she wasn't engaging with the assessor. These findings highlight the difficulties of an unfamiliar assessor seeking to ascertain the true abilities of a pupil on the AS using a formal assessment. The findings suggest the need to supplement the formal assessment of social-communication abilities of a pupil on the AS with informal assessment to gain a more accurate picture.

Adult Communication and Subsequent Pupil Utterances

Following the adults' participation in the PD, only two of the 10 strategies most frequently used by them were "directive" in nature and they were "communication cues" (*verbal prompts* and *yes/no question*) rather than "*behaviour directives*" (Table 4.16 below). Interestingly, although the adults from Shanbailey and Windyvale used considerably more "facilitative" than "eliciting" communication, more of their pupils' utterances followed their adults' use of "eliciting" communication. This finding suggests that "eliciting" strategies are more effective in supporting the development of speech for pupils who already have a wide vocabulary but are reluctant speakers. "*Linguistic Mapping*" and "*Follow Child's Lead*" (the two most frequently used adult strategies) were followed by the greatest number of pupil utterances overall. However, considering the frequency with which they were used, only 13% and 16% respectively were followed by pupil utterances. The most effective strategy in supporting the pupils' use of speech was "*Deliberate Ignore*" (an eliciting strategy), as 42% was followed by speech. "*Verbal Prompts*", "*Control Access*" and "*Yes/No*" questions were also highly effective

frequently used strategies. While the adults' use of "eliciting" utterances such as "*Seek Clarification*" and "*Choice Questions*" continued to be quite limited, they were observed to be effective strategies for supporting the pupils' use of speech as 59% and 54% of such utterances respectively were followed by speech.

Table 4.17: Adult Communication and Subsequent Pupil Utterances

Adult Communication and Subsequent Pupil Utterances										
Pre-Professional Development						Pre-Professional Development				
Rank	Style	Strategy	Rate per minute	% followed Pupil Utterance	N of Subsequent Pupil Utterance	Style	Strategy	Rate per minute	% followed Pupil Utterance	N of Subsequent Pupil Utterance
1	Directive	Nonverbal Command	22.0	14%	60	Facilitative	Linguistic Mapping	33.9	13%	82
2	Directive	Command	18.0	22%	79	Facilitative	Follow Pupil's Lead	26.7	16%	76
3	Eliciting	Waiting	17.7	8%	30	Eliciting	Waiting	13.8	16%	39
4	Directive	Behaviour Control	16.4	11%	35	Facilitative	Self-Talk	13.1	14%	32
5	Facilitative	Linguistic Mapping	16.3	7%	23	Eliciting	Control Access	11.0	35%	71
6	Facilitative	Social Comments	14.5	7%	19	Facilitative	Act Silly/Exaggeration	9.7	25%	44
7	Directive	Yes/No Question	13.2	20%	52	Directive	Yes/No Question	8.4	35%	53
8	Directive	Test Question	10.3	23%	47	Eliciting	Deliberate Ignore	7.3	42%	55
9	Directive	Verbal Prompt	9.8	43%	84	Directive	Verbal Prompt	7.0	39%	49
10	Facilitative	Follow Pupil's Lead	9.2	7%	12	Facilitative	Model	6.8	20%	25
Less Frequently Used Strategies	Eliciting	Control Access	2.3	33%	15	Eliciting	Choice Question	3.1	54%	31
	Eliciting	Choice Question	1.7	36%	12	Eliciting	Open ended Question	2.2	40%	16
	Eliciting	Seek Clarification	0.6	50%	6	Eliciting	Seek Clarification	1.8	59%	19

Function of Pupils' Utterances

The majority of the pupils' utterances across the cases during the pre-PD observations were used for "behaviour regulation" purposes, 14% were used to interact socially and 8% were for joint attention purposes. Table 4.18 below reports the "behaviour regulation" function of the pupils' pre-PD utterances. Analysis of the three more verbal pupils' utterances indicated that, the pupils from Shanbailey and Bridgeport used their speech mainly to "*Comply*" with what their adults did or said, while the majority of pupil from Windyvale's utterances was endeavouring to control her environment using "*Protests*", "*Making Non-Social Requests*", and talking to herself while "*Ignoring*" the adult. The pupils from Shanbailey and Windyvale used more of their speech for "joint attention" than for "social interaction" purposes (Table 4.19). Their joint attention utterances were mainly to inform the adults of what they would like. Over a quarter of the Bridgeport pupil's utterances was to socially interact with her adults (mainly

imitating her adults' utterances and turn taking during a singing session). She rarely spoke for joint attention purposes. Of the 16 utterances used by the pupil from Clonadoo, seven were for "behaviour regulation", six for "social interaction" and one was to "*Give Information*" and two were "*Comments*". Although the pupil from Grindstone only vocalised on 10 occasions with his classroom adults, they were mainly to control his environment as five were "*Protests*" and two were cross whines while "*Ignoring*" his teacher.

Table 4.18: Frequency and Percentage of Pupils' Behaviour Regulation Utterances

	Compliance		Ignore		Protest		Non-Social Request		Total	
	No	%	No	%	No	%	No	%	No	%
Shanbailey Pre	87.0	64.4%	2.0	1.4%	24.0	17.8%	10.0	7.4%	123.0	91.0%
Shanbailey Post	35.0	18.8%	1.0	0.5%	10.0	5.3%	15.0	8.1%	61.0	32.7%
Clonadoo Pre	3.0	19.7%	0.0	0.0%	2.0	12.5%	2.0	12.5%	7.0	43.7%
Clonadoo Post	22.0	12.9%	6.0	3.5%	2.0	1.2%	7.0	4.0%	37.0	21.6%
Windyvale Pre	45.0	20.9%	30.0	14.0%	47.0	21.9%	48.0	22.3%	170.0	79.1%
Windyvale Post	12.0	6.6%	2.0	1.1%	5.0	2.8%	22.0	12.2%	41.0	22.7%
Bridgeport Pre	74.0	39.6%	18.0	9.6%	22.0	11.8%	13.0	6.9%	127.0	67.9%
Bridgeport Post	17.0	8.9%	0.0	0.0%	11.0	5.7%	95.0	49.4%	123.0	64.0%
Grindstone Pre	0.0	0.0%	2.0	20.0%	5.0	50.0%	0.0	0.0%	7.0	70.0%
Grindstone Post	0.0	0.0%	1.0	3.2%	3.0	9.7%	0.0	0.0%	4.0	12.9%

Functions of post-professional development utterances.

The pupils' utterances varied widely in function during the post-PD interaction sessions highlighting the range of communicative abilities across the cases. The majority of the utterances used by the pupil from Bridgeport continued to have a "behaviour regulation purpose" (table above). Almost 50% of her utterances were to make "*Non-Social Requests*" (asking for items she required during painting or water play activities). The table (4.19) below reports on the numbers of pupil utterances used for social interaction and joint attention purposes. The pupil from Shanbailey used his utterances mainly for joint attention purposes. The majority of such utterances were to inform the adults what he would like to happen, although his ability to clarify what he meant and to comment on what was happening was developing. Both he and the pupil from Bridgeport

continued to use less of their speech to socially interact with their adults than for joint attention or behaviour regulation purposes. The three other pupils (Clonadoo, Windyvale and Grindstone) used their utterances mainly to socially interact with their adults. The pupils from Clonadoo and Windyvale mainly requested the adults to engage in mutual play while the Grindstone pupil sought “attention” by vocalising into the adult’s face. Three pupils (Windyvale Grindstone and Shanbailey) used more utterances for joint attention than for behaviour regulation purposes in the post-PD interactions. These findings highlight the different levels of communication among pupils on the autism spectrum despite being close in chronological age. One pupil was still at the basic level of communicating following the study as she was mainly requesting to have her needs met. Two pupils were communicating orally more for joint attention purposes than to socially interact with familiar adults, suggesting that they were on a continuum and that longer exposure to the adults’ use of nondirective strategies could lead to communication for social interaction purposes.

Table 4.19: Frequency and Percentage of Pupils’ Social Interaction and Joint Attention Utterances

	Social Interaction							Joint Attention				
	Ack	Im	RSR	SO/A	TT	Total		G	Com	SI	Total	
	No.	No.	No.	No.	No.	No.	%	No.	No.	No.	No.	%
Shanbailey Pre	0	2	0	1	0	3	2.2%	8	1	0	9	6.7%
Shanbailey Post	9	6	19	2	3	39	21.0%	59	26	1	86	46.2%
Clonadoo Pre	0	2	0	4	0	6	37.5%	1	2	0	3	18.8%
Clonadoo Post	2	34	50	14	2	102	59.7%	15	17	0	32	18.7%
Windyvale Pre	3	9	0	4	0	17	3.3%	25	4	0	29	13.5%
Windyvale Post	4	15	54	9	1	83	45.8%	20	37	0	57	31.5%
Bridgeport Pre	7	26	1	6	13	53	28.3%	5	2	0	7	3.7%
Bridgeport Post	9	12	1	1	6	29	15.2%	36	4	0	40	20.8%
Grindstone Pre	2	1	0	0	0	3	30.0%	0	0	0	0	0.0%
Grindstone Post	3	0	0	12	0	15	48.4%	0	12	0	0	38.7%

Ack = Acknowledge; Im = Imitation; RSR = Request Social Routine; S O/A = Show Off/Attention; TT = Turn-Take; G I = Give Information; Com = Comment, SI = Seek Information.

Summary

The findings from the micro analysis of the pre and post observations of the interactions between the classroom adults and their young pupil on the AS indicate that,

participation in the professional development initiative positively influenced the adults' interactive styles. The adults were supported in decreasing their use of "directive" communication significantly in particular their use of "behaviour directives", and in increasing their use of facilitative communication and embracing new communication strategies. The most "directive" adults made considerable positive changes to their interactive style. There was a significant increase in positive shared engagement evident across the cases following the PD.

Contextual elements such as the nature of resource/activity and learning characterises of the pupil were found to have an impact on the duration the dyads spent in positive shared engagement and on the pupils' use of speech. The duration of pupil-initiated interactions within the sessions increased and a growth in reciprocity within those interactions was also evident when the adults reduced their directive communication.

The use of social interactionist strategies was not found to have a major impact in supporting pupils who have a range of vocabulary to increase their frequency of language use within the interactions. Nor were they effective in supporting the nonverbal pupil to acquire speech. However, the use of the strategies did support the pupil who was minimally verbal to increase his use of speech considerably. Further, the spontaneous language use of the four verbal pupils increased significantly.

The study found that the communication strategies used most frequently during the interactions were not always the most effective strategies in supporting the pupils to use their speech. Eliciting strategies were not used with any great frequency by the adults prior to or following their participation in the PD, yet they were highly effective when they were used.

Chapter Five: Adults' Experience of the Professional Development

Introduction

The focus of this study was an investigation of the effectiveness of a professional development (PD) initiative in influencing the interaction styles used by classroom adults as a strategy for developing their pupils' social-communication skills. The professional development initiative comprised of a number of elements put in place to support the learning of the adult participants. It included attendance at six face-to-face meetings, held on Saturdays between September 2011 and March 2012, at which the MKO shared new PCK and facilitated discussion of that content and its implementation. The teachers were expected to build into their daily schedule, a 10-minute one-to-one social interaction session with the participant pupil. The teachers were asked to video one of the interaction sessions each week and to select one of these clips to share with the group at the subsequent PD meeting. The SNAs were asked to share one 10-minute interaction video clip for group discussion midway through the initiative. All of these adult participants were asked to submit a reflection on the implementation of the PCK at the end of each week for the duration of the study.

This chapter reports on the adults' engagement with and perceptions of the PD initiative. Findings are presented under the major themes that emerged from analysis of the transcripts of facilitated discussions carried out at the PD meetings and from the other data collection instruments, Reflective Diaries (RD), Learning Logs (LL), Interviews held before and after the professional development (Pre-PDI & Post-PDI), and Overall Evaluation sheets (OE).

Engagement with the Elements of the Initiative

There was a strong and clear commitment by the adults to all elements of the initiative, Table 5.1 below reports on the details of their engagement. Six of the adults attended all of the PD meetings. Of those who did not have full attendance, one of the SNAs could not attend two of the PD meetings due to a family bereavement and she did not engage with the activities for a number of weeks and two of the teachers and one other SNA each missed one meeting due to other unavoidable commitments.

The rates of submission of the video clips and reflective diaries, written over the lifetime of the PD, were very high at 95.5% and 88% respectively.

Table 5.1: Engagement in the PD Activities X Frequency and Percentage

<i>Attendance at Face to Face Meetings</i>					
<i>Teachers</i>	<i>Ella</i>	<i>Maddie</i>	<i>Siofra</i>	<i>Violet</i>	<i>Yana</i>
	5 (83%)	5 (83%)	6 (100%)	6 (100%)	6 (100%)
<i>SNAs</i>	<i>Nuala</i>	<i>Donna</i>	<i>Sunita</i>	<i>Heidi</i>	<i>Kim</i>
	4 (66%)	6 (100%)	6 (100%)	6 (100%)	5 (83%)
<i>Video Clips Submitted</i>					
<i>Teachers</i>	<i>Ella</i>	<i>Maddie</i>	<i>Siofra</i>	<i>Violet</i>	<i>Yana</i>
	20 (100%)	18 (90%)	18 (90%)	19 (95%)	18 (90%)
<i>SNAs</i>	<i>Nuala</i>	<i>Donna</i>	<i>Sunita</i>	<i>Heidi</i>	<i>Kim</i>
	1 (100%)	1 (100%)	1 (100%)	1 (100%)	1 (100%)
<i>Reflective Diaries Submitted</i>					
<i>Teachers</i>	<i>Ella</i>	<i>Maddie</i>	<i>Siofra</i>	<i>Violet</i>	<i>Yana</i>
	14 (78%)	16 (89%)	15 (83%)	16 (89%)	18 (100%)
<i>SNAs</i>	<i>Nuala</i>	<i>Donna</i>	<i>Sunita</i>	<i>Heidi</i>	<i>Kim</i>
	12 (67%)	17 (94%)	17 (94%)	18 (100%)	16 (89%)

Adults' Perceptions of being a Participant in the Professional Development

Transcripts of the pre- and post-professional development interviews, the reflective diaries, the learning logs and the overall evaluations were analysed and categorised and the emergent themes and sub themes relating to the adults' perceptions of being a participant in the initiative are outlined in Table 5.2. Three main themes emerged from this analysis, learning together, empowerment of the adults to support social-communication development, and enhanced adult-pupil communication and improved relationships. The participants also identified some reservations about elements of the initiative and these are reported throughout the chapter where relevant.

Table 5.2: Adults' Perceptions of their Participation in the Professional Development (Themes, Sub-Themes & Elements)

Learning Together	
➤ Mutual Support	<ul style="list-style-type: none"> ○ Similar Contexts <ul style="list-style-type: none"> ▪ In the Same Boat ▪ Non-Judgemental ▪ Affirmation and Support ○ Adult Dyads from each setting <ul style="list-style-type: none"> ▪ Enhanced Recollection of the PD Content ▪ Consistent Implementation of Content ▪ Different Perspectives ▪ Enhanced Classroom Collaboration about the Interactions
➤ Collaborative Development of New Knowledge	<ul style="list-style-type: none"> ○ New knowledge from Observations <ul style="list-style-type: none"> ▪ See Rather Than Just Hear ▪ Content Use by Other Participants ▪ Content Use with More Able Students ○ New Knowledge from Discussions ○ Developing Critical Observational & Thinking Skills <ul style="list-style-type: none"> ▪ Make & Receive Suggestions
Empowerment	
➤ Confidence in Supporting Communication Development in their Classes	<ul style="list-style-type: none"> ○ Deeper Understanding of the Nature of Communication & Language ○ Consider the Developmental Level of their Pupil ○ Understand that Motivation is the Key to Effective Learning <ul style="list-style-type: none"> ▪ Identify what Worked with their Students ○ Modify their Communication Style <ul style="list-style-type: none"> ▪ Adoption of the PD Strategies <ul style="list-style-type: none"> • “Wait”: • “Fun” <ul style="list-style-type: none"> ○ Building a Bond ○ Gaining and Maintaining the Student’s Attention ○ Reducing Directive Communication
➤ Confidence in Using the PD Content Beyond the Interaction Sessions	<ul style="list-style-type: none"> ○ Using PD Content across the Day ○ Using PD Content with Other Students ○ Sharing Content with Others
➤ Ability to Think about Communication & Language Development	<ul style="list-style-type: none"> ○ Question & Modify own Beliefs ○ Identify required Changes ○ Enhanced Critique Skills
Improved Relationships	
➤ Improved Adult – Child Relationship	
➤ Improved Participant Student – Other Relationships	
Reservations	
➤ Attending face to face meetings	
➤ Videoing Implementation of Content	
➤ Sharing & Discussion of Interaction Clips	

Learning Together

Participation in the PD initiative involved attending six face-to-face meetings, held on Saturdays over a nine-month period, beginning at 9.00am and ending at 2.00pm, with a working lunch.

The level of commitment to the meetings was very high (Table 5.1 above) and the interviews and the evaluations of the PD revealed that, in the main the adults had highly positive perceptions of these meetings. Two of the participants, both teachers, expressed initial reservations about being committed to the schedule but both ultimately believed the effort was worthwhile. Yana, the Windyvale teacher who had to travel furthest (165km each way) stated,

They (the meetings) were definitely worth it, although I must admit some Saturday mornings as you can imagine when I didn't want to get up that early, but they were worth it... So, while on Saturday mornings when the alarm goes off you're thinking 'oh no' I always felt it was worth it afterwards. I found it so useful, it was definitely useful (Post-PDI).

During the PD meetings the adults viewed and discussed video clips of each other's classroom practice. All reported on the benefits of watching and discussing the clips. However, three of the teachers Yana, Maddie and Ella, admitted that sharing their classroom practice and having others comment on their interactions during the ensuing discussions was uncomfortable for them. Yana (Windyvale T) confessed that she "hated the videos when it was my own, because you watch yourself thinking I shouldn't have done that or you could have done more of that...it's not nice to have to sit and hear others say, 'you should have done'" (Post-PDI).

There were clear indications throughout the adults' feedback that they had benefited from sharing and discussing their practice. All reported that the group was very empathetic and that they experienced more support than criticism with Yana summarising the sentiment of the group when she commented, "It was a nice bunch of people and I didn't feel that they thought I was hopeless, I was never made to feel that" (Yana, WindyvaleT, Post-PDI). Two subthemes emerged from the Learning Together data, mutual support and the new knowledge and skills generated from within the group.

Mutual Support

The adults attributed the mutual support they experienced from the meetings to the fact that they all worked in very similar contexts and that two participants from each setting were involved.

Similar contexts.

A key benefit of participation in the PD, identified repeatedly across the data, was the consistent relevance of the discussions within the meetings to the participants' own context. This came about because of the close similarity of the day to day experiences in all five settings. The participants valued the opportunity to interact with others whose pupils have similar communication and language difficulties. Yana (WindyvaleT) believed it reduced her sense of isolation; she explained that there was only one class for pupils on the AS in her school and that "here (locality) there is no other class and no other teacher or assistant here that we could meet regularly, so it was so worth it just to speak to others" (Post-PDI). The participants believed that being from similar contexts meant that everyone was in the same boat, that the group affirmed and supported each other's practice, and that they were non-judgemental.

In the same boat.

The value of being part of group who had similar difficulties was identified across the overall evaluations, learning logs, and interviews. One adult thought that her ability to problem solve had improved by listening to and talking to the other group members as "Some of the other girls within the group had come across similar situations and exchanged their experiences" (OE Respondent 6). Three others believed that engaging with a group who had similar challenges gave them the confidence to talk about their own struggles as, "... other participants talking about challenges were very much in line with my difficulties" (OE Respondent 2).

The sense of relief from seeing and hearing that others were struggling was also identified by participants in their evaluations, interviews and learning logs with Ella stating,

...I think, for all of us the first once or twice we went to the PD we thought, 'Oh, thank God, I'm not the only one struggling', that it was okay ... I think for the first

couple of times for me it was the, ‘alright it is okay that we are not flying through this already and know exactly what to do’, it was okay not to have things working perfectly it was nice to meet other people who were also a bit frustrated and going, ‘How do I get past whatever I’m stuck in, at the moment’ (ShanbaileyT, Post-PDI).

Affirmation and support.

Affirmation and support of being with others who understood the difficulties they were encountering and who could see positive aspects of videoed interactions which those involved felt had not gone well, is captured in a comment from Maddie:

I was saying (to myself) this is going to be terrible, but it wasn’t, they (the group) were seeing things that you would never have seen and giving lots of praise as well as saying what you could have done ... it wasn’t negative ... it was just constructive feedback that they would say I might have done this (GrindstoneT, Post-PDI).

Respondents also reported that peers’ positive feedback encouraged them to continue to work on enhancing the interactions: “Some interaction sessions which I thought went badly, others would find the positives in and this helped me to continue with the interactions” (OE Respondent 7). “...they (the group) really encouraged and motivated everyone” (OE Respondent 6). Síoifra valued the opportunities to discuss the interactions with others as they “confirmed what we were doing right and also what could be improved on and also encouraged us to see how we could plan better” (ClonadooT, Post-PDI). Heidi (BridgeportS) valued suggestions for improvement that were offered “in a nice” way (LL4).

Non-Judgemental.

Being part of a group from similar contexts was highly valued as the group members were considered non-judgemental. Yana spoke of feeling safe enough to discuss her difficulties within the group: “I didn’t feel at any stage that anyone was thinking or saying, ‘look at that daft cow, she shouldn’t have done that’” (Yana-WindyvaleT Post-PDI). Kim (WindyvaleS) also appreciated being in a group where she was an equal member and where her opinion was listened to, respected and acted upon.

That’s one of the things I really, really loved about the sessions. Like nobody asked if you were the teacher or the SNA... I was spoken to in the same way as everybody

else and so were the other SNAs and it was lovely because it made us feel ... that we also had something to offer... that what we did with the children was every bit as important as what the teachers did, and it makes you work that much harder and it make you give it your all.

She appreciated that every question asked was valued no matter who asked it and “It was answered without anyone being made feel it was a silly question or inferior in any way... I wasn’t afraid or in any way anxious about asking something that was really bothering me” (Post-PDI).

Adult dyads from each setting.

Having two staff members from each context participating in the PD was considered highly beneficial by all. Among the benefits of involving the teacher-SNA dyad mentioned were that more of the PCK was brought back to the school, the information was understood from different perspectives, the implementation of the PCK was not neglected, and permeation of PCK was enhanced.

Enhanced recollection and understanding of the professional content knowledge

Representative of adult dyads’ views, Maddie and Donna (Teacher & SNA-Grindstone) believed that having two staff from each setting reduced the possibility that content was missed or forgotten.

I don’t think I could have carried all the information back and shared that... I could have missed things. I think two heads are always better than one, you can bounce off each other.... She’d (Maddie) remember something you’d said or was said at the PD and I’d remember other things, or I’d say something, and she’d say oh no I don’t think that’s it. It was good to be able to talk to her (Donna, Post-PDI).

Ella (ShanbaileyT) valued having her SNA in the group for the different perspective that brought to the PD content and having someone to remind her of content she may have forgotten she commented, “Maybe Nuala took a different slant from it ...or she might hone in on something more than I did...during the week she would say “But don’t you remember what Tish said” (Post-PDI).

Consistent implementation of content.

The participation in the PD of two adults from each school was identified by Síoífra (ClonadooT) and Nuala (ShanbaileyS) as a factor that promoted consistent implementation of content because each individual motivated and reminded the other to set aside time for the interactions, particularly during a busy day. Kim (WindyvaleS) commented that having the teacher and the SNA access the PCK meant that the adults were “singing from the same hymn sheet ...because if the teacher is using one strategy and the SNAs are using a different strategy then it makes sense that the child has to be totally confused” (Post-PDI). Two of the teachers (Ella, Shanbailey & Violet, Bridgeport) thought that the involvement of the SNA in the initiative was very important as it supported the adoption of the content more readily back in the classroom by the other adults who were not involved in the initiative.

...I think having someone involved from that group (SNA) is really, really useful because it sells it much more quickly back here... Two is definitely brilliant I have to say because you had the support of somebody else in the classroom. You weren't alone trying to tell the others about it because Heidi knew what I was talking about (BridgeportT, Post-PDI).

Different perspectives.

The richness of different perspectives afforded by the participation of two adults with diverse roles from the same school in the PD was also highlighted by the participants as a valued aspect of the PD. Representative of this, Yana (WindyvaleT) felt the SNAs participation enhanced the overall learning within the PD group,

I think the teachers and the SNAs bring a different perspective. I think they have a different role and different responsibilities, so it was good to hear the different views and the different ways. The teachers brought a lot of ideas but a lot of the SNAs brought a different approach and their approaches were fabulous...watching some of the SNAs with some of the children I just thought ‘You know what, you have a much softer way with the kids’ and they seem to get more back.’ (Post-PDI).

She attributed the change that occurred in her interactions with her pupil to the presence of the SNAs in the group;

I just thought the SNAs had a different way of looking at things and a better way for me. When I consider how directive I was and when I saw them I wasn't sure their approach was right. But the more clips I saw of them the more I thought 'You are absolutely right, you're absolutely doing that right'... I just thought watching some of the SNAs on video you would have got a lot more from that child than I would have because I wouldn't have done it like that, but you know what, that is how I should have done it, because I would have got what you got (Post-PDI).

Enhanced classroom collaboration about the interactions.

The participants identified that the participation of the teacher-SNA dyad in the PD supported discussion and problem-solving in the classrooms about the development of their pupil's social-communication and language. Sunita, Donna and Kim (SNAs) spoke of daily discussions with their teacher when previous content was modified and built on. Nuala and Ella (Shanbailey) reported discussing the interactions with each other throughout the day with Ella (teacher) stating:

... coming from the meetings you would be very much aware throughout the day and saying, 'Do you know what I was thinking about last night?' Or Nuala would bring in things and say, "it was not along the lines of what I was working on, but you could use it Ella" and I would do the same.

Nuala (SNA) also reported that both adults were very aware of what each was working towards in the interactions and that while out family shopping she noticed and purchased resources that she felt would support Ella's interactions with Charlie (Post-PDI). Síofra (ClonadooT) believed that the presence of another class staff member was important "to keep the ideas flowing" as they discussed how the interactions went and they also planned together for subsequent interactions "whereas if you were on your own I'd say you could run out of ideas". One of the teachers reported that arising from her participation in the PD she collaborated more frequently with the staff, "I now discuss problems encountered with other members of staff much more, before I tried to deal with the problems myself as the teacher" (OE Respondent 9).

Summary of Findings on Mutual Support

The model of professional development adopted for this study was underscored by social interactionist theories. It differed from other models of PD on offer in Ireland in

terms of context and learning opportunities. The context differed in that the participants were a very specific group of school staff (teachers and SNAs working with prelinguistic pupils on the autism spectrum). The learning opportunities included the peer sharing and discussion of the participants' own implementation of the PD content.

The findings from the "Mutual Support" theme highlight the significant value placed by the education staff on this initiative, affirming the need for context specific PD voiced by principals and classroom staff in a recent national report (Daly et al., 2016). This current study took a risk by bringing two groups of education staff together (teachers & SNAs), because of possible tensions arising from their very distinct roles. However, the perceptions of both groups of being involved in such a model of PD were wholly positive, citing numerous examples of collaboration, dialogue and mutual respect, with one teacher admitting to the positive influence the SNAs had on her learning. The findings from this study contribute to existing knowledge on the concept of Communities of Learning and highlight the potential of this model for addressing the lack of PD provision for SNAs identified in numerous reports (Daly et al., 2016; DES, 2001, 2006; Government of Ireland, Joint Committee on Education and Social Protection, 2016). More importantly provision of PD to the teachers and SNAs together strengthened staff working relationships within autism-specific classes by increasing collaboration and shared problem-solving practices and in turn the learning for the pupil.

The adults (teachers in particular) articulated their discomfort at sharing and discussing their practice within a public forum. However, PD literature stresses the importance of activities such as self-reflection and collegial critique for real changes in practice to occur (Clarke & Hollingsworth, 2002; Freed, 2003; Darling-Hammond & McLaughlin, 2011; Levine, 2011; Rarieya, 2005). While Davis (2009) cautions that scrutiny of practice may undermine the participants' self-worth and confidence, the participants in this study believed the PD group to be supportive and affirming rather than judgemental. Further, they attributed this collegiality and democracy to the group composition, that is, participants being from similar teaching contexts.

Within the broad theme of Learning Together, there was a subtheme focusing on how participation in the observation and discussion sessions at the PD meetings increased participants' understanding of the PCK relating to development of social-communication in the classroom. The sessions furnished them with a range of ideas on how to enhance

their interactions. Participants also reported that their ability to reflect on interactions and to make suggestions on what modifications were required was enhanced. The findings of this subtheme are documented in the following subsection.

Collaborative Development of Pedagogical Content Knowledge

Accruing knowledge on how to enhance social interactions from observation and discussion of peers' practice was frequently reported as a benefit of participation in the initiative. In their post-PD interviews, seven of the adults identified "*ideas*" as a major benefit of being a participant, sixteen references were made to the value of accessing "*ideas*" that arose within the PD in seven of the overall evaluations and nine of the adults reported "*ideas*" as the greatest benefit of that particular day's meeting in at least one of their five post-PD learning logs. Refining their understanding of the development of communication was also regarded as a valued outcome with participants reporting that the opportunity to observe, and to critically reflect on their observations, led them to modify their beliefs on what constituted good practice.

New knowledge from the observations.

The opportunity to watch the video clips at the meetings was valued by the participants for a number of reasons. They valued specifically being able to "see" rather than just "hear" what others were doing, to "see how" the content was being implemented in different classes and with pupils of varying social-communication and language abilities.

See rather than just hear.

Having the opportunity to "see" the content in action rather than relying on anecdotal descriptions of what was happening in others' classrooms supported the adults' deeper understanding of the PD content. Donna (GrindstoneS) stated,

I absolutely loved ...looking at the videos, you can read textbooks and people can tell you this is how it should be done, you should do this, you should do that, but again unless you are seeing it in action, if it's visual, you are going to get a lot more. Rather than someone saying ... 'I did this, and I did that---'but you can't see every single reaction of the student or the teacher, I think to see that was brilliant (Post-PDI).

Sunita (ClonadooS) concurred stating, “We would hear about them and how they were doing, but to actually see them then, that was invaluable because you wouldn’t have understood, how bad or how much they had progressed.” Síoфра (ClonadooT) found the videos invaluable as she was a “visual learner.” Similar sentiments were also reported in the overall evaluations, “The videos were the most powerful tool for me...being able to see how others are teaching” (Respondent 2). “Seeing the clips was great as it gave clear insight into what the others were doing” (OE Respondent 3).

Interestingly, half of the adults admitted at the post-PD interviews that they did not like videoing their practice. The main reasons cited were pressure to get it right because of the knowledge that others would be viewing it and the embarrassment of looking at themselves making errors. Nuala (ShanbaileyS) felt she was under pressure “because I think it’s in your head oh no I’m being videoed and when you are on camera you forget things”. Yana (WindyvaleT) hated watching herself making errors “in glorious technicolour” on screen. Violet (BridgeportT) also admitted to being self-conscious initially “I suppose initially you were very self-conscious looking at yourself. Yeah, I was self-conscious initially, but I have to say that you just get over that and become more interested in what is happening on the video than looking at yourself.”

The adults appreciated seeing what others were doing with the PD content in their classrooms. Donna, (GrindstoneS) admitted that she had difficulty coming up with ideas for maintaining her interactions with Trevor (pupil) and was delighted to get ideas from seeing the other participants’ interaction clips at the meetings. Nuala (ShanbaileyS) also accrued a wealth of ideas from observing others, “...you are sitting there watching the videos and you are thinking to yourself ‘God I wouldn’t have thought of doing that.’” When asked about the benefit derived from the PD meeting Yana (WindyvaleT) wrote in her learning log, “So much (benefit) as I saw some great stuff I will use”, she found it so useful “to see what everybody else is doing because they always have other ideas, that I could use” (LL2). Yana noted in a later learning log that the greatest benefit from that meeting for her was the ideas she got from observing how others built on each interaction session, “It was so good to see how Ella moved on her “bubble” lesson with Charlie as she got so much more language from him – Elana would be able for much of that language, so I know how to do it now” (LL 5).

New knowledge from discussions.

The adults wrote and spoke of the value of the group discussions for providing them with a wealth of knowledge about developing social-communication and language. Maddie (GrindstoneT) commented, "... it (PD) was so helpful, what did we have, nine more voices, and yours, ten voices, and they were all there giving us ideas, we got lots of ideas and lots of input from everyone including yourself" (Post-PDI). Síofra (ClonadooT) concurred, appreciating that others pushed her thinking on how to build on the interaction "... Like before you just blew bubbles but what else could you do with the bubbles to make it a little bit more interesting for him? ...it was great coming home with new things to try" (Post-PDI). Kim (WindyvaleS) reported that the sharing of the ideas added to her bank of ideas when the interaction stalled, stating: "...I think sharing those ideas made an awful difference, you know as you would have something to fall back on in the bag" (Post-PDI). She gave an example of how suggestion about using a "bubble pipe" by Maddie (GrindstoneT) aided the successful maintenance of an interaction with Elana (pupil) for a longer period. The benefit of having a bank of ideas was echoed in the overall evaluations: "It was great to get ideas and suggestions if I had hit a wall with an activity." (OE Respondent 7). Sunita (ClonadooS) spoke of being so energised from the ideas generated at the PD that she was "dying to get in on Monday to try out the new toys or the new ideas" (Post-PDI). The format of discussing each individual interaction was also valued as the ideas generated were tailored to the specific pupil. Ella (ShanbaileyT) stated, "we were taking each child where they were at and not a blanket approach, ...focussing more on that child's learning as opposed to a general approach and coming up with ideas for them" (Post-PDI). Kim (WindyvaleS) also valued this approach as "what works for one (child) might not necessarily work for the other" (Post-PDI).

New knowledge for implementation with other pupils.

Identifying ways of using the PD content with more able pupils was a valued aspect of learning together identified by the adults. By way of illustration, Síofra (ClonadooT) spoke of using ideas observed in others' interactions with pupils who had more speech in her class and that she could identify what were the next steps for Freddy:

...it was very useful say for using with the other students in my class, as some of the students in the PD had more language (than Freddy) and so I could see 'oh that's

what you are going to do next, that's what you are aiming for' and it was also nice to know ...when he becomes more able where to go from then on (Post-PDI).

Maddie (GrindstoneT) spoke of gaining many ideas that were pertinent to two other pupils in her class from reading the reflective diaries of others: "...we were generalising and seeing ideas about what we could do with the other two boys in the class" (Post-PDI).

Enhancement of observational and critical thinking abilities.

While analysis revealed that the adults identified their discomfort at sharing their interactions and listening to the subsequent group discussion (reported above), they valued the process highly. The main benefits reported across the learning logs, interviews and overall evaluations included the opportunities to; make and receive suggestions about the dilemmas that were experienced during the implementation of the PCK and develop the skills (during the sharing process) to identify good and not so good practice.

Make and receive suggestions.

The opportunities to discuss the interactions together and, in particular the opportunities for each participant to discuss problems that they were encountering, were valued by the participants as they were a forum in which collaborative problem solving occurred, different perspectives were heard, questions were answered, and critical thinking skills were developed.

Six participants identified in their learning logs on at least one occasion that discussion of the difficulties they were encountering was the most beneficial aspect of the PD meetings. Heidi noted in her fourth learning log entry that the feedback was given in a supportive manner, "I love coming to the meetings because of the video clips and the discussion afterwards, you can learn so much from what others see in the clips and how they offer suggestions to improve, in a nice way" (LL4 Heidi BridgeportS). Kim (WindyvaleS) remarked that the openness and inclusivity of the group encouraged the offering of suggestions,

What I loved was that everybody shared, it didn't matter if it didn't work we still spoke about it you know, and somebody would have an idea, and it didn't matter who had the idea but if somebody had an idea it was listened to. Then if you are put to the pin of your collar back in the classroom you will take that advice and you will

try it ... you need that help so if somebody has an idea it is really worth trying (Post-PDI).

Heidi (BridgestoneS) remarked that often her own dilemmas and concerns were addressed during the discussions stating, "...I had questions answered even if I didn't ask them, somebody else had the same problem" (Post-PDI). Sunita (ClonadooS) reported that suggestions made by the group about the problems she had shared gave her renewed impetus on her return to the class, "... you were maybe ... getting a bit flat or maybe thinking it wasn't working or having trouble, at least you could discuss it then on the Saturday and it sort of energised you again for the next week" (Post-PDI). Ella (ShanbaileyT) agreed believing other's points of view (including the MKO's) about a problem encouraged participants to try something new:

It was good as well, say be it from you or one of the others, we might say this happened or this happened and you might give advice or sometimes someone else from the group might say well, have you tried x, y, z. and I might say 'no I didn't actually maybe it was worth a go' (Post-PDI).

Development of critical thinking skills.

The adults believed that their ability to think critically about what they observed and heard developed within the context of the viewing of the clips and subsequent discussions. Síofra (ClonadooT) held that the collaborative discussions of the group supported the critical thinking skills of each member as, "everybody was giving their halfpenny's worth on how they think to improve on this and that and I think that everybody thinks differently so some of things I would think up, the other person wouldn't have thought of or vice versa; ... so if you got stuck on something, someone else would have an idea about what to do" (Post-PDI). In their overall evaluations, three of the respondents wrote of how the discussions of the clips enhanced their critical observational skills. This PD activity taught respondent four to "look at things from another perspective as I often wouldn't have seen what they saw" (OE Respondent 4). Respondent one reported that the discussions improved her ability to problem solve stating, "I think outside the box a lot more and (think) about when it's time to move on" while respondent five learned from the discussions that she needed to think beyond a "quick fix" solution when she encountered problems.

Learning from each other about what should be avoided and what should be changed within the interactions was also valued. Violet (BridgeportT) identified the opportunities for “discussing with others and troubleshooting about what was going wrong in the interaction sessions” as the greatest benefit she derived from the meeting (LL 5). Donna (GrindstoneS) and Kim (WindyvaleS) spoke of how their critical reflection skills developed through observation of and listening to the discussions of the interactions. Donna believed her observational skills were fine-tuned stating,

I would watch somebody’s video and not see that they did anything wrong but then somebody else would pick it up. Not wrong, I’m not saying that they did anything wrong. Somebody will think about things completely different to the way you think about them and both ideas will be good, and it is two ways of improving on things (Post-PDI).

The observations of others allowed Kim to reflect on what she would change in order to enhance the interactions:

This sounds horrible, but I could see things they did wrong or not even maybe wrong but things that I wouldn’t have done, or I would have done different... I enjoyed watching others’ video I could see some very good ones but there were some that I would say ‘oh God I don’t think I would have done that’ or I would have pulled out something else there now or I’d have changed that, or I’d have moved from that now because mmm the child was lost there (Post-PDI).

This enhanced ability to reflect “on action” was also reported by Yana and Violet. Violet (BridgeportT) spoke of how she applied the problem solving skills she had learned from being involved in the PD within her own setting:

I do feel I definitely feel more skilled and say this morning with that session with Adam I thought “Oh great” as I could see it with Libby (SNA) as I could see how I could actually observe somebody else and I could say now ‘Yeah I know now where you (Libby) are going wrong there, too much prompting not enough waiting’ (Post-PDI).

Summary of Findings on Collaborative Development of Pedagogical Content Knowledge

Increasing adult participants' ability to support social-communication and language development was at the heart of this study. The model of PD developed to achieve that aim for this study placed PCK at its core. Believing that knowledge is co-constructed through interactions with others (Vygotsky, 1978b), the researcher/MKO included opportunities that allowed for implementation of the PD content in the participants' classrooms, peer observation of the implementation, and group discussion of what was observed.

The findings from the previous section indicated that observations and discussions at the PD meetings were pivotal in supporting the adoption of the PCK and in the generation of new knowledge that supported the development of social-communication and language for all pupils in the classes. The success of these dialogues may be attributed to the content discussed, the opportunity to observe effective implementation of the content, the group composition, and the dynamics within the group. As evidenced by their engagement, the PCK being discussed was highly relevant to all of the participants, a fundamental requirement for effective learning (Vygotsky, 1978a). The adults viewed clips of successful implementation of the PCK by their peers at each meeting. These observation opportunities are identified in the PD literature as vital for PCK adoption (Boudah et al., 2003; Gibson & Brooks, 2012; Klinger, 2004; Quick et al., 2009). All of the participants came from similar contexts, each bringing with them an understanding of how to improve practice in their setting (Hoban, 1996) and their contributions were therefore seen as relevant to the daily classroom experiences of the other group members (Bolam & Weinding, 2006; Guskey, 1997; Putnam & Borko, 2000). Further, the group comprised of two sub groups (teachers and SNAs), each group bringing ideas and experiences from their own role to the discussions. This group composition provided two lenses through which the implementation of the PCK was viewed. These two views were seen as complementary and supportive in developing the understanding of the whole group on how best to develop social-communication and language.

The findings also show that the group collaboratively engaged in the process of improving practice through self-scrutiny and collegial critique. This process required them to share practice and to reflect openly on the difficulties encountered in the implementation

of the PD content and to accept suggestions and, sometimes, constructive criticism from the group. Considering there were two distinct groups (teachers & SNAs) discussing and critiquing together, this activity was challenging and potentially threatening. However, evidence indicates that the dialogues were underpinned with respect and trust when suggestions were being made and received. These elements are identified in the literature as central if change is to emanate from a PD initiative (Fraser, 2005; Wennergren & Rönnerman, 2006). One of the major contributions to the safe and unthreatening environment in this current study was attributed to the context specific group. The dynamics within a group that comprised of staff from similar settings may have engendered empathy and understanding that informed the contributions. Further, others from similar contexts are seen as being “in the know” and are best accepted for correcting misconceptions (Quick et al., 2009). Equally, the role of the researcher as a MKO of the discussions may have had an influence in tempering the verbal interactions and providing a safe environment for interrogation of practice (Hoban, 1996; Smith & Gillespie, 2007).

Empowerment

The second theme relating to the adults’ perceptions of participation in the PD is their sense of empowerment, building their capacity to support their pupils’ social-communication and language development. A number of subthemes related to empowerment were identified and are detailed in the subsections which follow. They include confidence in own ability to appropriately support language and communication development in their classes, confidence to use and talk about communication and language outside of allotted interaction sessions, and the ability to think about communication and language development.

Confidence in Supporting Social-Communication Development

The adults spoke and wrote about the confidence they had developed from their participation in the professional development. Two of the participants admitted in their overall evaluation that, prior to the PD they did not have the skills to effectively interact with their pupils. Respondent six stated,

I felt I was totally out of my depth with my student but having done the course I feel confident to deal with any problem that may arise in the communication and

language area... more confident and motivated and better able to read her mood, more attuned to her.

Respondent five admitted that prior to attending the PD she really didn't know where to begin in supporting her pupil's social-communication and language and that he was getting frustrated. However, now she had the skills to interact with him and "... he is content and seeking our attention" (OE Respondent 5). Violet (BridgeportT) attributed her new confidence to not only to acquiring the knowledge of the new strategies but also the ability to use them, commenting, "I feel far more skilled now... so the most important factor I suppose for me is, to have learned the strategies; (and) to know how to use them" (Post-PDI). This confidence was also echoed by a respondent in the overall evaluations "Now I am using strategies to elicit communication that I probably never dreamed of using and knowing how valuable that they are" (Respondent 8). Two of the adults identified aspects of their work where confidence had grown. Heidi (BridgeportS) stated, "I learned so much and it really gave me more confidence...my communication has improved, I feel I'm different in my own approach to the students, I elicit more language from them instead of me using all the language" (Post-PDI). Síoira (ClonadooT), explained what she felt was pivotal for the development of communication and language:

It totally depends on the child and what their interest is, I think a lot of it is capturing their attention and getting them interested, and that means knowing what they love and using it. But, yeah, I would be so much more confident in doing it (Post-PDI).

The adults' sense of empowerment arising from their participation in the PD was evidenced by their references to their enhanced understanding of how to develop social-communication in their classes, knowing where to pitch their efforts to develop social-communication and language, the importance of pupil motivation for communication and language development and the importance of changing their communicative style. These findings suggest that the adults were now seeing themselves as having a better understanding of the content of their communication and language teaching, but the findings also suggest an enhanced understanding of critical aspects of the teaching and learning process

Deeper understanding of the nature of communication and language.

The adults spoke and wrote of their deepening understanding of communication and how best to support its development. A number of the participants believed that the PD gave them a new insight into what “communication” is and how it develops. By way of illustration Yana stated in her Post-PDI,

I suppose before I was thinking, well if I’m speaking and she is answering there is some kind of communication going on and you realise after the first couple of videos, you know what? There is no communication going on here at all. I’m talking and she’s talking and neither of us is listening to anything anybody is saying. Just realising that has made the communication between us even nonverbally is much better (WindyvaleT).

Síofra also admitted that prior to her joining the PD she didn’t really understand what constituted communication; she “thought that communication was them looking at you, speaking to you, I would never have thought of imitating as a form of communication” (ClonadooT, Post-PDI). Violet (BridgeportT) reported in her final learning log that she had come to the realisation that development of communication and language was more complex than she had heretofore thought.

The adults also believed they had a deeper understanding of how to develop social-communication and language. Two respondents wrote in their overall evaluation that their approach to the teaching of social-communication had changed. Respondent eight wrote that she now elicited language and sought to get “the child interested in others and their environment”. Maddie (GrindstoneT) believed she had a better understanding of how to develop the individual communication and language needs of all the pupils stating that, “I have a better understanding of the skills I need to teach them (her pupils) and the different strategies to use to teach skills because some of them are very capable while Trevor (participant pupil) is at a more basic stage” (Post-PDI). Sunita (ClonadooS) identified a strategy she learned through her participation in the PD that she believed was pivotal to successful interactions with her pupil and why, displaying her deeper understanding of how to develop social-communication and language:

“Mmm I learned to wait. That’s a big thing with him because it takes him time to process what you are saying. So, to just stand back for a little bit longer, because before I used to be rushing, come on, come on, what’s this, what’s this” (Post-PDI).

Violet (BridgeportT) thought that the requirement of the PD to implement the content on a daily basis supported her understanding of how to develop social-communication and language:

I feel, I really feel I have learned so much. Like I knew all the theory, like I knew the theory but I wasn’t really putting it into practice and I think because we had to do our ten minutes every day...day in day out and those constant practising of all those strategies I feel has fine-tuned my ability to do it...I do feel I feel a greater understanding and I feel I now know the value of play and about play strategies but I can apply those strategies across the board across the school day (Post-PDI).

A respondent in the overall evaluations identified that the most significant benefit she derived from her participation was the understanding of “the importance of social-communication as opposed to concentrating on academic skills (OE Respondent 4). Donna (GridstoneS) also admitted that prior to their participation in the PD, they (staff) had prioritised academic work and hadn’t been using the strategies in classroom, “we hadn’t really thought about these we were doing more academic work” (Post-PDI).

Consider the developmental level of their pupil.

Evidence that the adults’ understanding of communication and language development was deepening was their realisation that, prior to the PD what they had been teaching did not match the pupil’s communication abilities. Yana (WindyvaleT) commented,

I certainly learned a lot, I suppose the one thing was I was always thinking of Elana as a six-year-old or a seven-year-old, but now I know about taking it back to a much more appropriate developmental age bracket, that she is a younger student in an older student’s body. I have been more aware I suppose of how much I’m speaking to her as well. It’s to keep things simpler” (Post-PDI).

Donna concurred about her interactions with Trevor, she realised that she needs to interact with him “like he is at the stage of a year old or an 18 month old. Because he is six

nearly seven you ...I think I was expecting too much of him. but as soon as I went back to the basics and went back to that level, the change in him!” (GrindstoneS, Post-PDI). In the following quote Ella speaks of her increased understanding of the communication milestones that are required on route to being an effective communicator and that she realised these gaps had to be addressed with Charlie:

My understanding of the developmental stages that have to be gone through, that you (pupil) have to be aware of people and that you (pupil) can have an effect on their environment before you are going to be bothered interacting and the need to go back and develop that and to know that unless we (staff) are ticking these boxes we can't expect to be at another level altogether (ShanbaileyT, Post-PDI).

Síofra admitted that prior to her joining the PD she didn't really understand where to begin teaching social-communication and language, “I would never have thought of imitating him as a form of communication. I didn't really know how to break it down to the small little pieces and then just to take a small piece and work with it” (ClonadooT, Post-PDI). One respondent identified the greatest benefit she derived from the PD as being more considerate of pupil's communicative ability and “attuning much more to the child needs” (OE Respondent 2).

Understand that motivation is the key to effective learning.

Understanding the importance of ensuring the pupil is motivated to interact with you was mentioned by a number of the participants. Four of the adults (Síofra, Nuala, Heidi and Maddie) spoke about coming to a realisation that knowing the pupil's interests was pivotal in order to “capture their attention” (Síofra, ClonadooT, Post-PDI). Nuala (SNA) believed that it was about listening and attuning to the pupil:

It's about taking a step back and realising it's not what I want but what the child wants. If I go with something he wants I'm able to twist him around to my way without him knowing that we are gone back to my way (ClonadooS, Post-PDI).

Heidi (BridgeportS) stated, “I suppose it's finding the thing they enjoy doing most. The big thing is they really have to want to do it and making it fun” (Post-PDI). Maddie (GrindstoneT) had reported during the pre-PD interview that Trevor (pupil) was only really interested in “Thomas the Tank” books and that it was difficult to maintain interactions with him. This view was altered in her Post-PDI:

We would have thought that books were the only thing that motivates him but it happens that it was a lot more than books...oh yeah, we wouldn't have tried other things, we would have kind of gone with books and given them to him, but looking at what the others were using and you (MKO) saying to watch, to watch for what he enjoys, he has a choice now, and he is able to ask for what he wants to an extent.

Identify what worked with particular pupils.

The findings demonstrate clear evidence that the adults had developed an understanding of the value of using the PD strategies and the importance of marrying specific strategies to their individual pupils. They articulated the beneficial outcomes of using those strategies for communicative behaviours such as shared attention, re-engagement in the interaction, and language use. The teachers also identified why they thought a particular strategy was beneficial for their particular pupil for example, creating a bond, giving the pupil control.

“Fun” was recognised across the cases as pivotal in supporting the interactions. Violet (BridgeportT) noted in her reflective diary 17, “the fun factor is so important, it’s what bonds us” while Donna (GrindstoneS) wrote, “Trevor loves all kinds of rough and tumble play, singing and music and I feel that he has really improved his communication skills by using these activities during the interaction sessions” (RD 13). She believed its use caught his initial attention. Both adults from Grindstone spoke of the effectiveness of “singing the talk” for Trevor, with Maddie positing that “he seems to be able to stick it more than the normal voice” (Teacher, Post-PDI). Síofra, and Sunita from Clonadoo, identified “imitating” what Freddy did as being important for getting Freddy’s attention, Síofra explained, “... just copy what he was doing and wait for him to look over and notice that you were doing the same and that would bring him back in again” (Teacher, Post-PDI). She also singled out “inadequate portions” as a means of encouraging Freddy to request more she explained, “He enjoyed the party string, so I just gave a quick squirt so that he would ask for more. I did similar when pumping up the balloons. This strategy really worked for getting him to use his words” (RD 15).

The adults from Shanbailey and Bridgeport identified “control access” a number of times in their reflective diaries as a powerful tool for ensuring their pupil’s engagement with them. Ella (ShanbaileyT) reflected, “Controlling the access Charlie has to items is great because if I didn’t he would work away on his own agenda, so this has been one of

the most effective strategies I have used with him” (RD 13). Violet (BridgeportT) noted control access was an essential strategy with Keeva who would simply help herself to whatever she needed: “I definitely find withholding the stuff is great as Keeva will use language then if she wants it badly enough.... I also use the strategy of ‘in sight and out of reach’ throughout the day to elicit language” (RD 10 & 16). Heidi (BridgeportS) confessed the interaction session was a disaster if she didn’t use “control access” stating “she just does everything herself then and it’s like you’re not (there), ‘I don’t need you, I don’t want you’” (Post-PDI).

“Follow the child’s lead” was acknowledged as the most effective strategy to use with Elana from Windyvale with Kim (SNA) noting “Follow the child’s lead really seemed to work as Elana really enjoyed being in control” (RD 10). Yana (WindyvaleT) recognised that “Taking her lead or following her lead definitely and going with her ...and not being directive” was what worked. She recognised that she had a “directive” style of interaction and admitted that she had difficulty adopting these two strategies. She acknowledged that to support the development of Elana’s communication, she needed to change her thinking stating: “It is shifting my own thinking; it’s all about shifting my thinking” (Post-PDI).

Modification of the adults’ communication styles.

Further evidence of the adults’ empowerment arising from the PD was found in their reports of changes in their communicative style. The adults spoke and wrote of adopting the strategies recommended at the PD, using specific strategies to support their pupil’s social-communication and they believed they were less “directive” in their interaction style, allowing the pupil to lead the interaction.

Adoption of the professional development strategies.

The adults reported that their participation in the PD had enhanced their knowledge of the social-communication strategies. Evidence throughout the data identified that the adults were adopting the strategies to support their social interactions with their pupil. Violet’s comment typifies the sense of empowerment derived from having a repertoire of communication and language strategies, “I feel far more skilled now that I have the strategies. I know what I need to do to help this student communicate. The most important

factor I suppose for me is, to have learned the strategies and to know how to use them” (BridgeportT, Post-PDI).

The adults reported during their Post-PDIs that participation in the PD provided them with alternative ways to support their pupil’s social-communication development. Heidi (BridgeportS) commented that she had changed her interaction style with the pupils because of the information she received at the PD, “I feel I am different in my own approach to the children; it’s like eliciting more language from them instead of me using all the language. I know I was so directive. I am completely different...” Donna (GrindstoneS) also believed that her approach to the pupils had changed and attributed the change to the positive impact of the strategies on the participant pupil:

My personal opinion is the strategies have worked. I definitely think we are getting more out of Trevor than we did ... I have changed the way I work with him and also, I have changed the way I am with others...I didn’t think before to label everything but of course it makes sense because how is he going to learn the words if he has not heard the words (Post-PDI).

Maddie (GrindstoneT) spoke of using “singing the talk” throughout the day with all of the pupils in the class following participation in the PD, “we did lots of singing the talk with everyone...for hanging up the coat, getting the shoes, and the bag different things, washing the hands, but I found before last year we never did anything like that.”

Nuala (ShanbaileyS) also believed that the content of the PD had empowered her to support her pupil to communicate and reported that she used the strategies discriminately. She explained,

The whole list of strategies worked because you would use each one of them at different stages. I’m using two or three of them at the one time so the fact that I have the strategies, I know what I need to do to help this student communicate (Post-PDI).

Violet (BridgeportT) shared the success she had while using a particular strategy with one of her pupils other than the target pupil and showed her delight in having the knowledge, “I now use parallel play with another child in the room for a dedicated 10 minutes and I can’t believe how much he can imitate me...We seem to be able to get into a zone straight away! ...As a methodology it is really useful!” (RD 12).

The adults' verbal and written feedback was peppered with references to the interaction strategies and their impact on the pupil's social-communication. By way of illustration the findings on the impact of the two most cited strategies (wait & fun) on the nature of the adult-pupil interactions are reported below.

Wait.

The adults identified the strategy of "waiting" for the pupil to interact with them as pivotal for supporting social-communication development in their classrooms. Across the reflective diaries, learning logs, overall evaluations, and post professional development interviews there were 309 references to the use and value of this strategy. Violet spoke of realising that she was "using too much prompting and not enough waiting... I think the strategy is really tuning into the child, really, really, tuning into the child, observing the child very closely, waiting just waiting, waiting, waiting for them to do or say something" (BridgeportT, Post-PDI). Kim identified that her use of the "*wait*" strategy ensured she reduced her own talk, commenting, "I'll wait now. I give her a chance to talk, and I try not to ask" (WindyvaleS, Post-PDI) while Heidi reported that all of the staff in the room now "waited" for all of the pupils to use their language stating, "it's a lot calmer in the room...we (staff) are quieter, we talk less" (BridgeportS, Post-PDI). Sunita explained why "waiting" was important for Freddy (pupil),

... That's a big thing with him because it takes him time to process what you are saying. So, to just stand back for a little bit longer, because before I used to be rushing, come on come on 'What's this, what's this', whereas now, if you leave him for a little while sometimes it comes out (ClonadooS, Post-PDI).

Nuala (ShanbaileyS) reported both herself and Ella were no longer accepting one-word utterances from Charlie (as they were both aware of his extensive vocabulary) and that they "wait" for longer utterances. They "wait" for him to give a response and "wait" for him to initiate a request. Ella explained why waiting was so effective with Charlie: "Waiting definitely worked as Charlie had to try again with a different phrase when I didn't do as he asked or just waited without saying anything" (ShanbaileyT, RD 14). Kim admitted that she hadn't been using the strategy "wait" and that she had learnt about it at the PD:

The biggest thing I learned was to wait because that is something I wasn't doing. If I asked Elana a question and she was not answering I would answer it for her. Say I asked her, giving her a choice of two colours and she made a slight move towards one I would be straight in to say Elana wants red... I don't do that anymore...you know it's all about listening to the child and waiting. Something I wasn't doing (WindyvaleS, Post-PDI).

A number of adults spoke and wrote of using “wait” in conjunction with other strategies. The following extract illustrates how the adults used “wait” during the interactions,

At first, I blew the balloon a little to get Keeva interested, I then waited for Keeva to make the next move. She put balloon to my mouth and said ‘blow’. I held untied balloon up and counted 1, 2, 3 and (said) ‘let go’. We watched as the deflating balloon whizzed around the room. I repeated this but paused saying ‘1, 2’ and waited for Keeva to say ‘3’. I would say ‘let’ and wait for her to say ‘go’. I would change this around pausing after ‘1’ and waiting for Keeva to fill in the gaps. By using this strategy, I was able to have great interaction with Keeva, she responded every time, was focused and wanted more. We had great fun doing this and Keeva laughed heartily as balloon whizzed around the room (BridgeportS RD 11).

Violet reported teaching the other SNA's in the room to use the PD strategies and described the success of the SNAs use of “modelling” and “waiting” in the following extract,

We are doing rocking the baby. So, she (SNA) did it, she had a little doll and she wrapped it in a little blanket and put it into the basket and she sang rock a bye baby and rocked the basket and she waited and the child sang rock a bye baby and rocking the basket herself. So, you know she (pupil) was doing the imitation (BridgeportT, Post-PDI).

Fun.

The pivotal role of “fun/enjoyment” for successful social communicative interactions was continually identified by the adults, with 393 references to this strategy evident across the data. There were numerous descriptions throughout the reflective diaries, of the adults' efforts to ensure their interaction sessions were “enjoyable” and “fun” for the pupils. The

entries in the overall evaluations indicated that the adults appreciated their participation in the PD because of learning to encourage social-communication through “fun”. Participant five believed that participation in the PD had “shown us a way to increase the child’s vocabulary in a fun way not in a 1:1 “teaching” session”. Sunita identified during the PPDI that “fun” was the most effective strategy for developing the pupils’ social-communication stating,

I think the fun, having fun with them, getting down to their level, like being one with them like being their age, trying not to be an adult, ... just being silly and being childish and they get a kick out of that as well. I definitely found that easy and it really worked (ClonadooS, Post-PDI).

The adults elaborated during the PPDI on why using fun was such an effective strategy to have learned during the initiative. They mainly viewed the use of fun as a vehicle for building a “bond” with the pupil and for gaining and maintaining the pupil’s engagement.

Building a bond.

There were numerous examples from the adults’ spoken and written feedback of how they believed the use of “fun” underpinned the bond that developed between themselves and their pupils over the lifetime of the PD.

Representative of the general view were those expressed by Sunita (ClonadooS) and Nuala (ShanbaileyS) who said that much more social-communication and learning occurred when the adults left their “teaching hat” aside and instead interacted in a fun way. Sunita claimed that:

The children seem to relate better to you when you are playing rather than when you are in teaching mode...trying not to be an adult being like a child that sort of really worked, definitely yeah...so fun having more fun, making the lesson fun not a class if you know what I mean, but making it that, having more fun together and playing and that sort of really made a difference (ClonadooS, Post-PDI).

Additionally, Nuala reported that the staff was teaching the pupils

“...in a fun way as opposed to being the person who was there to tell them what to do or show them what to do. Now there is much more interaction and more fun about

it... you know ‘You have to teach them this and you have to teach them that’ but now it is much more fun with them and they enjoy it more and you get much more out of them (ShanbaileyS, Post-PDI).

Ella (teacher) wrote, “Charlie responds well to funny situations. He loves it when I act silly” (RD 13). She described the successful outcomes when “fun” was used as a vehicle for social interaction with Charlie outside of the 1 :1 designated interaction session during her Post-PDI,

...and then definitely for Charlie it was all the animation and the fun and the silliness I used, is what really worked, ... even during the day we would keep it up like, we reward him with marshmallows and there are different colours and we would say “What colour do you want” and he would say “Pink” and you would say ‘oh you want a black one’ and he would say laughing ‘No, no, no, I want ...’ and we would try this in lots of things and that really works .

Síofra reported that she timetabled a specific “communication time” through fun for all the pupils in her class: “We just literally gave them 1:1, I find it brilliant having the communication time 1:1, it builds a bond with you and the child because it’s fun and they are enjoying it and it’s not too (Síofra stressed) pressurised either” (ClonadooT, Post-PDI as she believed that unless the pupil enjoyed being with the adult he would not be motivated to interact with her. Respondent Two also reported timetabling fun interaction sessions for her pupils because of the impact on the participant’s social-communication:

XXXX (participant pupil) communicates more now that my relationship with her has improved. The other students have benefitted also as I have put “play” on each child’s timetable so that myself and my two SNAs are now spending 10 min/day engaged in parallel play with each child (OE Respondent Two).

Gaining and maintaining the pupil’s attention.

Adults across four settings identified the value of using animation and being funny as effective strategies in gaining their pupils’ attention and in ensuring the pupils remained engaged with them. Donna (GrindstoneS) stated, “I definitely learned that animation was brilliant... because it got his interest and it kept him focussed” (Post-PDI). Having described an interaction using messy play with corn flour in her reflective diary she positively reflected that: “This session actually lasted about 20 minutes as Trevor was

having so much fun” (RD 8). Síofra (ClonadooT) also commented on the value of using this strategy in her diary and suggested to herself that she needed to use it more often: “I notice that I get Freddie’s attention when I use silly actions and noises, while I don’t think he always finds it humorous, it captures his attention and gets him to focus on what I am doing – so more of this” (RD 7). Heidi (BridgeportS) gave a brief description of how she used “fun” in her interaction with Keeva and reflected on the impact of the strategy on attention and language development:

When flicking water at Keeva she laughed heartily and waited with anticipation for me to flick the water at her, she would move away and then come back for more and would say ‘flick’. Keeva now knows the word ‘flick’. The fun element is very important with Keeva as you can lose her very easily; the fact she stays with me and is not running away is great (RD 8).

Nuala (ShanbaileyS) reflected how using this strategy kept Charlie engaged in the interaction with her and she also believed it encouraged him to use his speech:

His interest seemed to wane a bit but I kept being very animated using some routine phrases like, oh no, oh no he is going to go, it is clear he loves animation as it brings him back each time...teasing Charlie and contradicting him in a fun way and animated way made it fun for him and also it seems to increase the amount of words and eye contact he would use (RD 14/15).

However, in her final reflective diary, Nuala wrote of her realisation of the need to be attuned to Charlie’s idea of fun. She admitted that what she thought was fun wasn’t necessarily fun for Charlie and she acknowledged that she found it difficult to maintain Charlie’s engagement:

I think the session didn’t go well because it’s more about attuning and bonding, also realising what is and is not motivating for him, and I didn’t do that. Charlie loves to be challenged in a fun way and the element of surprise is a big thing with him and it wasn’t there (RD 18).

Summary of Findings on Confidence in Supporting Social-Communication Development

The findings indicate that arising from their participation in the PD; the adults had developed new knowledge, understanding and confidence about how to support the development of social-communication and language in their classes. The adults now saw the importance of supporting the development of communication and language skills within social rather than academic contexts as evidenced by their reports and by some of them having taken steps to ensure all of the pupils in their classes were given social interaction time within the school day. Their feedback indicated that, not only were they adopting the new content, they were also adapting it to suit individual pupils, pitching it to each pupil's "zone of proximal development" within their classroom, aligning the strategies to the strengths and needs of the pupils by selecting contexts and resources that were motivating for the pupils (Vygotsky, 1978b). Jordan (2008) emphasises the particular importance of having the ability to tailor the pedagogical content to suit individual pupils on the AS to ensure optimum learning. The evidence also indicates that the adults were convinced of the positive impact of the strategies on the pupils which the literature identifies as a requirement for sustained use of PD content (Clarke & Hollingsworth, 2002; Guskey, 2002).

Reducing Directive Communication

Table 5.3 below reports on the frequency "directive" communication was mentioned in the adults' talk and writings highlighting that the adults were very aware of their use of "directive" communication within their classrooms. The references mainly noted the adults' efforts to reduce and eradicate its use from their practice as illustrated by Maddie (GrindstoneT) in her reflective diary and by Heidi in her interview. Maddie wrote, "I tried not to use directive talk during our interactions and instead gave an expectant look but no verbal prompt for Trevor when I was waiting for him to exchange... I avoided using directive talk and intrusive questions" (RD 9). Heidi reported that she had changed her communicative style with all of the pupils in the class:

I know I was being directive, I was so directive, I am completely different on that... my communication improved I feel I am different in my own approach to the children... Instead of going in and barking orders, 'Get your bag, hang your bag up,

put your coat here’, that has stopped completely now, we don’t do that at all (BridgeportS, Post-PDI).

One of the participants wrote in her overall evaluation that the knowledge she gained at the PD had caused her to change her interaction style: “I feel I have changed my approach when interacting with the children, mainly being less directive, waiting more, more understanding ...I’m using a lot less directive language” (OE Respondent 1). Ella believed that of all the strategies she encountered at the PD, “No directive talk was definitely a very good one” but she admitted that she still found it very difficult to implement (ShanbaillyT, Post-PDI). Violet also identified the strategy of “no directive talk” as an important strategy to have learned as its use has given the pupils “more control and space in their lives” (BridgeportT, Post-PDI).

Table 5.3: References to the use of Directive Communication

	Learning Logs	Reflective Diaries	Post PD Interview
<i>Ella</i>	2		1
<i>Nuala</i>			
<i>Síofra</i>		3	
<i>Sunita</i>	5	1	
<i>Violet</i>	4	2	1
<i>Heidi</i>	1	2	3
<i>Yana</i>	2	3	9
<i>Kim</i>		2	1
<i>Maddie</i>		3	
<i>Donna</i>	2		

Prior to their participation in the PD the adults (Yana & Kim) from Windyvale were highly directive in their communication with Elana (Table 4.11). Table 5.3 above indicates that Yana was aware that she was using this style of communication and Table 5.4 below describes her efforts to substitute it with the communication promoting strategies encountered at the PD. This dissonance was identified from the learning logs she wrote at the end of PD meeting days, her weekly reflective diaries over the lifetime of the PD, and her Post-PDI.

Table 5.4: Yana's Efforts to Decrease her Use of Directive Communication

Learning Logs (LL)	Reflective Diary (RD)	Post PD Interview (PPDI)
LL 1 A significant thing you learned... "Use of directive language to be reduced by me"	RD 9 Document any challenge you have encountered relating to C&L "The challenge of providing Elana with very clear guidelines on what is expected without being overly directive is without a doubt the most challenging aspect of our social communication at the moment"	How would you rate your ability to teach communication and social communication? "It still needs a good bit of work, there is a power struggle, there is a power struggle and I know that. And I know that I'm too directive at times with her. I find it difficult with her I do so I know I need more work on that and I know that myself I do... I was being too directive with my talk or I was going "sit down, sit down, sit down" and when I saw myself in the video I was thinking How many bloody times have I told her the same thing? Tell her and just wait for her to do it because she is understanding what you are saying but you just need to wait. So, I suppose before I was thinking well if I'm speaking and she is answering there is some kind of communication going on and you realise after the first couple of videos you know what there is no communication going on with her at all. I'm talking and she's talking and neither of us is listening to anything anybody is saying."
LL 3 Greatest need going forward... "Knowing how to progress communication with Elana without me being overly directive.	RD 11 Explain what you did. "I was avoiding intrusive questioning and directive talk. I was doing the shared play with Elana, and only eliciting the language that I knew she always used."	
LL 4 A significant thing you learned... "The amount of directive talk should be reduced as it can be irritating for the child" What surprised you at the meeting? "I always had thought that simple directive language was what we should be using when the child is being disruptive." Plan to do Differently? "Cut the directive talk"	RD 15 Reflecting on the interaction what strategies did you use? "I start off well and then I forget and get into teacher mode towards the end and lose her, I realise what I have done and get fed up with my own voice! I'm a work in progress....	
	RD 16 Reflecting on the interaction what strategies did you use? "I was more directive than I should have been in a few places. I tried to be a bit sillier than I normally am – I'm not sure that Elana noticed! I tried to do more recasting.	

There was evidence in the post-PD observations reported in the previous chapter (Table 4.11) that Yana had reduced the use of directive communication considerably during her interactions with Elana, and had increased her use of more facilitative strategies introduced to her at the PD. These findings and the findings reported in the table above suggests that participation in the PD empowered Yana to become a more facilitative interactive partner for Elana.

The SNA in that setting was also observed to reduce her use of directive communication dramatically in her post-PD interaction with Elana as highlighted in the previous chapter (Table 4.11). Kim recognised herself as being “directive” during her Post-PDI commenting,

I actually saw in one (interaction clip) I saw where I should have scrapped what I was doing and left the child alone totally. I was actually horrified that I had spoken so much and that I was so directive with her.

However, there was no evidence in her reflective diaries or learning logs of her going through a process of change like Yana. A possible explanation for this may be that Kim wasn’t naturally directive but had adopted the interaction style of the teacher. She had reported on her pre-PD interview that she had no training in autism and that what she knew she had learned from Yana. This finding may suggest the pivotal role the teacher may play in influencing the interactive style in the classroom.

Summary of Findings on Reducing Directive Communication

The evidence in the previous chapter and in the section above support the findings in the autism research literature that caregivers and teachers tend to be directive while interacting with children on the spectrum (Chiang, 2009; Diken & Mahoney, 2013; Lemanek et al., 1993; Shapiro et al., 1987; Sigman et al., 1986; Tjus et al., 2001; Watson, 1998). The previous section findings indicate that the PD learning activities supported the adults’ to continually reflect on and talk about their interaction style. In their learning logs and reflective diaries, they articulated their struggle to reduce and eliminate their use of directive communication style (mainly referring to behaviour directives) and their efforts to adopt a more facilitative approach instead. The transformation was not easy for one particular teacher (Yana) and the “personal angst” she was experiencing was evident throughout the lifetime of the PD. However, this dissonance is identified in the literature

as critical in supporting real change (Desimone, 2009; Pajares, 1992). The evidence reported above shows that the process of change relating to the use of directive communication continued over the lifetime of the initiative, highlighting that the “span of time” is critical to support this attitudinal change (Desimone, 2009; Opfer & Pedder, 2011; Pajares, 1992).

Confidence in Using and Talking about Communication and Language

Empowerment of the adults was also evidenced by their reports that they were using the information with other pupils and in other contexts indicating that their confidence in supporting social-communication and language was growing.

Using pedagogical content knowledge across the day.

Numerous examples were given by the adults during their post-PD interviews of how they infused the PCK into their interactions throughout the day. The following comments taken from the Post-PDI interview illustrate the confidence of the adults in using the content. Violet (BridgeportT) emphasised social-communication as the priority objective for all of her pupils stating, “I suppose our whole emphasis now in the class and as a teacher is, I have just tried to put communication as the number one goal across the day for all the children not just for ten minutes and you try to apply the strategies with all the children”. Heidi, the SNA in that setting, echoed the teacher’s report stating that they were using the PCK from the time the pupils arrive until they go home:

I mean you can’t just do it for the ten minutes you know it’s kind of our thing now. So, it’s done from when we get the kids in the morning to when they go home you know. And I know it might not be done perfect there is still bit of directive talk you know and that’s probably in every class but no it’s definitely throughout the day that we are doing it.

She gave an example of using “exaggeration and fun” to defuse a possible challenging behaviour incident during “yard time”:

In the yard one day she (pupil) wanted to come in as it was cold, and the door was locked. She would cry and cry normally so when I went over to the door and pretended ‘Oh it’s locked oh Keeva oh no the door is locked’ this was fun for her

and she laughed and she accepted it, now the next day she came to me and she did it she brought me over and she checked the door and said “locked” and accepted it.

Ella (ShanbaileyT) believed that the strategies needed to be used all day and reported that she encouraged staff from outside the room to implement some of the strategies when they met Charlie: “Don’t let him away with ‘dawdeeda’ if you come across him on the corridor” telling them to “*wait*” for his response instead. She also gave an example of how she observed Nuala (SNA) using the PD while reading a story to Charlie outside of the interaction sessions:

Nuala was working with him at table top work and there was a story and there were three monkeys and Nuala would change it to and there were ‘Five monkeys’ and he would say ‘no, no, three monkeys’ and she would say ‘No there are five’ and so there would be that sort of interaction back and forth. And that was during the normal day it wasn’t a set up situation, but it was lovely to see, because you were acting ridiculous you were still getting it out of him and that was brilliant.”

Sunita (ClonadooS) also reported that the whole staff were using the PD content with the pupils throughout the day: “The SNAs are engaging with them starting from imitating them to trying to get them to imitate you throughout the day, using the strategies from the PD and trying to build it (social-communication) up in an unpressurised way.”

Using pedagogical content knowledge with other pupils.

There was evidence across all of the settings that the adults were using the PCK with pupils other than the target pupil. Violet commented in her post-PDI that she did so “because I have seen the results of it with Keeva.” Sunita (SNA) also spoke of using the strategies with other pupils in the class and with three pupils from the other autism-specific class in her school explaining what she did,

In one session I set out the play-dough with myself and one of the other children and I just named, labelled everything they were doing and copied the movements they were making, just the whole thing I did with Freddy and you could see them look over thinking what’s going on here... The copying of what they did definitely got their attention.

The adults in the three other settings gave specific examples during their PPDI of using the content with pupils. In the following extract Yana (WindyvaleT) describes how she had used the strategies with another boy in her class and the outcomes she saw. In this extract Yana also identified how her approach to social-communication development had changed:

You know with Morgan we have been using the communication strategies with him... I used eliciting anyway, he was getting the choice and I was letting him run with it and I was sitting beside him and doing the parallel play whereas before I would have said 'Try this way'. So, just letting him look at what I'm doing and if he wants to imitate it, 'yeah great' but not telling him. Say this morning, I had a mystery box and I showed it to him. It involved pictures with prepositions that dictated how the building blocks should be used. However, Morgan was mad to build the blocks his way and I let him do it his way rather than saying which I would have before, 'No its supposed to be done this way, the car is supposed to be in front of the house, look at the picture'. Instead now I talk him through what he is doing, and it is really working because before he used just very short phrases, he did very little talking at all and with no imagination, I mean no imaginative talk and no imaginative play at all. Whereas today we got a big story today from him about where he was going to put the trees and he was going to visit grannies while he was pushing the car. He gave me far more than I would have gotten from him because I let him go on talking and I asked him only a few questions (Post-PDI).

Sharing pedagogical content knowledge with other adults.

Adults in all of the cases spoke about collaborating with other members of staff within and outside their classroom to ensure the content of the PD was shared with them, highlighting the value placed on the PCK and also the confidence they had in speaking about and explaining the PCK to others. Maddie (GrindstoneT) spoke of Donna and herself returning from the PD meeting and chatting to the other SNAs about the strategies: "...and we got them on board and they are acting silly and doing all the strategies that we would have been picking up at the PD" (Post-PDI). Donna (SNA) explained "we would come back from the course and obviously the girls would say "How did it go" and we would tell them the new strategies Like we'd say, "If you are working with Trevor maybe try doing this and they do" (Post-PDI). Violet reported that she had modified, printed and

laminated some of the slides that had been given at the PD meeting and had put them on the classroom wall as a point of reference for the class staff. She also voiced her plans to run a training course for her school staff, stating that the information was an,

...absolute positive thing for us in the school...what I would like to do, yes? is to put some sort of a training programme together for the staff and take a look at the videos and say look and talk about communication and talk about the importance of it and set up a few scenarios or role plays and things like that and maybe show the videos and talk about the strategies and what we are using...I would definitely want to introduce it in the school as a teaching strategy for communication (Post-PDI).

Síofra (ClonadooT) was already introducing colleagues to the strategies allowing the teacher and SNAs in the other autism-specific class to observe their interactions with Freddy. Síofra believed that many SNAs,

...don't have that bond with the student especially at the start. I thought it would be worthwhile for them to spend time watching us and doing these interactions with the student and build up that bond before you ask them to do academic work because you are fighting a losing battle otherwise. So, the other teacher and SNAs came in and watched and now she does it in her room (Post-PDI).

She reported that the principal came to watch some of the interactions and she also shared Freddy's successes during lunch time resulting in teachers coming to her room to watch the video clips of the interactions. Heidi and Kim (SNAs) shared the information regularly with the other SNAs in the room with Kim (Windyvale) reporting,

I told Rachael what I did every time we went to the PD because I felt it was as important for her to know and to use the strategies myself and Yana are using ... You have to, if it is going to work ... we all have to be singing from the same hymn sheet or else it is no good (Post PDI).

In the following transcript from Ella's (teacher Shanbailey) reflective diary she describes the impact of sharing the PD content with her staff:

During the week I have asked all staff to use gestural prompts instead of verbal and also to do as Charlie asks: for example, Charlie will hand you his coat and say, 'zip it up please' and so I asked staff to do as I did, zip up the coat and hand it back to him.

This continued every day for about the first four days and Charlie was getting quite annoyed (obviously we put it on after a few minutes so that he wouldn't miss yard time) but then on Friday he handed the coat to a staff member and said 'zip it up' first and then when it was (zipped up) and handed back he tried again with 'put it on me'. Hooray!! (Ella RD 9).

The fourth sub theme that emerged from the findings relating to Empowerment was the adults' enhanced ability to reflect on communication and language development.

Ability to Think about Communication & Language Development

The adults were encouraged to take video recordings of their 1:1 interactions with their pupil (teachers took one each week, SNAs took one midway through the initiative). They were also asked to write reflections on their 1:1 interactions each week. At each PD meeting, video interactions were shared with the group and the subsequent discussion opened with the owner of the clip commenting on their interaction. A group discussion of the shared video followed. The findings indicate that the activities afforded the adults opportunities to question their own beliefs and modify false beliefs, identify what changes were required, critique other's interactions and fine tune their observations of pupil behaviour.

Question and modify own beliefs.

Viewing of the clips and subsequent discussion encouraged the participants to question their own beliefs and to come to an acknowledgement and understanding that a successful interaction may develop through different avenues. A respondent remarked in her overall evaluation that the sharing of her own and other's interactions and hearing the group's views encouraged her to question her own practice and to change her thinking on how best to support social interactions with pupils' on the AS: "At the beginning I thought that what I was doing was the right way or the only way, but listening to the others and seeing what the others do, my mind is much more open and I see things completely differently" (Respondent 8). Heidi (BridgeportS) felt that by observing others she questioned her own perceptions of the best way to interact with the pupil stating,

Oh I'd see a video and I'd think 'God was that right that she did that', and then I would get a completely different view because yes it was right, do you know,

because I can get stuck in ‘this is what works’ instead of me thinking outside the box or broadening it a bit, so that was great for making me do that (Post-PDI).

Watching the interactions and hearing the discussions encouraged Donna (GrindstoneS) to go beyond the surface and to question what she was observing. She admitted to taking what she observed at face value until she heard other views:

I would not see that they did anything wrong and then somebody else would pick it up. Not wrong, I’m not saying that they did anything wrong... Somebody will think about things completely different to the way you think about them and both ideas will be good, and it is two ways of improving on things (Post-PDI)

Heidi (BridgeportS) and Ella (ShabaileyT) believed that reviewing their own clips corrected false impressions of what they thought had happened during their interaction with Heidi stating,

Oh, they (clips) were very helpful because you think that you are doing everything... but you can see an awful lot by the videos. By looking back (at them), you say, “Oh God, why didn’t you do that, yeah why didn’t you do that and why did you do something else (Post-PDI).

Ella (Teacher) concurred stating,

It was really, really, really good to just sit and watch and go, right now I can now see three or four things I shouldn’t be at and trying to think what you had said, and others had said. It made me very aware whereas I had thought at the time I was doing everything the right way (Post-PDI).

This observation was also highlighted in the overall evaluation by the comment, “Watching the videos was excellent because you may think you are using strategies, but you see you’re not using them consistently” (OE Respondent 1).

Identify required changes.

The data indicated that reviewing the video clips and writing the diaries were valuable activities that encouraged the adults to think about the social-communication that was occurring within the interaction and to identify modifications that might enhance the quality of the interactions with the pupil. Yana, (WindyvaleT) believed that the

requirement to record on video her implementation of the PD content made her more conscious of what she was doing during (reflection in action) the interaction, reviewing it ensured that she thought about what she had done after the interaction was ended (reflection on action):

It was good to see yourself in one way because you watch yourself and think ‘I shouldn’t have done that, or you could have done more of that’... I was being too directive with my talk or I was going ‘sit down, sit down, sit down’. When I saw myself on the video, I was thinking, ‘How many bloody times have I told her the same thing? Tell her and just wait for her to do it because she is understanding what you are saying but you just need to wait’. I have looked at it and said to myself ‘oh I can’t believe I did that’ and often when I’m doing the videoing I think ‘I can’t believe I’ve done that’. It is good for that although it is also tortuous (Post-PDI).

Kim (WindyvaleS) explained that she found it difficult to think about what she was doing while “in the throes” of the interaction, and having the clips to review allowed her to reflect on what she had done during the interaction and what she could have done:

I think they are very valuable to look back on, they do teach you things ... you see when it’s happening and you are in that moment you can get so caught up in the moment that you can’t see past it, you are trying to calm her and everything is going through your head and you are trying to stay calm yourself to try. Whereas, if you look at it afterwards... you step out of that room... and you say ‘Oh God if I had just brought out maybe the roller or the play-dough and she was able to use the spaghetti maker that she loves, if I had offered that, that could have really stopped it’, I mean offered a different choice (Post-PDI).

The process of writing of the weekly reflective diaries (RD) was also considered useful for ensuring that the adults thought about what they had done during the interactions with their pupil. Kim (WindyvaleS) reported that the process of writing the diary ensured she thought about her role in the interaction rather than focussing on the pupil: “I thought - they were brilliant they made me think an awful lot more about what I did rather than looking at the student. When I wrote the diaries, I tried to figure out more about what had happened and then thinking about it and changing it usually” (Post-PDI). Sunita (ClonadooS) also believed the writing of her reflective diaries identified for her what went wrong in the interaction, commenting that while writing the diary “you could see if you

made a mistake, not a mistake as such but if you didn't handle a situation the right way. Maybe you stepped in when you shouldn't have, or you didn't give him enough time" (Post-PDI). SÍofra (ClonadooT) admitted the writing the RD ensured she thought about the interaction, "Once you have it (the interaction) done, you're done, and you almost put it out of your mind but when you have to write up the bit afterwards, it made you just think a little step further" (Post-PDI).

The adults gave numerous examples of how reviewing the interactions either through video analysis or writing of the diaries identified the strategies that should be reduced and the ones that should be used more frequently by them. They could see if they spoke too much, if they said something or did something they shouldn't (e.g., too much prompting, directive talk, not waiting, not being animated). Kim (SNA) was very forthright about the benefits she gained from watching the clips. She reported that the videos aided her to recognise strategies she should or could have used. They made her recognise that she was being very directive and that she,

...should have been more attuned to her and copped on and just left her alone" ...The videos showed me that I was trying too hard trying to make the student do what I wanted her to do. I wasn't stepping back and listening to what she wanted or even offering her a choice (Post-PDI).

She added that she had changed as a result of reviewing the clips: "Whereas now I try to make sure that we are doing what she wants to do and that she is happy" (Post-PDI).

Enhanced critique skills.

The adults spoke of how viewing and discussing each other's interactions supported their ability to reflect, and they could now recognise good and not so good practice and identify ways in which a peer's practice could be improved. In the following excerpt Violet (BridgportT) identifies her ability to observe what was occurring in her classroom and to identify what needed to be changed (reflection on action):

I feel I'm far more skilled now, this morning, I noticed that he (a pupil from her class) wasn't responding (to the SNA) he was looking out the door. So, I was able to guide her and say he is actually switched off now. He is not tuned in. Now number one the radio was on and he stims on music so the first thing we need is the radio off and number two, he was looking out the window, I said he has actually lost interest

so I said let's try something different, so we tried bouncing him on the exercise ball and straight away I could see the face I could see the animation I could see the joy so we were bounce, bounce, bounce (BridgeportT, Post PDI).

Summary of Findings on Ability to Think about Communication and Language Development

The findings reported in this sub theme further strengthen the findings in the “adopting of strategies” section that the adults had not only acquired new and specialist knowledge, but they were also actively modifying and fine tuning the content to the individual needs of their pupils in their classes and in different contexts. The ability to align social-communication and language teaching to the needs of the communicative partner is identified as pivotal for learning by social interactionist theorists (Bakeman & Adamson, 1984; Bruner, 1981, 1983). Further, this specialist knowledge and the ability to adapt to individual pupil's needs are recognised in the PD literature as a requirement for optimum learning within classrooms (Blank et al., 2007; Fraser, 2005; Gottfredson et al., 1995; Jordan, 2006) and for sustained adoption of the content (Gibson & Brook, 2012; Guskey, 1998; Timperley et al., 2006).

A sense of professional growth was also evidenced in the talk and writings of the adults by the confidence of both groups of adults to share their new knowledge amongst peers in their schools and in one case the teacher adopting a mentoring role for the whole staff using strategies encountered at the PD. The SNAs in this study had reported in their pre- PD interviews that dialogue with their class teacher was the only opportunity available to them to increase their understanding of how best to support the pupils on the AS with whom they worked. It would also seem to be the only “expense free” training available to SNAs nationally at this current time (Daly et al., 2016). However, teachers mentoring SNAs without appropriate knowledge themselves is not the most effective way to support our pupils on the AS. A model of mentoring is a realistic avenue for providing PD to a very important cohort of school workers. However, the teachers require the appropriate knowledge and time is required within schools for this mentoring to occur formally.

The PD literature emphasises the importance of learning activities in supporting participants' learning (Cordingley et al, 2005; Cordingley et al., 2007; Darling-Hammond & McLaughlin, 2011; Gregson & Sturko, 2007; Harwell, 2003; Joyce & Showers, 2002; Timperley et al., 2007). The evidence presented above indicates that the learning activities

adopted for this model of PD were influential in affecting change in the participants' knowledge, understanding beliefs and practice and for enhancing their reflection skills. The requirement to take video of their implementation of the PD content was identified as ensuring that the adults noticed and thought about what they were doing during the interaction (reflection in action) (Schon, 1983), while the viewing of their own and peers' clips and subsequent discussions were reported to be the catalyst for questioning and changing their thoughts on their own and others' practice (Quick et al., 2009; Schon, 1983). Opportunities to deconstruct the implementation of the content enables deeper understanding (Darling-Hammond & McLaughlin, 2011; Rarieya, 2005). The adults' ability to see alternative ways of using the PD content was also attributed to these activities. Reviewing the clips in conjunction with the writing of the reflective diaries was also reported to have aided the adults' abilities to reflect "in" and "on" action, a skill required to ensure change in practice (Clarke & Hollingsworth, 2002). The findings also demonstrate that the learning activities ensured that the adults focussed on the influence their communicative behaviours had on the outcome of the interactions rather than concentrating solely on the role of the pupil on the interaction.

Improved Communicative Relationships

The fourth and final theme that arose from the data on the adults' perceptions of being a participant in the PD was the improved relationships that developed over the lifetime of the initiative. There was evidence of enhanced communicative relationships between the participant adults and pupils, and between the pupil and others in the school. The adults of the pupils who had speech also reported improvements in their use of speech.

Improved Adult-Pupil Relationships

The adults spoke and wrote of the enhanced relationship that developed with their participant pupil over the lifetime of the initiative and often identified what brought about the positive changes. Violet (BridgeportT) spoke of the improved relationship between Keeva (participant pupil) and herself during her Post-PDI commenting, "I just feel the relationship has improved so much and I just feel there is more of a trust and more of a bond. I just feel she is more willing to engage with me now." The growth in this positive relationship was noted in a number of her later reflective diaries stating, "On the whole I feel that I have a better bond and understanding of Keeva which spills over into activities across the day" (RD11). In a subsequent diary entry, she reported that Keeva was staying

longer in the interaction writing, “Our sessions are definitely engaging as she always lasts the pace except for two brief occasions when she opted out” (RD13). In her RD 16 she wrote:

Our relationship has also improved as we are now talking more to each other throughout the day...language has become a two-way street and I feel her listening and attention has sharpened-all part of the circle of communication. She is also easier to “get around” as I suppose the bond is improving all the time.

Furthermore, in RD 17 she attributed this bond to her use of facilitative strategies, “Our relationship is improving all the time and I now find that I try harder to understand Keeva now and “wait” at different times of the day for her to vocalize things.”

Nuala (ShanbaileyS) attributed her use of the PD strategies to the growing trust that was developing between Charlie (participant pupil) and the participant adults. She commented:

I think he has come a long way in trusting us. And I hope I have achieved some of that, that I have contributed in some way shape or form to that because of the strategies I'm using...I'm just saying to you genuinely it (PD content) has worked with him and it has enabled us to bond and to trust each other more (Post-PDI).

Síofra explained how Freddy's trust in them was evident as he used to get upset when they tried to transition him within the class, even when a visual was shown to him but “he doesn't anymore he just comes with us and he is just more contented, and I think it's just that he trusts us more now” (ClonadooT, Post-PDI). Maddie (GrindstoneT) also spoke of her pupil trusting them more and credited this increase in trust to consistent, positive responding by the staff. She explained,

There is a huge difference, you know at the start the trust was missing, you know you might say oh you'll have that later and “the later” might never come. And when we started with the PD up with you, there was a huge change we were the granny do you know like you said the generous granny giving the, giving what he wanted then reining it in and then we got the control back to a certain point (Post-PDI).

Donna (GrindstoneS), also noticed this growing trust, writing, “I think he trusts me now he knows I will be there for the fun” (RD15). Yana (WindyvaleT) also held that Elana and herself had developed a closer relationship stating, “Oh we are definitely closer,

and I know I complain about her behaviours and everything, but do you know we are still in a way better place than we were last year.” She attributed this better relationship to the changes she had implemented arising from her participation in the PD. She also spoke of following another pupil’s lead admitting that prior to her involvement in the PD she would have insisted that he do the activity her way.

Improved Participant Pupil-Other Relationships

All of classroom adults reported in their interview prior to the PD that the participant pupils rarely sought out interactions with adults or peers and if the pupil did approach another it was usually to have their needs met. Donna (GrindstoneS) described Trevor (participant pupil) as, “...a loner ..., he never plays with other children. He doesn’t seem to be interested them. He runs around on his own...he will grab you and bring you to something if he wants something but not always” (Pre-PD Interview). Violet (BridgestoneT), speaking of Keeva, said,

She will rarely come to you looking for help. ...she doesn’t make any preferences in the classroom here ...She doesn’t ever seek out any particular company. She actually prefers her own company... she can almost shut down in the classroom where she not just tuned in to what’s happening or to us (Pre-PD Interview).

Charlie’s classroom adults believed that he was happier when he was left to his own devices and when the adults didn’t try to interact with him, with Nuala (SNA) stating, “he wouldn’t really respond very well to me to be honest” and Ella (ShanbaileyT) remarking that “he stays very much to himself” that she had never seen him initiate an interaction and “he doesn’t seem to have a whole pile of interest in other children... he won’t put himself into a group or that, he won’t interact with them in any way. He never talks to them” (Pre-PDI). Yana (WindyvaleT) spoke of Elana “as far as interacting goes, there is not really a whole lot that goes on with her, I see her out on the yard just running around on own, she is totally oblivious to you know to everybody else... it’s as if they don’t matter. She doesn’t even see them” (Pre-PDI). Freddy (Clonadoo) was described by his teacher as, “very independent he gets things for himself” while Sunita the SNA remarked that, “he likes to play on his own and doesn’t go near other children. He will take what he wants and bring it back to his desk and play with it on his own” (Pre-PDI).

Improvements in their pupils’ ability to develop communicative relationships with others were identified by all of the adults during their Post-PDI and by some who noted changes they observed in their pupil’s social-communication in their reflective diary entries. Table 5.5 below gives a snapshot of the changes in the pupils’ social-communication attributed by the adults to their use of the PD strategies throughout the

year. Four of the pupils (Charlie, Trevor Freddy and Elana) had developed an awareness of others in their environment, and they had become more interested in interacting with other adults and peers. All four were reported to initiate social interaction now with their classroom peers. Keeva had begun to tolerate peers in her space and trust was developing between herself and her class room adults as evidenced in her request for them to hold her hand.

Table 5.5: Changes in Pupil-Other Communicative Relationship

Charlie & Other Adults: He is just a lot more aware of us and aware of people around and if anyone comes in, he is looking now. He will say “Hi” ...He knows that he can tell people if he wants or doesn’t want to do something. He will ask for things, he will ask you to do things, get this, change an activity. Whereas before he just went along with what was on offer now he will say, “No I want something else” (Ella).

Charlie & Peers: He is a lot more interested in people, adults, children and trying to interact with them, especially with other children ... he might only go and brush up against them, but he’s trying in some way to interact, to start something, to engage in something with them but with the other boys in the class he will call them by name and say “Eddie” and he loves watching them play (Ella).

He loves to play, and he loves to chase Eddie and if they are doing something fun, he’ll try to get involved but not really using communication as such it would be more interaction in that way, in a fun way but he wouldn’t use words (Nuala).

Freddy & Other Adults: He notices anyone new coming into the room and is more aware of what is going on around him... Say if in the morning time all the other SNAs come down to do their exercises he stands in the middle of them and looks at all of them. He looks directly in your eye and he get your eye contact and then he starts laughing or he just knows how to get people’s attention and he is happy then (Síofra)

You can see when somebody walks into a room. He is straight over looking at them laughing and smiling and looking for the attention. Whereas before he would just sit in the corner and wouldn’t bother (Sunita,).

Freddy & Peers: He has started to go over to the other children but not really initiate not wanting too much from them really, but he is going over and going in with them a bit (Síofra, PPDI).

He joins in more with them now whereas before he used to play by himself whereas now if someone else is playing he will play side by side...the yard as well he’ll maybe run after somebody and maybe instigate a sort of a game and it wouldn’t go on for very long but he will sort of instigate something with the kids in the yard definitely (Sunita PPDI) I also noticed on the school bus he has begun to notice the child sitting beside him more and trying to engage with him looking into his face (Sunita RD14)

Trevor & Other Adults: He can see a point in the adults and the children around him because he would get the kids if one of the adults wasn't in his vicinity he would go and get one of the kids to go and get whatever it was, rather than climb the book shelf or up the shelf ... he will tolerate us in his space, which is a huge thing, yeah, he would have just pushed you away before or just left and then you were back to square one again (Maddie PPDI).

He knows if someone gets a haircut he is looking at you because he knows. He is noticing people and he is taking an interest I think in us (Donna PPDI)

Trevor & Peers: He is initiating playing with the other kids on the trampoline as well and he is looking at them and waiting for them to jump because he's getting enjoyment out of how high he can go when they are jumping as well ... Conor tends to just sit on the trampoline and if it is just Trevor and Conor on the trampoline. Trevor will go right up and look at him or tap him on the shoulder as if to say, "jump with me" you know. that's how I interpret it anyway ... a few occasions he has just gone, and tickled Leo and Leo laughed back, and Leo is very good and would tickle him back, so it is, so he is definitely, definitely interacting much better than he was before (Donna PPDI).

Elana & Other Adults: She began to see us as people rather than just things in the room, she started to notice other people as well... She now gets our names right, most of the time and, thinking back to last year, she knew only me. The SNAs were interchangeable for her names wise and she had no idea of Mrs Bobbitts or the principal's name. No idea at all. Whereas now she knows them all by name and will respond to them all... If you call her name, she'll largely, well, she'll acknowledge that you've spoken, she'll pause whatever she's doing ... I got my hair cut and she noticed it straight away because she came in and it was the way she looked at me she knew something was different. she is more social with us. She is a more social being than she was this time last year... She looks for fun with you. One of the others was playing with the iPad the other day and she heard the start of the three little pigs story she came out and sat on my knee and there was an iPad on my desk and asked for the Three Little Pigs. (Yana).

Elana & Peers: She actively seeks to go and sit with somebody to eat her lunch... She's kind of befriended a few of the children in her own mind. There's one little boy in particular in the mainstream class and she's mad about him... whereas last year I would have said we could change the 5 other children in the room and she wouldn't notice they were any different (Yana). She tries to join in the games sometimes. There are a couple of them (mainstream students) who play with her... Last year I wouldn't have said she knew there were other children around her (Yana). Elana's amount of communication throughout the whole school day has improved, and she actually initiated some chat with one of the other children! It was about a biscuit but still it was a start she asked Kyle, where's my biscuit (I had taken it (sabotage!)) (Yana RD 15).

Keeva & Other Adults: She will now let you tidy up with her whereas before she would be pushing you away and doing it herself. Now she lets you do it with her and the kids (Heidi-SNA, PPDI).

What she has started to do, which she never used to do say in the afternoon she likes one of us to hold her hand going out and she might say “hand”. And that to me was a huge thing for Keeva because she guards her like space so carefully. (Violet-teacher, PPDI)

She’ll say I want jig saw and she will come over to you, because we have put everything out *of her reach now so that she has to request. If we are standing at the door for example and she wants the door open, she will say “Open door”. It’s kind of throughout the day that she would use language (Heidi)

Keeva & Peers: A little (interactions with peers), not significant but say last year when doing a jig saw nobody else was allowed to do it. If anybody put a piece down, say another child put a piece down she would take it off quickly and throw it, now that isn’t happening as much she will let them do it, she will leave it there. Now she will speed up a bit herself, but she is still allowing them to be in her space... As far as going to the kids and interacting with them, there wouldn’t be a whole lot of that (Heidi).

Summary of Findings on Improved Communicative Relationships

The findings presented in this subtheme highlight that the adults believed that their use of the PD content positively influenced the relationship between themselves and the pupils. They held that the pupils began to trust them more. They attributed this to their realisation of the importance of the pupil’s contributions within the interactions and their efforts to allow the child to lead. They also reported that the pupil’s attention to and interaction with other adults and peers had improved significantly. The duration of the initiative identified by PD theorists (Desimone, 2009; Gareth et al. 2001) as fundamental to positive change would seem to have had an impact on the bond and trust that developed in this study as evidenced by entries relating to these emotions only occurring in the later reflective diary.

Chapter Conclusion

This chapter presented the findings on the adults’ perceptions of their participation in the professional development initiative. The adults appreciated the opportunities to meet, share and discuss the development of social-communication and language with others from similar contexts. There was evidence in their oral and written feedback that these opportunities enabled them to understand that enhanced relationships with the pupils were

required to optimise social-communication and language learning. The adults spoke and wrote of their efforts to establish this mutuality. They perceived that they had changed their interactive style, being less directive, adopting the strategies of the PD and fine tuning them to the individual pupil. They continually sought to establish contexts that were of interest to and enjoyable for the pupil and they allowed the pupil a lead role within the interactions. There was also evidence of professional growth amongst the adults as they perceived themselves as having specialist knowledge and that they were adopting a mentoring role within their schools. The adults perceived that trusting bonds with their pupils evolved from their participation in the PD initiative, that the pupils began to communicate with other peers and other adults within the school community, and that the use of speech by the verbal pupils had improved considerably within and beyond the structured interactions.

Chapter Six: Impact of the More Knowledgeable Other's Input

Introduction

The overall aim of this study was to enhance the social interactions that occur between adults working in classrooms for pupils on the autism spectrum, and their young, prelinguistic pupils. Achievement of this aim required that the adults acquire new knowledge on how best to support these interactions. The model of professional development (PD) considered most appropriate to achieve this aim was the Inside/Outside model whereby a collaborative community of learners works with an external MKO who has expert knowledge of the topic being addressed. This model was chosen on the basis of the researcher's belief that knowledge is co-constructed between the learner and others and that knowledge development is best supported by the presence of a more learned other. The researcher facilitated the PD meetings for the duration of the initiative.

The participants attended face to face sessions from 9am to 2pm on six Saturdays between September and April during the year of the study. A total of nine hours of content relating to evidence-based, social-communication strategies was delivered by the MKO (researcher) on four of the six days. The PCK delivery was supplemented with video clips and hand-outs (Appendices 11, 12, 15, 16 & 17). At four of the six PD meetings, the researcher facilitated an average of two hours of discussion about the implementation of the PCK, by the participants, in their own classrooms. These discussions were based on video clips recorded by the participants and shared with the group at the meetings. All of the discussions were recorded on audiotape, and later transcribed and analysed to investigate the nature of MKO's talk (questions and comments within the discourse) and the participants' subsequent talk. This chapter utilises these data to address the fourth research question "To what extent did the presence of a MKO during discussion of the implementation of the PD content impact on the adults' learning?"

Four categories of MKO talk emerged from the data. These were Encouraging Participant Talk, Offering Suggestions, Affirmation of Good Practice and Providing Clarification. Exemplars of questions and comments from each category are presented in Table 6.1 below. Findings are reported under the four category headings.

Table 6.1: Four Categories of Talk used by the More Knowledgeable Other

Encouraging Participant Talk	Offering Suggestions
<ul style="list-style-type: none"> • Talk about the strategies you used (DC) • Talk about your interaction (DO) • So that was Siofra's and Freddy's clip. So, what were the objectives Siofra was trying to achieve and what strategies did she use (to group) (CC)? • Anything else/Any Comments? (to group) (CO) • Where do you see that? (CC) • What was that strategy she used? (CC) • Why? Unpick it why? Why? (R) • In what way did you go too far? (R) • Could you suggest any way on how to move that forward? (PSP) • Anything else? (PSP) • What could she have done differently? (PSU) • Now did you? (Ch) • Oh, are you sure now? (Ch) • There was more to that than that. (Ch) 	<p>Suggestions about activity Maybe, you should divide it up and make three different colours or four different colours and now you are offering choice of what she can use you know. Maybe putting the eyes in in different colours or the hair is a different colour. So, there is still a lot of work you could do with the play dough because she is interested in it and you haven't overused it.</p> <p>Suggestion about strategy Maybe now that's where you would switch. in the sense that she was going "ah" and you went "ah" and then she went "ah" but then maybe you begin to extend it by saying "ah-ah" and see would she imitate. That's where turn taking comes in. Then hopefully she would do it and if she doesn't, then you have to wait, and she'll start again, and you follow her lead but gradually keep coming back to see whether she will follow your lead you know so that you are not forcing it but you are doing it.</p> <p>Suggestion about Problem solving Yes, now you could also "switch within the activity" and that is important to remember, so that if you can't go and get new resources, that's where you have to think on your feet and say right, "this is falling apart. What do I do next to keep her engaged?" Maybe switch within the activity then?</p>
Affirmation of Good Practice	Provides Clarification
<p>MKO: And that's the balance of control I keep talking about because they haven't got the communication they haven't got the language and you've been the controllers and he (pupil) found it so hard to deal with being directed all the time and now you have given him the control back. You have found a way of taking control but in a nice way rather than in a didactic and directive way.</p> <p>MKO: I can see it in your interaction with Elana now, that she is happy to stay with you, which is absolutely brilliant, because you can't get in to teach unless they (pupils) stay with you</p>	<p>Query: I did a bit of labelling and I was trying to label her actions "oh you want this" or labelling what was happening as well "the table is wet" or and I don't know whether this was the right thing to do but I was trying to prompt a little bit of the language.</p> <p>MKO's Reply: You know that's grand but maybe a bit more of recasting or extending of what she says. When she said "yellow", you labelled it and said, "yellow whistle" but you could have maybe given her the full sentence "I want yellow" or "I want yellow whistle" so you take the opportunity to build her up to 3- or 4-word utterances.</p>

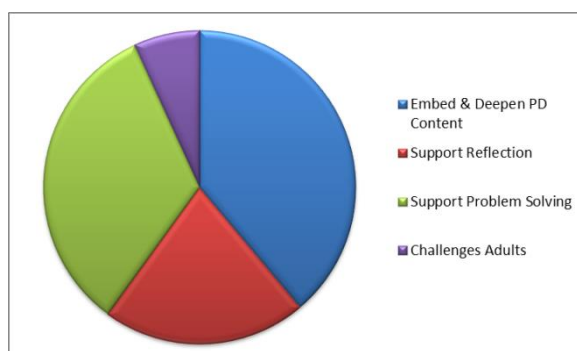
Findings for: More Knowledgeable Other's-Talk Encouraging Participant Talk

Discussion took place following the sharing of a video clip by a participant of a video recording of her of her implementation of the social communication strategies with the participant pupil. These strategies would have been the focus for teaching and learning at a previous PD session. The MKO's dialogue during the discussions consisted mainly of questions and invitations for commentary designed to encourage the owners of the video clips to talk about their implementation of the PD content as seen in the footage that they shared with the group, and to elicit talk from the other group members about what they observed during the recorded interaction. The MKO's questions were categorised as Descriptive, Connections, Reflection, Problem Solving and Challenging. The Descriptive and Connections questions were further classified as Closed or Open and are referred to as, DC, DO, CC and CO throughout the chapter. Table 6.1 above provides exemplars of these questions.

The Reflection questions are referenced as R, the Problem-Solving questions were further classified as Planned (initiated by the MKO) and Unplanned (arising from discussion) and are identified as PSP and PSU. The Challenging questions are identified as Ch. (See Key with Table 6.1)

Figure 6.1 below represents the MKO's "Encouraging Participant Talk" discourse categorised by function. Thirty-nine percent sought to embed and deepen the participants' understanding of the PD content through Descriptive and Connections (DC, DO, CC & CO) questions. Twenty-one percent sought to facilitate group- and self-reflection, 33% was scaffolding the participants to become independent problem solvers (PSP & PSU), and 7% of the MKO's questions were used to challenge the participants' thinking (Ch). The findings for the first three categories are presented below while the findings for the fourth category are reported throughout the sections. For the first category of MKO Talk, Encouraging Participant Talk, the findings are outlined according to the four functions of talk illustrated in Figure 6.1

Figure 6.1: Function of the More Knowledgeable Other’s “Encourage Participant Talk” Discourse



Embed and Deepen the Pedagogical Content Knowledge

“Descriptive” and “Connection” questions were posed by the MKO to support the linking of PD content with what was happening during the interactions being shown and to deepen the participants’ understanding of content. DC and DO questions were posed to the owner of the shared clip to encourage her to identify the social-communication strategies used, or those that could have been used, during the interactions. CC and CO questions were posed to the group to encourage them to identify strategies observed that had not been mentioned by the owner of the clip. These questions also provided the participants with opportunities to make suggestions about how the interaction on view might be enhanced. The participants’ responses to these questions are presented below.

Use of descriptive questions and subsequent participant talk.

During the second PD meeting, following the sharing of an interaction clip by a participant, the MKO began the discussion by asking the group to identify the objectives the adult was endeavouring to achieve, and the strategies observed within the interaction (“connection” style questions). Later, on reading the transcript of that meeting she realised the importance of allowing the owners of the clips to orally reflect on the interactions they had shared before opening the discussion to the group. At all subsequent meetings, discussions of observations began with descriptive questions posed to the owners of the clips. Exemplars of DC questions and subsequent adult talk are provided in Table 6.2. Although these are “lower order” questions that sought specific information, DC questions encouraged the participants to reflect on what they observed and to identify the strategies

being used, thus embedding the strategies in the participants' minds (No.1). This format allowed for incremental learning of the PCK, as the participants saw and heard the strategies labelled repeatedly over the lifetime of the initiative (Knapp, 2003). The use of DC questions also encouraged the owners to "go beyond naming" the strategies as they often reflected orally on the reason for particular strategy use (No. 2 & No. 4). This oral reflection supported a greater understanding of effective use of the strategies as it aided the speaker make to links between the strategy used and their particular pupil. The spontaneous interruptions by peers were also seen as a catalyst for this type of reflection (No.1).

Table 6.2: Descriptive Closed Questions and Responses

No.	MKO	Participant
1	What strategies did you use (PD 3)	<p>Ella: I used animation just exaggeration, comment and self-talk and commenting on what I was doing, offering a little bit of choice just between colours and that emm, waiting sometimes to see if he would tell me to "blow".</p> <p>Violet: Acting silly.</p> <p>Kim: Having fun.</p> <p>Ella: Yes, just to have fun and just the few words I wanted to try and get away from "blow it, please" I was saying "more" you know to try and replace that phrase. You know he thoroughly enjoyed the session I thoroughly enjoyed it too apart from needing a defibrillator afterwards.</p>
2	What strategies did you use when you were working with him? (PD 3)	<p>Nuala: Well obviously parallel play, the fun, acting really silly and very animated and singing the talk. Follow his lead, but just definitely to make it fun because that is one thing I came away from the last session, that this is about him having fun, so I tried to make it as much fun as possible</p>
3	What strategy/ies were you using (PD 4)	<p>Sunita: I used a lot of waiting and labelling and singing the talk because the singing seems to work really well with him and fun he seemed to have a good bit he enjoyed himself</p>
4	Talk to me about the strategies you used (PD 5)	<p>Ella: Controlling access is a big one to use with him but gesturing as well because you know with Charlie if you ask him a question he just repeats it back to you, so it means nothing and you get nowhere so even throughout the day we use a lot of gesturing I have sort of cut out asking questions and that's what he really responds to, he knows ok she wants me to say something or ask me something he understands it better than a question</p>

The MKO often used DO questions to invite the owner of the clip to talk about what they shared for example, “Would you talk to us about this” (Table 6.3 below). Interestingly, the owners rarely began their discussion by identifying the positive aspects of their interaction, tending instead to comment negatively on their input (Exemplars, 1,2,3,4 below). This finding suggests that this style of question caused dissonance by indirectly forcing the owners to acknowledge their failures. It also encouraged the owners to “reflect on action”, to analyse and identify what was hindering the interactions from being more successful. This ability to pinpoint what may be affecting positive outcomes is the first step towards change, being a forerunner to future modification of practice. The MKO often followed an occurrence of negative self-reflection by encouraging the owner to acknowledge the positive aspects of their input in the interaction (No.1 & 4) and to identify the specific strategies used by them (No.2). For real learning to occur, participants need the ability to interrogate their enactment of the PD content and recognise the outcomes, both good and not so good (Clarke & Hollingsworth, 2002). Recognising what they are doing well encourages the participants to adopt the content (Guskey, 2002). The presence of the MKO in this study ensured that the adults’ successes were identified, but she also supported the adults as they learned to articulate precisely “what” they were doing well. The importance of providing encouragement and affirmation of participants’ successes in the implementation of the content is required to ensure the use of the new knowledge is sustained (Fraser, et al., 2007). Further, if the participants have the ability and confidence to identify their successes there is a strong possibility they will have the confidence to fully adopt the changes.

The use of DO questions also presented the MKO with opportunities to challenge misconceptions. In the dialogue presented in Exemplar 2, Table 6.3 below, the MKO interrupted Maddie to question her perceived use of the social-communication strategy of “follow the pupil’s lead”. The MKO’s contribution helped her to think objectively about her practice, and in doing so, supported the process of change (Kennedy, 1998). The MKO followed up this “reflective dialogue” (Rarieya, 2005) by identifying what was happening, and what change was required, thus further consolidating the PD content with the group.

Table: 6.3: Descriptive Open Questions and Responses

Facilitator's Comment: Talk about your interaction / Talk to us about this...	
Exemplar 1	<p>V: I suppose just looking at it now in the cold light of day, I just feel I was working really hard there, you know I was doing a huge amount of talking and I wasn't giving her enough time to respond. You know just in terms of language, I just felt it was very lacking.</p> <p>MKO: Ok Violet, let's talk about the positives first what did you think you did really well?</p> <p>V: Well I suppose what worked well was she liked the activity so, there were a good lot of interactions there. She really liked the activity and there was a good few times where she actually imitated some of the things that I did and then having the little stash of stuff you know to the side and once I could see that she was starting to stim I was able to change it to something else? (PD3)</p>
Exemplar 2	<p>M: Emm, we had a visiting artist into the school in September and she came over and did some work with the kids. Trevor particularly liked the activity with just getting stuck in and he was exploring different textures and, looking back now, I should have implemented some of the things that she had used with him. She had pieces of fern and they were making swirly pictures with them and loads of different things whereas I just relied on the sand.</p> <p>MKO: Perhaps talk about the strategies, what strategies did you use?</p> <p>M: Em, I tried to do a little bit of parallel play with Trevor and follow his lead.</p> <p>MKO: Now did you follow his lead though?</p> <p>M: No, I didn't, no.</p> <p>MKO: There was certainly parallel play going on, but you were doing your own play and you were hoping he'd change and do what you were doing but the problem was he didn't, and you need to do what he was doing (PD3).</p>
Exemplar 3	<p>Sí: I missed some of his communication, like just there towards the end he said "sun"? He had looked back at the poster behind the picture of the sun and I just didn't pick up on it. Then I was doing a circle and he went fish I just didn't pick up on half of what he was saying ...And the X, he was saying X he wasn't saying the sound, he was saying the name. We hadn't taught him the names of the letters. I thought he was saying "it", I kept writing "it" and he said it again and I wrote it again and then he did it. He had actually, when we were looking back at it properly, he had done it in the air before, when he was saying it but I didn't pick up on it. At the start of it I could see I should have waited a bit more I was kind of jumping in, trying to prompt him the words I was saying "press, press, press". (PD5)</p>

Exemplar 4	<p>V: I could see half way on I began to take more control of it. It was more about me and trying to get her into my world rather than going into her world you know, so it was dominated by me. I know I was concerned about her just when she started fiddling with her fingers and pulling it off her fingers. I was concerned oh, that I was losing her. I was just trying too hard and I wasn't attuning enough to her. At the beginning I might have been, but I think then towards the end, certainly at half way, I wasn't attuning to her at all.</p> <p>MKO: But you did use very good strategies what strategies did you use?</p> <p>V: Well I suppose I did wait some of the time, yes as you say I enticed her to use her language when she was selecting the different things, she had to ask for them. And I tried to use a little bit of "singing the talk as well".</p> <p>Sí: And you switched activities.</p> <p>Y: When she got fed up, you switched or when she started stimming with her fingers you changed it to stop her from doing it, so you did switch it.</p> <p>D: You offered her choice.</p> <p>V: I didn't do enough imitation though I wasn't imitating her enough and commenting or self-talk. Did I do that?</p> <p>K: You labelled.</p> <p>V: I think I did an awful lot of it though, an awful lot of talking. I think I would have done better maybe to have done less talking because even just listening to it is very stressful watching it. You know the way you say to yourself "aaaah, there's too much talking going on there". So, say maybe less and maybe just let it hang there and wait. (PD 4)</p>
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MKO= More Knowledgeable Other; V= Violet; M=Maddie; Sí =Síofra; K=Kim; D=Donna; Y=Yana

Use of connection questions and subsequent talk.

The MKO directed CC and CO questions and invitations for comments to the group during the discussion sessions throughout the lifetime of the initiative (Figure 6.1 above). The responses to this style of talk generally came from participants other than the owner of the footage on view that day. The use of "connection" talk encouraged the participants to identify the specific strategies being used within the observed interaction.

This style of talk impacted on the adults' learning in a number of positive ways. Posing questions to the group allowed for collective participation in the learning, an element identified by Desimone (2009) as pivotal for effective PD. The adults had ample opportunity to contribute to the discussion after each observed clip and, in doing so, they

contributed to collective development of knowledge. Repeated identification of the strategies (Table 6.4 below Exemplars 1-7) during each discussion session ensured that the adults had multiple opportunities for the assimilation of the PD content over time (Desimone, 2009). This repetitive identification also supported greater understanding of the strategies by the participants who were seeing and hearing about their implementation in various contexts (Fielding et al., 2005). CC and CO talk also encouraged the identification of successful outcomes as the members of the group orally reflected on what they saw. The identification of the good practice and positive outcomes provided encouragement and affirmation to the owner of the clip from the peer group (Ex. 1, 2, & 6). Guskey (2002) advises that participants need to recognise that the content is having a positive impact within the classroom to ensure its continued use. Hearing praise from peers who “know” because they come from similar contexts, is possibly the greatest affirmation one can receive. Knowledge that the content is working buttresses the implementer against failures that may happen in the future (Guskey, 2002). Oral identification of what worked and overtly acknowledging the value of using the strategies also increases the likelihood that those strategies which have been seen to be successful will be adopted by the other group members. Connection talk also acted as a trigger for group members to consider their own practice in light of what they were observing. In Exemplar 3 below, Ella acknowledged a difficulty within her own interactions and compared her practice with that of Siofra’s. This comparison was causing dissonance for Ella; she observed the positive effect of practice that differed from her own and that dissonance may have been the catalyst for her to modify her future interactions. Admitting that one is experiencing difficulty is often problematic, whatever the context. The openness of the connection questions here, however, made the participants amenable to spontaneous revelations.

The MKO also used “connection” questions to probe further about the PCK being observed in the interactions. This enabled group members to come to a deeper understanding of that content. It ensured that individuals made the links (Ex.4). The dialogue that followed the MKO’s use of this style of talk often encouraged the adults to go beyond mere labelling and to reflect on the rationale for and value of the particular strategy (Ex. 2 & 5). An invitation for comment following the discussion about the strategies Sunita used in her shared interaction clip (Ex. 7), led Violet to offer positive criticism on what she observed and to offer a suggestion on how to improve the

interaction. Critique is required to ensure deeper understanding within the group (Wideman, 2012). Although Sunita acknowledged Violet's criticism, she defended her own practice requiring the MKO to step in to re-emphasise the objectives of social-communication interactions. This finding suggests an important role of a MKO in supporting learning is placing pressure for change where participants are reluctant to accept a peer's evaluation of their practice (Guskey, 2002; 2009).

Table 6.4: Connection Questions & Invitations for Comments

Ex	MKO Talk	Subsequent Response / Dialogue
1	That was Siofra's and Freddy's clip so what objectives was Siofra trying to achieve and what strategies did she use? (PD2)	V: Well, the objective was social engagement and the strategy was parallel play. You had the two sets and you both had the identical set of equipment and labelling and counting and attuning, and what I thought was good was that you were able to, kind of, turn it around, when he, like, at one stage he was getting a little repetitive there towards the end and you were able to draw him back into the play by creating all of the bubbles on your own and all of a sudden it went from what he was doing on his own, he was suddenly interested in what you were doing.
2	Do people see what other strategies she (Donna) used? (PD4)	Sí: She was getting down to the pupils' level and she waited. E: Labelling what she was doing and what he was doing with her words. V: Expectant look, you know waiting expectantly for him to ask again. M: You kept it mainly to one word, you didn't overdo it with the language because usually when its language overload he'll switch off completely and then he's gone whether he is enjoying it or not. You knew this ... There was clear enjoyment on his face throughout the whole, he was smiling away.
3	Anything else? (PD2 about Siofra's clip)	E: I think she did very well, I find it hard not to talk and (not to) ask questions, you know, you waited, and you didn't do over kill with language you kept it very simple you kept it very repetitive, I thought that was really good that you didn't talk a lot. Y: And when he was getting repetitive you moved it to making the bubbles to keep his interest.
4	What strategy did you use to get him to say, "wind it up"? (PD3)	Su: I used waiting, yes, just waiting and singing the phrase, letting him listen to the singing and just saying it every time I did it, just being repetitive. V: That's self-talk well that's self -talk isn't it?

5	<p>What other strategies do you think you saw - Yana using?</p> <p>(PD4)</p>	<p>H: It was fun.</p> <p>Sí: She was using animation but maybe it was actually painful pulling them off, but it looked animated.</p> <p>V: She was attuned.</p> <p>K: There was imitation.</p> <p>MKO: Definitely attuned and that's really important, can you expand on that Violet?</p> <p>V: Well Elana was definitely in control, Yana let her lead. Elana was directing the whole thing and she really enjoyed that and it was obvious Elana loved being the boss.</p>
6	<p>What strategies were used? (PD5)</p>	<p>Su: Switch activity.</p> <p>M: Follow his lead.</p> <p>Y: And he controlled, so she started but then he changed the drawing, what was really good was, she continued with what he started. She obviously knew this is something he is interested in, so she thought if I keep at it I'll keep him with me.</p> <p>MKO: But that is what it is all about. You kept chipping away until you drew him in and then once he changed you knew not to be on your own agenda. He then began to dictate the pace and you went with him.</p> <p>E: And I could see that there was a whole lot of spontaneous interaction going on and a whole lot of initiations by him rather than the responses, which was brilliant.</p> <p>MKO: Why do you think that was, Ella?</p> <p>E: Well, he was getting the opportunity to initiate because Siofra allowed him</p>
7	<p>Does anyone else have anything else to say?</p> <p><i>(open question after Sunita spoke on the clip she shared at PD4)</i></p>	<p>V: I suppose you were probably going into directive stuff.</p> <p>MKO: mmm, go on.</p> <p>V: You know the sheet and the word red, it suddenly became an instruction, it became ...</p> <p>Su: A lesson yeah.</p> <p>V: Well rather than just play and fun ...it became a lesson...You could maybe, if you had a bag you could put that stuff into it and make it a game.</p> <p>Su: I normally do, I normally do have a bag but because I wanted him to say red I thought if I had enough red things on the table it was more opportunities for him to say red. He wasn't interested first when he came in with the red items and that's why he went for the shooters and that is why it ended up going in that direction first.</p> <p>MKO: As Violet said though you were perhaps being directive and the objective for the interaction is not really about being directive and what we needed to do was to try to achieve the learning through fun and play.</p>

(V=Violet; Sí=Siofra; E=Ella; M=Maddie; Su=Sunita;H=Heidi; K=Kim; MKO=More Knowledgeable Other)

In the dialogue below following the sharing of a clip by Heidi (BridgeportS, PD 3) of a very successful interaction, the MKO encouraged the adults from the setting to make connections with the content of the PD and the success of the interaction. She also encouraged Violet (BridgestoneT) to articulate the value of changing her practice from expecting Keeva to conform to the adults' demands to following Keeva's lead instead.

Dialogue 6.1: Making Connections between the PCK and the Success of the Interaction

- MKO:** That was wonderful, really good, Heidi. So, what were the ingredients?
- Heidi:** We used to battle with Keeva, we used to battle with her and make her do it, now we say, "Oh, you don't like it, Keeva?" or, "You don't want it, Keeva?" and take it away, and that really has helped.
- Violet:** There is no oppositional behaviour during our interaction sessions really now, sure there isn't (talking to Heidi)? Like, there would be a lot of opposition behaviour outside of those sessions like running away, but in the sessions, she really enjoys them. I have to admit that.
- MKO:** Do you think it was worth following the pupils' lead (addressing Violet)? I remember you saying, she can't be let away with it, that's not life in school really, that she has to do what she is told in school.
- Violet:** Yes, yes, well I think we are definitely building a better relationship with her during the sessions you see and I do think she responds better to us now, for example Keeva might go to her schedule and snap off the one she wants, but it might not be the next one and if I say to Keeva "uh oh, put it back Keeva" and I wait she will go and put it back and a few things like that and I just have to say it and wait and she will do it. I feel she is listening to me better I feel there is a trust you know, just the relationship is better whereas before it could be more of a battle and she'd run away. Or she'd run out the door or whatever.
- MKO:** You have built a trust with her.
- Violet:** I do feel that there is a better definitely there's a better relationship. You would say the same Heidi, wouldn't you?
- Heidi:** Definitely, yes, yes, the crying and everything Violet, the crying has stopped.
- Violet:** That's right and you know maybe we understand her a little bit more. Now definitely during the first few play sessions, there was opposition but because we're going along with her now we are not getting into any kind of battles. (PD 3).

The MKO's use of "connection" questions was found to support the learning process within the discussions. CC and CO questions elicited responses from all of the participants which contributed to the overall knowledge arising from the observations. They ensured that connections were made by the adults between what they were observing and the PD content. They enabled the adults to see the value of implementing the PCK. They also allowed the group to take responsibility for their peers' learning through their critical evaluation of peers' practice and through acknowledgement of the impact of the strategies on the interaction. This style of talk allowed the MKO to move into the background during the discussions, only intervening when deeper reflection was required, or to counter misbeliefs.

Supporting the Participants to become Independent Problem Solvers

The discourse analysis revealed that a third of the MKO's "Encouraging Participant Talk" questions and invitations to comment were scaffolding the participants to problem solve either from within the group or as individuals. There was also evidence of the MKO participating in the problem-solving dialogues.

Problem solving questions and subsequent talk.

Following the discussion of each observed interaction, the MKO generally posed a "Problem Solving Planned" (PSP) question for the whole group such as, "How could we move this session forward" (Table 6.1 above). In posing these PSP questions, she sought to give collective responsibility to the group for suggesting ways to enhance future interactions between the owner of the clip and her pupil. "Problem Solving Unplanned" (PSU) questions such as, "So moving it forward yourself, Yana, what do you think you would change/ (for all) Going forward though, what should she do?" were posed to either the owner of the clip or the group when there was evidence of a breakdown of communication within the interactions. More than a third of the dialogue that occurred within each of the four discussion sessions focused on problems, dilemmas and difficulties. Interestingly, the need for the MKO to act as a catalyst for problem solving dialogue diminished over time (Figure 6.2 below) as her use of problem-solving questions decreased from twenty-five such utterances during the first discussion session to seven in the final discussion session. This finding suggests that a) as the participants became more

comfortable within the group they became more confident in sharing their dilemmas and difficulties (Little, 2003) and b) the MKO took more of a “back seat” in the discussions, deferring to the knowledge and expertise within the group to their readiness to support each other in tackling their dilemmas.

Figure 6.2: Number of More Knowledgeable Other’s Utterances to Encourage Problem Solving

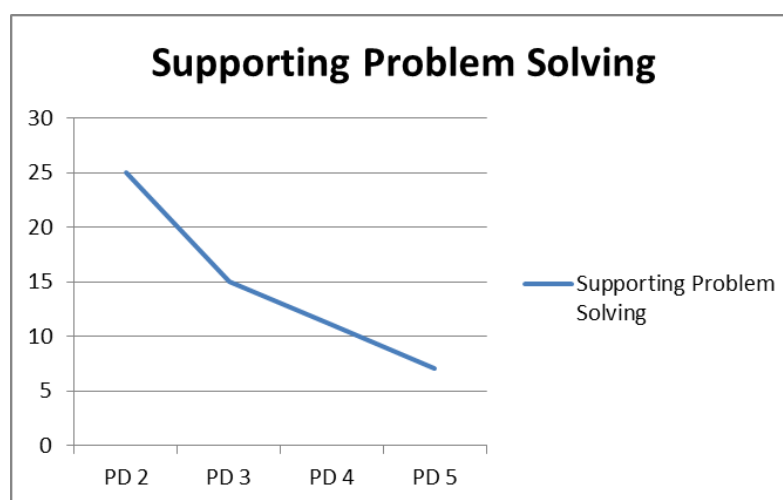


Table 6.5 illustrates the nature of the collective problem solving that occurred in response to the problem-solving questions. The adults made suggestions mainly about modifying/changing the resources/ activities that had been used or they referred to novel actions/activities that could be used to strengthen the interactions. Interestingly, there was little evidence that these questions encouraged the adults to consider the use or non-use of social interaction strategies (PD content) for maintaining or enhancing the interaction. An explanation for this finding may be that resources/activities are external influences on the interaction and were possibly perceived as easier to change, while strategy use is within the remit of the adult and thus more sensitive and more difficult to suggest a change. Identifying the need for alternative strategy use may have been considered a personal criticism of the peer’s practice that could cause embarrassment and discomfort and for that reason was not suggested. However, this style of critique is required for improvement in practice (Hargreaves, 2003; Wideman, 2012). While the participants’ suggestions illustrate their growing awareness of the importance of sensitivity to the pupil’s interests

and the need for adaptability and creativity in structuring contexts and choosing materials, perhaps, MKO questions relating specifically to “strategies” such as, “What strategies could she use to enhance future sessions?” were necessary to scaffold the group to consider the role the adult plays in determining the success or otherwise of the interactions. Questions relating to practice coming from the MKO rather than from peers may be more acceptable. The use of these questions could diminish when there is evidence of talk of amending practice in the adults’ deliberations.

PSU questions were directed at the owner of the clip when the interaction was observed to be less than successful. The PSU exemplar from the PD2 session (Table 6.5 below) demonstrates Violet’s difficulty in formulating possible alternatives to ensure future interactions are more successful. However, by PD5 she is confident in self-reflecting, and in identifying alternative strategy use. By this session the group had been engaged in 6-7 hours of collaborative discussion. These findings suggest the importance of “discussion” as a PD learning activity. These findings also support the argument that professional development initiatives need to sustain support over a reasonable duration in order to bring about real changes in participants’ thinking (Clarke & Hollingsworth, 2002; Desimone, 2009; Guskey, 1986; 2009; Pajares, 1992).

Table 6.5: Discussions arising from the More Knowledgeable Other’s Problem-Solving Questions

1. MKO: (PSP)	<i>So, moving on now, what do you think Maddie could do to move it forward? (from PD2)</i>
Group:	<p>Sí: Maybe to stack the books or to hit them against the table or anything like that would he copy? I don’t know.</p> <p>MKO: would he tolerate you taking his books?</p> <p>E: Or you know.</p> <p>MKO: Sorry go ahead Ella go on.</p> <p>E: You know the way he took your book, even for you to take his, you know just something as small as that?</p> <p>MKO: waits...anything else?</p> <p>V: Yeah because then he started stimming, he started getting over stimulated then, so there was some point there where I suppose you need to think of something you could do to switch... what is it to switch the activity...within that activity?</p> <p>MKO: Yes, Violet within the activity.</p> <p>V: Whether he would allow you to point in his book, like the picture or whatever he was looking at, car, cat whatever you know, would he let you point in his book?</p> <p>M: When it’s based around Thomas he’s very tolerant, he’s just highly motivated.</p>

	<p>Y: Do you know I just wonder if you could get some of the wee Thomas the Tank trains or something you know the wee toys.</p> <p>E: A track going around and around.</p>
MKO:	What is important is changing within the activity if there is a lull or you feel you're losing him or that it becomes too repetitive as Violet says you have activities to draw on to keep him interested.
2. MKO: (PSU)	Violet, if you were doing that again now what would you do differently? (PD2)
Group:	<p>V: If I was doing it again (hesitating).</p> <p>MKO: If you were doing that same lesson?</p> <p>V: If I was doing that same lesson emm. I don't know really (hesitating).</p> <p>H: Maybe use less items and less accessories.</p> <p>V: Yeah, I suppose, maybe to use one or the other and maybe not stop half way to go out to get the other dolls.</p> <p>Have them with you but not introduce them you know in sight and out of reach.</p>
MKO:	You could have had the dolls with you, there's no problem switching what you are doing but you lost her when you went to get them. So, it's just, maybe to having them with you beside you on the floor it's important to anticipate that you may need them. Even though it's a short ten minutes you need to anticipate, you need to think 'Oh this mightn't go quite as well as I think, what do I have in my bottom drawer in order to keep this interaction going?' So, you might have them with you but not introduce them you know in sight and out of reach.
3. MKO: (PSP)	Does anyone else have any suggestions to build on this session? (PD5)
Group:	<p>Sí: Can I just say I added the clay because I wanted him to control... for him to initiate and get me to do stuff with the foam because I didn't think he would want to touch it. But then he was touching it, so I just picked the clay because I thought if the clay was in the foam he wouldn't touch it and he would then have to get me to do something with it. I had the clay beside me.</p> <p>E: We used food colouring to add to the foam, but then that coloured his hand, so we had paint that he had to request, and he made all the different colours.</p> <p>Y: And remember Tish said before about vitamin droppers, say you had a bank of vitamin droppers and you had different colours in them and he could you know request a big bit and little bit. Just to see if</p>

	there as a way of expanding it.
	E: Yes, because he knows his colours doesn't he or even if you put numbers in front of them then he wants two, you know the paint that has the number two in front of it.
	D: or what number of drops he wants to put in.
	E: And he could request sponge shapes to dip the sponge shapes in the foam.
	V: Did you just put a small drop of paint into the foam Síofra and he just mixed it?
	E: Yeah just mix because Charlie loves (making a mixing gesture) and he asks for different colours.
	Y: We never used foam as I'm allergic to it but maybe to hell with and get gloves on and try the foam this week. It's all bubbles at the moment and they are slippery on the floor.
MKO:	But what different strategies could she use?
4. MKO: (PSU)	What could you have done Violet? (PD 5)
Group:	V: I should have gone with it. I should have given it to her I should have labelled the cloth. I could have given her maybe two minutes to wipe it and then said "finished".
MKO:	Exactly, that's going with following her lead and by doing this you are leaving your own agenda. Because she was looking for it, maybe what you could do is, you could tempt her you could show her the cloth, she then puts her hand out and you label it and you give it to her. By doing this you are keeping her involved. You give it to her for the two minutes as you said and then you say finished and you take it away.

More Knowledgeable Other's talk within problem solving dialogues.

In conjunction with posing problem-solving questions, the MKO actively participated in the problem-solving dialogues throughout the lifetime of the PD. The exemplars reported in Table 6.6 below demonstrate that she allowed the group to interrogate the problems, acknowledging the knowledge and expertise within the group. However, she intervened to provide informed support by tackling false beliefs (No.1), affirming good practice (No.2) or by aiding the participants to consider alternative solutions (No.3). She also intervened to emphasise the PD content being discussed (No. 4). The questions posed, and contributions made by the MKO during the problem-solving

dialogues highlight the importance of her presence for participants' deeper learning. While she acknowledged the new knowledge that emerged from within the group on how best to increase the success of the interactions, she also scaffolded the group to engage in the more difficult process of self-scrutiny (Levine, 2011). The MKO also acted as a guide during the discussions, reiterating the PD content where appropriate and adding to solutions offered by group where necessary (Exemplars, 1, 3 & 4).

Table 6.6: Categories of Participants' Queries

<p>1. Seeking Clarification (PD Meeting 4)</p>	<p>M: its ok and it would be ok to use pictures, they wouldn't be action songs (pictures) but he would love Jedward and all the popular modern music, so it would be the video he would be watching so we could have a little picture for him to request what he wants.</p> <p>MKO: Mmm, be careful about using video, because the video does not allow for interaction Maddie. What I liked about this activity was there were the two of you in a 1:1 context.</p> <p>D: If you had the Jedward music for playing but not the video.... Yes?</p> <p>V: And you could have your hair like Jedward's hair (laughter).</p> <p>MKO: Yes D, have a choice board of Jeward's music but for him to listen to not to watch.</p>
<p>2. Revealing Dilemmas (PD Meeting 4)</p>	<p>H: Now this was a question I as trying to work out with Violet. When doing the playdoh, you know parallel play, she'll come and take mine and she will block hers, so I started to say "mine Keeva" and "that's Keeva's and this is mine". Is this right because when she is in integration in the mainstream class I see that she's doing that with the kids and the kids don't like it. So, I'm wondering if I should be doing a bit more sharing. If she is going into mine should I let her, and do it with her instead of saying mine and Keeva's? Because she is doing a /lot of grabbing in the integration class.</p> <p>MKO: What do people think about that?</p> <p>K: I think you should let her go with the grabbing.</p> <p>D: Trevor is very much like that, he does that as well so if he goes to grab mine, so I say, "oh you want my one" and I swop them over.</p> <p>MKO: Great Donna! It is a building of tolerance in her you are absolutely right to make light of it. What do we want to avoid? V: We want to avoid conflict.</p>

<p>3. Highlighting Difficulties (PD Meeting 4)</p>	<p>Y: I think when the video is on you, you sometimes panic.</p> <p>E: (Interrupting) I was just going to say that.</p> <p>Y: You would normally just say oh look she is fed up with that, I'll go over and get this thing here, and then you go for that but then you go, oh no the bubbles are at the other side of the room, oh no I'm going to disturb everybody-y, and normally you would just think, look this isn't going so well let's start again whereas when you are videoing as well you think I've got 15 minutes</p> <p>H: It's the dolls as well, Keeva knows that the dolls are in the bag, you know so it's very hard to sneak that in and you can't help that she is focussed on the bag.</p> <p>MKO: But that's what planning is all about, it is thinking this is the way I'm going to develop the session and ok if it kind of stalls I can move this way, just have a little think about what you are going to do during the session. Sometimes you need to think on your feet and that's the difficult one and that's what the process is all about really that maybe the activity should have been switched within the activity. I think the more 10-minute sessions you do the more comfortable you are going to be with it.</p>
<p>4. Seeking Advice (PD Meeting 5)</p>	<p>H: Can I ask you, you said at one stage in the clip (addressing Ella) "What will I do" so how would you change to get that answer without asking?</p> <p>E: That's it I remember I was trying to remember you said at some stage we could ask some kinds of questions, but I can't remember what they were.</p> <p>H: So, what would you do there? Would you just wait for him to ask you to do something?</p> <p>E: Yeah how would I ask that question?</p> <p>V: Maybe gesture by putting your hands out like this (modelling a questioning gesture).</p> <p>MKO: Absolutely Violet and don't forget to use exaggeration. Use self-talk as well, "<i>oh dear I can't open it, it too hard</i>". But don't forget to make a big fuss of him for helping you as well. Tell him he is wonderful, "<i>Thank you so much, my goodness you are so strong, well done</i>". Try not to ask Charlie, "<i>What will I do?</i>" Wait like you usually do with the handle poised. But if he doesn't say the words, so as not to frustrate him, Ella I would... (leaving a pause)?</p> <p>E: Just give him the words he needs.</p> <p>MKO: Exactly, give him what he needs and then move on and hopefully you have the opportunity to practice it again, bang it, pick it up or whatever to elicit his speech.</p>

Supporting Reflection amongst the Participants

The MKO used "Reflective" questions with great frequency to encourage participant engagement in self and group reflection on the implementation or non-implementation of the PD content in theirs and in others' classrooms e.g. "...balance of control - was it

there? / Why was his attention so good? / If we were attuning what do you think he was telling you? / Why do you think you had 10 minutes of good interaction?” This style of question was also used to support the participants’ reflection on the effect of the PCK use on the pupils, for example, “What strategies did you find really effective for her and why? / So what strategies are really effective for Freddy and why? / What two or three strategies did Síofra use to cement this interaction?”

The dialogue that followed the MKO’s “reflective” question provided her with the opportunity to probe further and to address false beliefs of individual participants. In examples 1 and 2 (Table 6.7 below) she supported Yana while she unpicked her beliefs on what was happening within the interactions between herself and her pupil. In the first example she helped Yana to realise that imitating Elana’s vocalisations (even though Elana had speech) was positive as it allowed her to respond to Elana and in doing so, to support the development of balance of control within the interaction. In the second example she challenged Yana’s belief that the success of the interaction between herself and Elana resulted from Elana getting her own way. This dialogue also allowed the MKO to reiterate the value of fun and motivation with the group. Exemplar 4 illustrates the MKO’s role in ensuring that dissonance occurred between Ella’s perception that the interaction being viewed was less than successful because “Charlie was difficult” and led her to consider her own role in the lack of success of the interaction.

Reflection questions posed to the group about a colleague’s implementation of the social-communication strategies facilitated the participants’ thinking about the positive impact of the strategies on individual pupils (Ex.3). Making links between the PD content and positive outcomes observed in pupils and having opportunities to observe others implement the learning increases the likelihood that the new practice will be incorporated into the future practice of the participants (Guskey, 2002). In exemplar 5 following Ella’s (ShanbaileyT) sharing of an interaction that had not gone so well, the MKO sought the group’s thoughts on the possible reasons for the lack of success. The subsequent dialogue developed into a collaborative problem-solving session. However, the participants offered suggestions about external factors (resources/activities) that may have been responsible for the lack of success. The MKO intervened on two occasions to encourage deeper thinking. On the second occasion Violet reflected on Ella’s input, offering a positive critique to Ella while reflecting also on her own practice. This finding suggests that without the presence

of the MKO to scaffold the group members to question each other's practice, reflection could remain at a superficial level, considering the impact of external factors only.

Table 6.7 Supporting Reflection

Ex	MKO Question	Participants Response & Subsequent Dialogue
1	<p>“...balance of control was it there? (<i>seeking self-reflection</i>) Taken from PD 1</p>	<p>Y: No, I was just following her.</p> <p>D: You did get communication though with the bubbles, even though she was playing with the blocks.</p> <p>E: She said “blow” didn’t she?</p> <p>Y: Yeah, she said “blow” a couple of times.</p> <p>MKO: But the vocalisations, her vocalisations Yana. You imitated what she did, but you didn’t imitate any vocalisations.</p> <p>Y: No, I didn’t imitate her vocalisations and I don’t know why. I suppose it’s because she is she is able to speak normally ..., she had kind of put her speech on the back burner recently and there has been just a lot of babbling, so I don’t want to encourage that.</p> <p>MKO: Okay but if we are thinking back to the strengthening of social engagement though.</p> <p>Y: I should have babbled with her then.</p> <p>MKO: But her babbling was happy babbling and it was directed at you and if we go back to the objectives of getting social engagement, the objectives are fun, tolerance...whatever so we are going to do what she wants and does for the moment.</p> <p>Y: I should have babbled with her you know...you see that when you watch it but at the time it’s so difficult.</p>
2	<p>Why do you think you had 10 minutes of quite good interaction?” (<i>seeking self-reflection</i>) Taken from PD 2</p>	<p>Y: Because she had her blocks and she was getting her way.</p> <p>MKO: Oh, are you sure now...hold on, the blocks didn’t come till afterwards.</p> <p>Y: She asked for them fairly fast, the blocks, the balls I suppose initially because she wasn’t asked to work, emm she was getting a playtime.</p> <p>MKO: Exactly she was getting a playtime and it was motivating, the items at the time were motivating, but she lost interest in them, so what would we need to do to move that forward?</p> <p>K: Have more new things handy.</p> <p>Y: Yeah more motivating items.</p>
3	<p>So what strategies are really effective for Freddy? What two or three strategies did Síofra use to cement this interaction? (<i>seeking group reflection</i>) Taken from PD 3</p>	<p>H: Well, she made no demands on him which is very good I thought, still got him to do different things and to do what she wanted but, there were no demands made on him.</p> <p>Y: Following his lead, he began to do the numbers and then you did them with him and name them he really seemed to enjoy that.</p>

Ex	MKO's Talk	Subsequent Response / Dialogue
4	In what way Ella? (<i>seeking self-reflection</i>) Taken from PD 4	<p>E: I am expecting way too much, but I think he was difficult, MKO: What was missing though? E: I suppose his control, at least some of it. MKO: Emm in what way did you control? E: I was forcing him to, yeah, I know I can see it now. MKO: Yeah, that ok that's what it is all about, I mean we want him to be at the other stage, at a higher stage and he will get there, but we don't want to rush him. E: So, I have to wait, but he can talk I think because he can talk I can see now I am rushing him. MKO: So, what, what do we need to go back and do? E: Follow his lead. N: Give control.</p>
5	Why. Unpick it why? (<i>seeking group reflection</i>) Taken from PD 5	<p>Y: Did he not like the leaves or did he not like the texture perhaps. V: He lost interest in it I think. N: He didn't want the two colours. E: He didn't you're right, the yellow and purple, I didn't know that, I had never come across that before. MKO: But there was more to that than that what do you say Violet? V: mmm. E: Be honest. V: No, no, I just think the painting is motivating, but as you're saying just to try to figure out, if painting is motivating what could you do to keep it as an activity. M: maybe ...longer engagement through hand printing. E: Put paint on your hand say. MKO: mmm anything else? V: You were probably a bit like me Ella maybe with an agenda, thinking I'm going to do the leaves, and then I'm going to do this and then I'm going to offer him choices and you were controlling a lot during that painting activity and because I can see I was doing that a lot too. I was thinking God I have to get something out of this, I have to have an end result and maybe I think if you just have the paints there and just see what does he do and just watch and if he walks around the room and he has paint on his hands and paint on the walls whatever and that you are commenting and labelling, just go with him, cos I think that's what I have to do with Keeva as well. I have to kinda give myself a break and say oh you know, you know just go with her more and you'll get there.</p>

Summary of Findings on Encouraging Participant Talk

The findings above offer insights into the role of the MKO's pedagogic talk during the PD initiative. She initiated and engaged in "reflective dialogues" helping the group to gain greater understanding and new sights into the situations they were observing (Rarieya, 2005). Evidence shows that her questions aided deeper understanding of the value of the content, that she acted as a catalyst for constructive dissonance and that she challenged the beliefs of two of the teachers. Through repetitive questioning she supported deeper reflection on what underpinned the less than successful interaction (Coburn, 2001) and acted as a catalyst for a peer to offer criticism of another's practice (exemplar 5). However, exemplar 5 occurred in the final discussion session (PD 5) and taken in conjunction with the Problem Solving Planned (PSP) exemplar from the same session (table 6.5 above) they reveal that towards the end of the PD initiative the majority of the adults continued to identify "resources/activities" as the causes of and solutions to unsuccessful interactions, rarely scrutinising their peers' role in the process. These findings indicate the importance of the MKO in scaffolding deeper interrogation of the content implementation and in creating dissonance for individuals within the group. However, the findings also suggest that despite the continual presence of the MKO, the majority of the adults did not show the ability to reflect in a balanced manner on peer's practice over the lifetime of the initiative.

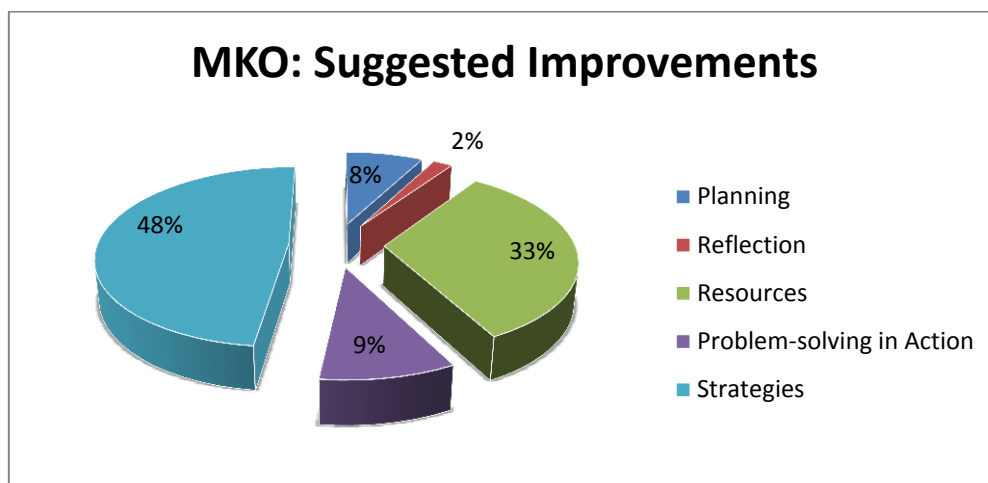
How the MKO sought to scaffold the learners to become adept reflectors and independent problem-solvers may also have had an impact. Timperley (2008) and Darling-Hammond and McLaughlin (2011) believe that participants need to be challenged within a safe environment to ensure change. The MKO used "Challenge" style talk (e.g. "Now did you? /Oh, are you sure now? /There was more to that than that") least often during the discussions (Fig 2 above) preferring instead to support the adults' learning through a softer style of questioning and commentary. More frequent modelling of "Challenge" talk may have supported its use amongst the group and ensured more peer led dissonance.

Category Two Offering Suggestions

The findings for the second category of MKO Talk, Offering Suggestions are outlined in this next section. There was consistent evidence in the MKO's talk that she actively engaged in the group discussions on what was happening and how best to improve

future interaction that followed the interaction sharing clips. Her suggestions related mainly to five topics reported below: strategy use, resources/activities, pre-planning, reflection, and problem-solving in action (Figure 6.3 below).

Figure 6.3: More Knowledgeable Other’s Suggestions on How to Improve Interactions



Strategy Use for Enhancing Social-Communication within the Interactions

Almost half of the MKO’s suggestions during the discussions of observed interaction sessions referred to the strategies introduced at the PD meetings. She identified “other strategies” that could have been used by the adult to enhance the social-communication within the interaction, often clarifying by giving examples of how they could be incorporated. She also sought to deepen the participants’ understanding of the value of the strategies by identifying the “rationale” for their use.

Suggesting other strategies to use within the interactions.

The MKO drew the participants’ attention continually to strategies that could have been used within the interaction that had been shared with suggestions such as, “Don’t forget to use *exaggeration* and to use *self-talk* like ‘Oh dear I can’t open it, it’s too difficult’ and don’t forget to make a big fuss of him for helping you as well (PD 5)/Perhaps you could *imitate* everything she did with the bubbles (PD2)/maybe you are going to have to get a bit braver and start to *sing the talk*” (PD3). She identified and affirmed the adults’ use of particular strategies but encouraged them to increase the use of such strategies or

build on them, stating “You did a little bit of animation, but more would help (PD5)/I liked the way you took the bubbles straight away but don’t forget to use turn-taking talk like my turn, your turn” (PD5). She also made suggestions of strategies that could be used in future interactions such as making the interaction more fun or changing the vocabulary: “you could say ‘I’m flicking, I’m flicking instead of I’m turning the pages’ (PD2) / leave a pause in the middle of a line of a song rather than the end” (PD3).

Rationale for particular strategy use.

The MKO went beyond identifying strategies on numerous occasions availing of the opportunity to deepen the participants’ understanding of the rationale for the use of suggested strategy by linking the strategy with the particular context. In PD 3 she encouraged Violet to label the shape and colours being used so that the pupil has numerous opportunities to hear the vocabulary, saying, “Maybe *label* the shapes and label the colours. I know she probably has them (the vocabulary) in her repertoire but we don’t hear her use them” (PD3). She encouraged Maddie to label when her nonverbal pupil rejected an item, to inform the pupil that his communication was heard and accepted: “You could label when the pupil rejects an item and say, ‘Oh you don’t like that one Trevor no problem’ and move on. So, what you are doing is giving him control, so you are *attuning* and *labelling*” (PD4). She encouraged Ella (PD2), Yana (PD3), and Maddie (PD 4) to “sing the talk” because it was evident that the pupils liked music, explaining to Maddie, I don’t know if you are a singer but you could *sing the talk* because he is very interested in music (PD 4). She sought to deepen the participants’ understanding of the content by explaining “why” the particular strategy is appropriate. In PD 3 she explained the value of *inadequate portions*: “I’m not sure I would have all the paints in front of him. I’d offer him the choice of one or the other and once he has made his choice I would take the other away...and when he is fed up of it you bring in another colour and you offer another choice ...so that you are drip feeding him drip feeding him all the time a great way to keep him attending” (PD3). In PD 5 she clarified the importance of substituting verbal prompts with non-verbal communication saying, “I think perhaps use *expectant look* and *wait* or use an *exaggerated gesture* and *wait* because what is happening is, he is waiting for the verbal prompt. The problem is the verbal prompt and we need to get rid of that” (PD5). She linked the use of *providing choice* with giving the pupil control: We could offer her a little bit more *choice* and by doing that you are allowing her some control” (PD2).

More Knowledgeable Other's Suggestions about Resources/Activities

The adults were responsible for the context in which their ten-minute social interaction occurred, so a range of resources and activities were used across the lifetime of the PD. Following the sharing of the interactions, the group made suggestions on the causes of difficulties observed and how future interactions could be enhanced, referring frequently to resources/ activities. On a number of occasions, the MKO chipped in when a critical solution/suggestion was not forthcoming from the group; for example, when she observed that the presence of a particular resource/activity was the cause of the limited social engagement between the adult and the pupil or that the resource was not motivating enough for the pupil.

In the first sharing of the interaction clips (PD 2), Yana (WindyvaleT) and Violet (BridgeportT) were observed to have great difficulty gaining and maintaining their pupils' attention throughout the session. Both teachers had brought items much loved by the pupil (set of blocks and Barbie dolls respectively) to engage in play with their pupil. However, the pupils were observed to ignore the adults when they had access to their favoured item. Following lengthy group discussions on possible ways to enhance the interactions, the MKO advised that the teachers omit these resources from future interaction sessions, suggesting to Violet (BridgeportT) that, "You just might have to accept that those Barbies are becoming all-consuming and that maybe it's time to bin them for the moment and find some other motivating items". Heidi (BridgeportS) reported in PD 5 that she had her interaction in the sensory room and that her pupil often requested a blanket from a shelf in that room during their interaction session. Heidi was delighted with Keeva's ability to request what she wanted but bemoaned that she retreated under the blanket and remained there hindering the opportunities for interaction despite Heidi's attempts to incorporate the blanket into their interaction. The MKO recommended that the blanket should be removed from that room or that the interaction should occur in a different room.

The MKO also stressed the importance of using resources that were highly motivating for the pupil to support greater social engagement within the interactions. Following a group problem solving with Ella (ShanbaileyT) during PD 2 on why her interaction with Charlie during a painting session (leaf printing) had fallen apart, the MKO suggested that the resource was not motivating for Charlie: "perhaps there wasn't a "wow" factor when you put down the leaves, the activity seemed to be too matter of fact that sort

of thing, here is the activity let's do it". A similar problem arose for Maddie (GrindstoneT) in the clip shared in PD 3. Trevor was observed to ignore Maddie's efforts to get him to use the paint brush. He was observed to drop the brush and continually explore the paint using his hands. The group came up with various solutions for example, the use of sponges, bigger brushes, thicker brushes. The MKO then suggested that the resource (paint brush) may not have been an appropriate item for her pupil's developmental age and suggested what Maddie could do, linking the suggestion with what another group member had done: "He really wasn't interested in the brush to use as an implement, all he wanted was to squish really, to squish it, and there wasn't enough paint for that really. Perhaps what you need to do Maddie is, *follow his lead*. I can see why you wanted him to use a brush because you didn't want it on the floor and you didn't want it on the ceiling and you didn't want it on his clothes, but go back to Nuala's (ShanbaileyS) idea about the shaving foam, maybe that's the activity you need to be doing with him and go with him".

Shared engagement difficulties were observed in clips shared by two of the teachers Ella (ShanbaileyT, PD 4) and Yana (WindyvaleT, PD 5) as the pupils' attention was lost a number of times during the interactions. Their peers offered suggestions on what they could have done to prolong the shared engagement but did not identify that bringing only one resource (Ella brought items to make a plane and Yana brought a canister of bubbles) may have been the crux of the difficulty. Allowing the discussion to develop the MKO chipped in and suggested to Ella, "I think that having just one resource didn't lend itself to having 10 minutes of successful interaction. You did actually switch within the activity when you were losing him ...I think the nature of the activity did not lend itself to 10 minutes perhaps". Similar feedback was given to Yana. Síofra (ClonadooT) endeavoured to interact with Freddy without using any materials (shared clip PD 3) and she admitted that it was not as successful as she had hoped, as although Freddy was having fun there was no balance of control as;

...he was definitely directing it all...Looking back I see now I should have had things to move on to and objects to use because it really got stuck a good few times and he wasn't really into it, I thought the more he enjoyed it he would copy me a bit more which he didn't really.

The MKO acknowledged that although Síoфра had worked really hard to maintain Freddy's engagement with her she advised "it goes to show really that having no activities is not such a great idea for interacting with pupils like Freddy who are developmentally young especially for ten minutes because he became repetitive and you couldn't interrupt that".

There was clear evidence arising from the MKO's "Encouraging Talk" questions and comments (reported previously) that the adults were developing the expertise to advise each other on possible resources/activities that could enhance the interactions. However, their ability or perhaps willingness to reflect negatively on their peer's role in the use/non-use of resources did not change over the lifetime of the PD. The findings show that the MKO pinpointed when the resources/activities impacted negatively on the quality of the interaction. Possible explanations may be that the MKO had a highly developed ability to "reflect on action" and identify immediately the root of the problem while the adults required more time to develop this skill. Another possible explanation may be (highlighted earlier) that the adults were not comfortable giving criticism to each other, preferring instead to offer possible solutions that related to the resources used by their peer.

Suggestions about Pre-planning and Reflection

During the discussion fora, the MKO also drew the participants' attention to the importance of pre-planning the interaction session, and the need to reflect in action and to reflect on action.

Pre-planning for the interaction session.

The MKO drew the adults' attention to the importance of pre-planning the interaction sessions in three of the four discussion PD meetings. She suggested that pre-session thinking was required to support prolonged successful shared engagement within the interactions. Following the viewing and discussion of the engagement difficulties observed during Yana's (WindyvaleT) and Violet's (BridgeportT) interaction sessions shared in PD 2 and during Donna's (GrindstoneS) clips in PD 3, the MKO emphasised the importance of pre-planning. She suggested that pre-planning ensured the adults had options should they need to repair the interaction, "Planning is all about thinking, this is the way I'm going to develop the session and okay if it stalls I can move this way" (MKO

PD 2). She advised that the adults needed to plan the “bank of back-up” resources and/or strategies they would have “in their bottom drawer to keep the interaction going”. She acknowledged that they may not need to use them but recommended that they have them. Donna (GrindstoneS) bemoaned at the PD 3 discussion session that a number of her interaction sessions were “a disaster” because she could not follow Trevor’s lead of putting paint in his mouth, of licking/sucking the paintbrush, of squeezing paint on his hand and rubbing it on his sweater. When asked had she any successful interaction she identified water play. The MKO asked her why she thought that session was successful. She replied, “well there wasn’t anything in the water that I couldn’t copy”. The MKO then replied “So can I suggest it’s to do with planning, I don’t want to be harsh, but it is. You have to see what is going to happen here, you have to anticipate what could actually happen and plan to ensure it doesn’t” (MKO PD 3).

The MKO made a number of suggestions arising from the interaction observations about the adults’ language use. She advised the adults to plan the language they would use in the sessions “do I want to develop language about colour” (PD3) but to be aware and open to words evolving within the session. She encouraged them to plan for the use of vocabulary already in the pupils’ repertoire and to plan for revision of words heard in previous sessions by keeping note of language that had been heard “don’t forget to note the word he uses and find ways to incorporate it into another session” (PD4).

The following dialogue 6.2 (PD 3) came at the end of a long discussion on how Maddie could prolong future social engagements with Trevor. Maddie had highlighted that Trevor ate anything she used with him during the interactions. The final suggestion offered by a group member was to use jelly with him. The MKO then chipped in to advise the adults of the need to plan the objectives they wished to achieve with the jelly resource. This acted as a catalyst for suggestions from the participants on how the resource could be used to achieve communication objectives.

Dialogue 6.2: Recommending Planning

MKO: But say we decide to use jelly as our resource we need to think about what it is we are going to do with it and what will we use it for? Do I want to develop language say...talk about colour, do I want to get him to request, to turn-take.?

Nuala: You could use the shapes cutters and label the shapes.

- Sunita:** You could put the jelly out flat and then cut the jelly with the shapes and get him to label the shapes.
- Síofra:** You could sing, “this is the way we pour the jelly” and “this is the way we squash the jelly” and this is the way “we stir the jelly” (PD 3).

The need for reflection in action.

The MKO continually drew the participants’ attention to the importance of problem solving “on their feet/in the moment”. She encouraged them to become observers within the interactions and to recognise when the interaction “is falling apart...stalls”, or when there was “a lull” (PD 2), to be aware when they “lose the pupil” or the pupil “slumps” or “tunes out” (PD 4). She suggested that they needed to have this ability in order to maintain the interaction. Following Violet’s (BridgeportT) explanation in PD 2 that she had to leave the room during the interaction to get another resource in order to re-engage with Keeva the MKO suggested, “that’s where you have to think on your feet, you think ‘right this is falling apart what do I do next to keep her engaged?’” She suggested that instead of leaving to source a new resource, Violet could have done something differently with the resource already there. She acknowledged this was a difficult skill to develop suggesting “The more 10-minute sessions you do the more comfortable you are going to be problem-solving on your feet”. She sought to scaffold the adults to develop this strategy by encouraging suggestions from the group on what could have been done differently within the interaction rather than what to do in the future. In PD 3 there was evidence that the teachers were problem solving “in action”. Violet (BridgestoneT) offered “maybe you could have used more animation like I should have, be bigger, more dramatic”. Ella (ShanbaileyT) added “you don’t even have to use objects, you could get up and swing around or just jump up and down on your hands you know just move”. In PD 4 the MKO reiterated the importance of observation within the moment and reminded the group that sometimes there was a need to “dump” the objectives they had planned for the interaction to maintain the interaction stating,

Sometimes we are so caught up with what we want them to learn or what we think should happen in the interaction that we don’t see what they are doing. It’s so important all the time to watch what the pupil is doing and if the pupil slumps in any way, if the pupil tunes out in any way, *switch the activity* absolutely ... but even if

that doesn't work then you watch what the pupil is doing then you *follow their lead*" (MKO, PD 4).

The need for reflection on action.

The MKO also suggested the importance of reflection after the interaction in order to inform and enhance future sessions. She encouraged the participants to do so by revisiting the clips they had videoed as they aid in identifying what has been missed "in the moment": "Use the videos you make, look back on them ... Sometimes we miss the opportunities, when we are caught up in the interaction but looking back at the videos will show, what you missed or could have done" (PD2). She drew their attention to the value of revisiting the clips to identify strategies that weren't used and to reflect that if used they could enhance the interaction, "Your video clips are powerful tools, use them, go back to them and see what worked, what didn't work, what strategies you used and think about other strategies you could have used" (PD 5).

In the Dialogue 6.3 below the MKO refers to a section in Violet's clip viewed during the PD 2 session. Her comment scaffolds Heidi and Kim to reflect on what had been observed and what had been said.

Dialogue 6.3: Scaffolding Reflection

MKO: Sometimes we miss the opportunities when we are caught up in the interaction, but looking back on the videos you make, will show what you missed or could have done. The use of the hairdryer was lovely Violet, and Keeva loved it but you sort of missed the opportunity to build her communication using it.

Heidi: 'Cos you were brushing the doll's hair and you didn't notice"

Kim: That she picked up the hairdryer and Violet should have gone with what Keeva did, is that what you mean Tish?"

MKO: Exactly, you know by going back to view the videos and say to yourself "What should I have done there?"

Summary of Findings on Offering Suggestions

The findings in this category identified that the MKO took an active role in scaffolding the adults' learning. She continually motivated the adults to adopt the new

content (Butler et al., 2004) though her identification of other strategies from the PD content that could enhance the interaction. She scaffolded the adults to gain a deeper understanding of the PD content (Coburn, 2001; Timperley et al, 2007), by contextualising the content, by making links between particular strategies and the individual pupils' learning characteristics and identifying strategies that are particularly supportive of pupils on the AS engagement with others. The MKO offered suggestions when problems arose and when the nub of the problem was not identified by the group, thus supporting the adults to continue to implement the content (Butler et al., 2004)

The findings also highlight the supportive role taken by the MKO in the development of the adults' understanding of the importance of planning and reflection (Ince, 2017). This evidence, taken in conjunction with "Supporting Reflection amongst the Participants" in the Encouraging Participant Talk category indicates that the MKO informed the exchanges within the discussions where necessary in order to scaffold deeper reflection by the adults on their implementation of the PCK. Clarke & Hollingsworth (2002), suggest that the quality of change arising from a PD initiative is influenced by the participants' abilities to reflect. There was strong evidence in the study that the adults developed the ability to "reflect on action" in particular on their own practice. However, the participants rarely reflected negatively on each other's practice preferring to offer solutions about the resource/activity used to support the interaction. The adults had expressed their discomfort at sharing and discussing their interactions in the post-PD interviews which may account for the lack of negative critique within the discussion group.

The third category of MKO Talk identified within the discussion fora data were Affirmation of Good Practice. The findings are reported below.

Affirmation of Good Practice

The MKO did not allocate a formal time slot to provide feedback to individuals during the PD preferring the adults to be active in their own learning by allowing the feedback to come from within the group. However, throughout all of the PD discussion sessions the MKO positively affirmed the adults' use of strategies and resources, and their problem solving in action skills. She also acknowledged the positive relationships she observed developing between the adults and their pupil.

Affirmation of Strategy and Resource Use

There was evidence in the MKO's speech that she affirmed participants' use of strategies, identifying specifically what they had used well and articulating why it worked. She also commented positively on their selection and use of resources.

The MKO acknowledged regularly to the group when she observed the adult implementing specific content, "*Labelling*, you are absolutely fantastic at *labelling*" (to Violet PD2)/"your use of *imitation* was a fantastic, a fantastic element of your session you know" (to Yana PD 2)/"...and when you were pouring the sand that was lovely as well because you were *self-talking* about it saying, 'pouring the sand' and you could see him glancing over at you...your use of *pausing* was very good" (to Maddie PD3). When Yana showed self-doubt about her predominant use of *following the pupils' lead* having observed Siofra's use of the strategy *switch the activity*, the MKO affirmed her strategy use for her particular context saying, "You were absolutely right in your case, to move the interaction forward you *followed her lead*, that's what you needed to do for your particular pupil" (PD 3). Counteracting self-doubt was a role the MKO took throughout the initiative. During PD 3 following a predominantly negative self-analysis by Violet on what she had done during an interaction, the MKO interjected with, "She was very interested in you, I mean you were very hard on yourself to tell you the truth, I thought there was a lot of work going on" to which Violet replied "Oh, thank God I passed, (laughter), I passed" (PD 3). She also countered Yana's negative self-criticism during that same meeting saying, "I think you're being very hard on yourself ... You're all being very hard on yourselves, I mean there is a huge difference between the clips we saw in the previous meeting and now" (PD3). During the fifth PD meeting she sought to boost Ella's confidence when she bemoaned, "he often forgets that I'm there and he does his own thing" to which the MKO replied, "What I have to say from the video footage that I have seen, I can see that you are very hard on yourself, he really likes you being there" (PD 5).

The MKO often followed up an affirmation of good strategy use to emphasise to the group, the value of using the strategy, "She *imitated* him a lot didn't she and sometimes that is what we need to do so that they (pupils) become aware that we are in their space you know rather than us expecting them to imitate us all the time (about Sunita PD4)/ "I loved the way you *recast* every time he said 'pray' you did not say 'No, it's press' you just automatically came in with the correct word so that he was hearing it all the time without

being corrected” (to Síofra PD5). During PD 5, Heidi (BridgeportS) recounted that she had changed the way she interacted with Keeva when Keeva requested to go inside from the playground. She reported that before she would have said, “the door is locked and we’re not going in” whereas now she used fun in the form of animated and exaggerated gestures while pulling the door and saying sadly “oh can’t open, can’t open”. The MKO again affirmed the strategy use and revised the understanding underpinning the use of the strategies,

Wonderful, and that’s the *balance of control* I keep talking about, we’ve been the controllers and they (the pupils) find it so hard to deal with being directed all the time and now we have given them the control back and you (Heidi) have found a way of being controlling but in a nice fun way rather than being didactic and directive.

The MKO also praised the participants’ use of resources in the interaction saying, “Heidi has been having fantastic success with the balloons they (Heidi & Keeva) have been having great interactions” (about Heidi PD 5). She acknowledged the teachers’ liberal use of the resources and linking it to the success of the interaction “What I really liked about your session as well Violet, was there was lots of play dough, you weren’t stingy with it, you know it was a big lump” (to Violet PD3)/ “And what was really, really good was you didn’t give a hoot about how many stickers she used Yana, you allowed her to have as many stickers as was needed to keep her engaged, there was none of this ‘oh Janey Mac she will have them all used up!’ And that was great, that kept her involved with you” (to Yana PD 3). She also affirmed the use of a resource that the other adults felt was not effective, suggesting that the resource was motivating but that it was the way the resource was used that had a negative impact: “There was something about the ribbons, she was really interested in them and this was important, as the pace wasn’t very fast, but she didn’t leave” (to Yana PD3).

Affirmation of the Adults’ Problem-Solving Skills

The MKO emphasised the value of problem-solving by acknowledging and identifying the problem-solving “in action” abilities of the adults. Violet (BridgeportT) had reflected negatively on her shared interaction at PD 3 stating, “I felt at times the pace was too slow yes I did, it got a bit, em, repetitive”, to which the MKO replied “But then you realised that Violet and it seemed as if you said to yourself ‘oh I need to move this on’

and you switched the activity which was great”. Yana (WindyvaleT) had also negatively reflected on her interaction with Elana but the MKO interjected stating, “You have to give yourself credit Yana, there was a time there where there was a lull and I thought now she’s (pupil) gone and you had nothing really to switch to, but you thought on your feet and you changed what you did with the ribbons. By switching the activity, she didn’t leave, she stayed, suggesting ‘I like this, I like being with Yana’” (PD3). The MKO also identified and described Ella’s (ShanbaileyT) problem solving “in action” to the group in PD 3,

You used a highly motivating resource; you knew that it was going to work and how you were going to work with it to a certain extent. And then you used the strategies, you had to pull the strategies from within yourself, like you didn’t go into the session thinking I’m going to exaggerate, you realised quickly this is quite hard (I’m losing him). I really need to exaggerate really hard, and he loved it and all of a sudden, he was sucked in and he thought this person is really interesting and the more you acted silly and the more you exaggerated the more he laughed heartily and that’s what we need for the moment.

Acknowledgement of Growing Relationship between Adult and Pupil

General and specific encouragement was given by the MKO to individuals and the group continually across the PD meetings. In the following exemplar taken from PD3 Yana (WindyvaleT) shared an interaction she had with Elana during which there were a number of episodes when Yana and Elana were not interacting. Having viewed the clip, the other adults offered suggestions on the causes of the non-interactive bouts. The MKO allowed the reflection to flow for a number of turns and then identified the positive aspect of the interaction.

You must remember there were 10 solid minutes of both of you in each other’s space, and that is a huge achievement. That’s really, really important to keep in mind. You know it’s easy for us to criticise but there were ten solid minutes. She did tolerate you in her space just so long as they were on her terms and that’s okay for the moment...she wasn’t trying to get out the door, she knows how to open a door, she knows how to do a run (PD 3).

She acknowledged the evidence of improvements in Yana’s and Elana’s shared interactions on numerous occasions and explained the importance of ensuring that the

pupil stayed within the interaction, “I see a huge difference between what we saw in your previous interaction and this one (to Yana in PD3). I can see in your interaction with Elana you know, that she is happy to stay with you now which is absolutely brilliant because you can’t get “in” unless they (pupils) stay with you (to Yana PD5).

The MKO affirmed the growth in the positive relationship between the dyads as they evolved throughout the initiative, and in PD 4 she identified that the pupils had moved physically closer to the adults and they were less inclined to abandon the interaction altogether accrediting the adults with that success, “I can see the bonding in the interactions. They (pupils) are up against you now and they are smiling and even if they are cross or not too happy, they only go so far and they come back, they are happy to be in your space and that’s really brilliant” (to group PD4)/ “I can see a huge difference in the bonding that has occurred with every one of you” (to group PD5). The MKO also acknowledged the relinquishing of control by the adults and suggested their giving of control to the pupil as the reason for positive shared interactions, “The bond is strengthening because you are drawing him in. He wants to be with you because he is thinking this person is an idiot (lots of laughter) and I’m the one who can do things and it is really good” (to Ella PD5)/ “You kept chipping away until you brought him in until you drew him in and then once he was interested you knew not to be on your own agenda and you went with him” (to Síofra PD5).

Summary of Findings on Affirmation of Good Practice

The findings in this section identify the role the MKO took in nurturing the adults’ self-esteem through affirmation of their implementation of the strategies within the interactions. This affirmation of the adults’ practice is pivotal in sustaining morale (Cordingley et al., 2003) as most individuals want and need affirmation. The MKO also identified the positive impact the adults’ new practice had on the relationships within the classes. Seeing positive outcomes of the implementation of the PD content increases the likelihood of its adoption (Guskey, 1985). Often practitioners are too close to the coal face to see the positives of their own practice and it requires an objective and informed other to really highlight what they are doing well. The MKO also sought to counteract overly negative self-reflection, by drawing the adult’s attention to the positives, and in doing so re-energising them to continue implementing the PCK.

The findings for the fourth category of MKO Talk, Provides Clarification are reported below.

Provides Clarification

The MKO was only heard to answer a small number (n.16) of questions during the discussion sessions across the lifetime of the initiative. This may be explained by the fact that no time was allotted specifically for MKO questions, as the MKO believed that her role was a “guide on the side” and that the adults would be active in their own learning. She held that the expertise within the group should and would in the main support the group learning. She also hoped that, by adopting the role of “guide on the side” she would empower the group to become autonomous problem solvers. The questions posed by the participants were therefore spontaneous and were mainly directed at the MKO. The majority of the questions (n.9) sought clarification from her when the participants questioned their own understanding of the content. However, the MKO often used the opportunity presented to deepen the participants’ understanding. In Dialogue 6.4, Heidi (BridgeportS) sought clarification on how to use the strategy “labelling” during an interaction.

Dialogue 6.4: Providing Clarification

Heidi: Can I just ask you (addressing the MKO) is it okay to change the word at this point like you know when you’re rolling the dough say, to say something else, maybe pushing the dough?

MKO: Oh absolutely

Heidi: At the same session though during the same session?

MKO: Absolutely, you see what we are trying to do at the moment is just to pull her in, pull her in to engage with us and whatever it takes to pull her in. At the moment she’s glancing over but we want more than this ... we want her to think ‘oh what’s this person doing she’s really interesting’. That’s what we want though, and whatever it takes. So, change what you are doing with the dough if you are losing her and label what you are doing” (PD3)

Following a discussion on how to scaffold Charlie (pupil) to use his words without a verbal prompt, Heidi (BridgeportS) asked “So if you have done the *expectant look* and

exaggerated gesture and they are still not speaking would you give them the word then, is that it and try and get him to say it the next time?” The MKO clarified the procedure and provided the rationale for using it, stating “Absolutely, we want our pupils to stay with us so if he is not giving us the word we are waiting for, give it to him as you just don’t want to frustrate him, but use the expectant look again and again and hopefully the response will come” (PD 5).

The participants also sought verification that what they saw others do, or something they had done themselves, was correct. Having observed Trevor ignoring Maddie in PD2 a discussion ensued and Violet (BridgeportT) sought verification from the MKO of what she perceived as the correct strategy asking, “So there was some point there then when I suppose you need to think of something you could do to switch...to switch the activity...within that activity is that what you would do”? To which the MKO replied, “Exactly Violet and that is where your stash of goodies, your stash of motivating items come in, you introduce a new item and if you haven’t got one (a different item) then you switch the activity within the activity”. In the following exemplar a question asked by Violet provided the MKO with the opportunity to give advice to another participant indirectly. Síoфра commented following her shared clip “While it was real boring to watch he was actually happy enough to keep saying 3 ,2, 1, press, 3, 2, 1, press”. Violet interjected, “But once you started doing the rhyme it brought out the word, that was a trigger wasn’t it (looking at the MKO)? Whereas he wasn’t inclined to do it if the 1, 2, 3 wasn’t there so that was a kind of a lead, a prompt wasn’t it?” The MKO replied, “Yes you’re right Violet, it’s a verbal prompt and it is very important to fade that as soon as possible” (PD 4).

The MKO’s advice was sought on three occasions. Violet and Heidi sought advice on dilemmas they encountered during their interactions, while Maddie’s query related to the appropriateness of a resource she intended to use. The MKO gave advice that addressed the individual’s queries, but which was equally appropriate for all the participants to take back to their classrooms. The following dialogue from PD 4 illustrates how, while giving advice to Violet on how to address her difficulty with keeping Keeva engaged with her, the MKO used the opportunity to make the advice relevant for the whole group.

Dialogue 6.5: Providing Advice

Violet: I think (addressing the MKO) the challenge is just sometimes. Well I just find this when you start to lose them sometimes it can be just very difficult to bring them back. When they start just going into their own world and maybe some kind of repetitive play and you are trying to introduce that element of surprise or have something else. It can be very hard sometimes to break them out of that, that's what I find sometimes, and you are kind of thinking Oh God you know, how am I? and you have thought of ideas, but you have used them all up and you are thinking what am I going to do now?

MKO: I would say 90% of pupils with ASD who are developmentally young, love rough and tumble love the "craic", love the "novel", love the "different". You mightn't have another item in the box as you have used them all then you might just act totally mad or just take them out of the chair and give them a few minutes of rough and tumble, just roll them around or just give them a swing or something totally out of the blue or just to get that bond back. So, it's all about knowing your learner. Okay, he really likes sensory input, maybe your learner loves singing, they definitely love the novel, the exaggerated and the silly use it.

Chapter Summary

The findings on the nature of the MKO's talk reported in this chapter highlight the value of having an informed expert to facilitate learning during discussions of practice by the participants. The evidence shows that through her use of open and closed descriptive questions the MKO supported the owners of the clips to think about the content they had implemented and to become more familiar with and adept at, identifying the strategies they used or did not use during their interaction. This style of question also acted as a catalyst for dissonance and for reflection on action by the owner of the clip. The open and closed "connection" questions ensured that the non-owners of the clips thought about the PD content they observed in others' interactions. The reflection abilities of each individual, and of the group, were developed by encouraging them to identify the positive and not so positive elements of the interactions. Encouraging the group to identify alternatives through MKO supported dialogue supported the development of problem solving skills. However, there was little evidence of challenge by the participants of each other's practice

across the discussion sessions. Challenge (that may lead to dissonance) is required to ensure that real change occurs and for practice to change (Grieve, 2009; Pedder & Opfer 2013). The findings show that the MKO affirmed the adults' practice and sought to deepen the adults' understanding by posing further questions and making suggestions where necessary. The findings in this chapter and those presented in chapters four and five will be discussed in the following chapter.

Chapter Seven: Discussion

Introduction

The purpose of this study was to positively influence the teaching and learning of prelinguistic social-communication skills to young pupils on the AS. These skills are identified in the literature as being pivotal for language development but are known to be very problematic for children with a diagnosis of autism. Certain strategies have been identified in social interactionist literature and in previous empirical research as being effective when used by the caregivers of preschool and very young children on the AS to promote the development of those children's social-communication abilities. The researcher believed that the use of such strategies by classroom adults would also be effective in addressing the compromised social-communication skills of the school-going pupils on the AS.

A particular model of PD, with these strategies as its core PCK, was developed by the researcher to achieve this purpose (Fig. 2.1). The model was underscored by the researcher's social constructivist view of learning; learning occurs within a social context, an active role is played by the learner, learning is enhanced by the presence of a more knowledgeable other and the quality of the learning is influenced by the dynamics within the learning environment (Vygotsky, 1978a). This view of learning emphasises the mutual interplay between the learner and the communicative partner(s) (Sameroff, 2009). Central to this transactional view is the recognition that the outcomes for the learner will be influenced by their own characteristics as a learner and the characteristics of the communicative partner supporting the learning (Sameroff, 2009).

The researcher and adult participants worked together over an academic year within the framework adopted for this model of professional development. The learning opportunities for participants included engagement during face to face meetings with social-communication content, opportunities for implementation of and reflection on the content within the participants' own contexts, and fora for discussion and sharing of ideas on the implementation of the PD content. The researcher adopted the role of more knowledgeable other within the PD meetings to scaffold the participants' learning.

The findings reported in the previous three chapters indicated that the model of professional development was effective in achieving the overall purpose of the study.

Positive change occurred in all ten adults' (5 SNAs & 5 teachers) interaction styles and in the five pupils' social-communication skills. The adults increased their use of the facilitative and eliciting strategies introduced at the PD meetings while their use of directive communication strategies reduced considerably. They reported using the PD content with other pupils in their class and sharing it with other adults in their schools. The adults' abilities to reflect and to problem solve were enhanced and beliefs were also found to have changed. The implementation of the PD content supported the development of the pupils' social-communication abilities. The pupils communicated more frequently, their nonverbal and verbal initiations increased, they remained in positive shared engagement with their classroom adults for longer periods and their protests decreased. The frequency of pupil-initiated interactions increased and lengthened in duration. Outcomes relating to the pupils' language abilities varied across the cases. The findings also identified environmental factors that influenced the teaching and learning processes within the classes. Contexts that allowed the learner a sense of control supported more positive mutual interactions. The learning characteristics of individual pupils were also found to influence the teaching and learning that occurred during the interactions.

This study was concerned with exploring the nature of, and changes in, the teaching and learning processes of social-communication in autism-specific classrooms. The findings are discussed in two sections. The findings on how the adults, the pupils and the learning environment influenced the learning process within the classroom interactions are discussed in section one. The second section addresses the impact of contextualising the adults' learning, facilitating the adults' active engagement, and the influence of the MKO's on the learning within the model of the PD.

Section One: The Social-Communication Teaching and Learning Processes within Classes for Pupils on the Autism Spectrum

The nature of adult and pupil communicative behaviours observed during the pre- and post-PD interactions will be discussed under the following themes: the balance of communication, the adults' style of communication, the function of the pupils' social-communication, and the pupils' language use. The mutual influence of the adults' and pupils' communication on the interactions will also be explored in this section. Discussion of the influence of the context of the interactions on the social-communication and language learning will conclude this section.

Balance of Communication

Communication occurs within a framework of sharing and social reciprocity with each partner listening, responding and acting on what is being shared in a manner that encourages on-going communication. However, observations of the pre-PD interactions of classroom adults and their minimally/nonverbal pupils on the AS in this current study revealed a lack of balance within the interactions. Like caregivers in previous research (Adamson et al., 2001; Kasari et al., 1988; Lemanek et al., 1993; Willemsen-Swinkels et al., 1997) the classroom adults worked hard at maintaining their pupil's engagement with them. The classroom adults were seen to dominate the interactions, communicating with considerably more frequency than their pupils (Elder & Goodman, 1996; Freeman & Kasari, 2013; Meirsschaut et al., 2011; Willemsen-Swinkels et al., 1997). The pupils responded more frequently than they initiated (Corbett et al., 2010; Elder & Goodman, 1996; Forde et al., 2011; Sigman et al., 1986; Stone et al., 1997).

While all of the adults dominated and communicated more frequently than their pupil during the pre-PD interaction sessions, individual pupil characteristics seemed to influence the interactions, with the dominance and frequency linked in varying ways to the verbal ability of the pupils. In line with previous research (Konstantareas et al., 1988; Willemsen et al., 1997), the adults of the nonverbal pupil in this study worked hardest at maintaining their pupil's engagement as they communicated at a higher rate than the other classroom adults. However, unlike previous reports that parents of nonverbal children were more dominant than parents of verbal children (Elder & Goodman, 1996; Willemsen-Swinkels et al., 1997), the adults of a verbal pupil (Shanbailey) were the most dominant and were considerably more dominant than the adults of the nonverbal pupil (Grindstone).

Differences in pupil characteristics may account for this latter finding. The Shanbailey adults reported that their (verbal) pupil was difficult to interact with as he wasn't motivated to communicate with them. His teacher described him as "well able", and "needing to be pushed". This pupil's reluctance to communicate was confirmed during the pre-PD interactions as he was observed to be the least frequent pupil communicator. His classroom adults possibly sought to compensate for his lack of social-communication with them by continually filling in the silences. The nonverbal pupil (Grindstone) was described by his teacher as "easy to work with". He was the most frequent pupil communicator during the pre-PD interactions. This pupil's learning characteristics may have ensured that the adults did not need to focus to the same extent as others on eliciting communication from him. The closest to a balance of communication within the pre-PD sessions was observed between the Windyvale adults and their pupil. This pupil was the most frequent verbal communicator. However, her communication was mainly to express her desire to escape from the academic activities the teacher brought to two of the three interaction sessions and to indicate that she wanted to play alone with the resource brought to the session by the SNA. The findings from these three cases indicate that pupil characteristics influence the balance of communication observed between early communicators and classroom adults who have yet to acquire the knowledge of how best to support more balanced interactions.

A more equal balance was evident in the adult-pupil communication during the post-PD interaction sessions. The overall rate of pupils' communication increased, reflecting previous findings that the use of social interactionist strategies supports increased pupil social-communication (Aldred et al., 2004; Girolametto et al., 2007; Venker et al., 2011). The greatest improvement in communicative balance occurred between the Shanbailey adults (most dominant adults during pre-PD sessions) and their verbal pupil, as his rate of social-communication more than doubled. The pupils continued to be predominately responders during the post-PD sessions. However, as a group their overall initiations doubled, with the Shanbailey pupil initiating five times more frequently than he did at the outset of the study. This latter outcome confirms previous research that children on the AS initiated more frequently when their communicative partner used responsive communication (Girolametto et al., 2007; Green et al., 2010; Ingersoll et al., 2005; Mahoney & Pereles, 2003; Ruble et al., 2008; Siller & Sigman, 2002; Venker et al., 2011) and adds to findings that when classroom adults are trained in social interactionist

strategies, the initiations of their pupils on the AS increase (Kossyvaki et al., 2012; McAteer & Wilkinson, 2009). In particular, this study found that the use of a highly responsive style of communication by the adult(s) is very appropriate for supporting a reluctant verbal communicator on the AS to become a more active communicative partner.

Adult Communication Style

The nature of the adults' communication style, its impact on the interactions and what influenced the adults' communication will be discussed in a pre-post format in this section.

Adult style of communication and its influence on the interactions pre-PD.

The overall style of adult communication during the pre-PD interaction sessions was predominately directive (comments and actions that directed the pupils' behaviours and language use) mirroring previous findings on the interactive style of caregivers of developmentally young children on the AS (Diken & Mahoney, 2013; Doussard-Roosevelt et al., 2003; Freeman & Kasari, 2013; Lemanek et al., 1993; Meirsschaut et al., 2011; Shapiro et al., 1987; Sigman et al., 1986; Watson, 1998; Willemsen-Swinkels et al., 1997), classroom adults of pupils with language delay (Girolametto et al., 2000) and teachers of pupils on the AS (Tjus et al., 2001). The adults' use of directive communication was seen to have a negative transactional impact on the interactions as a sequential analysis indicated that the majority of pupils' protests immediately followed the classroom adults' use of directive actions or utterances, suggesting that the pupils did not like to be told what, or how, to do something. Further, the adult communication that immediately followed pupils' protests was predominately directive in style, indicating, like the findings of Dawson et al (1990), that the behaviours of the children on the AS adversely affect their communicative partners' behaviours and that the partners are drawn into directive interactions (Wai Wan et al., 2012). The frequency of pupil protests decreased considerably during the post-PD sessions when the adults used predominately responsive communication. The pre-PD findings show that adults' directive communication elicited protests from the pupils and the pupils' protests elicited directive communication from the adults. Continual negative interactions undermine the development of positive relationships in any classroom leading to reduced opportunities for learning. The need for positive relationships with pupils who have compromised social-communication skills is fundamental to their learning.

Directive communication and shared attention.

The adults' predominately directive communication style seemed to negatively influence the time spent in positive shared engagement as the adults and pupils spent on average less than half of the pre-PD sessions in positive shared interaction. This reflects previous findings that caregivers of children on the AS had great difficulty maintaining their engagement within interactions (Adamson et al., 2009; Patterson et al., 2014; Willemsen-Swinkles et al., 1997). Contrary to the finding of Diken and Mahoney (2013) that the children were least engaged with the most directive mothers, two pupils in this study (Grindstone & Windyvale) spent more time engaged with the classroom adults than did their counterparts in other settings despite the fact that these adults were the most directive in style. Further, unlike the report of Willemsen-Swinkles and colleagues (1997) that adults had greater difficulty maintaining the attention of nonverbal pupils on the AS than pupils who have speech, the pupil in this current study who had no speech spent more time in positive shared engagement than did the verbal pupils. This pupil used his social-communication mainly to comply with his adults' communication. The verbal pupil from Windyvale engaged with the adults for the same duration as the nonverbal pupil (average; 55% of the sessions) even though her classroom adults used the second highest frequency of "*behaviour directives*". However, her social-communication was mainly used to protest and to make non-social requests. This latter finding contradicts Mahoney and Wheedens' (1999) suggestion that teachers' use of directiveness elicited compliance by young children with SEN.

The findings from the Grindstone and Windyvale cases suggest that factors other than directiveness influence pupil compliance. The Grindstone pupil had attended an ABA preschool and continued to be tutored twice a week after school during the PD initiative, suggesting that perhaps he was very familiar with, and had learned to comply within didactic interactions. The Windyvale pupil used her social-communication mainly to protest and to request what she wanted, suggesting that this pupil remained in the interaction as she was prepared to fight for control. The findings in this current study propose that pupil characteristics play a role in determining the duration and quality of shared engagement with highly directive adults.

Nature of adult directive communication and shared attention.

The nature of the adults' "directive" communication was also found to impact on the pupils' attention. Two types of directive communication were used by the adults; "*behaviour directives*" (actions and utterances that demanded a response; behaviour control, commands, non-verbal commands, blocking and removing) and "*communication cues*" (utterances that expected a response e.g. test questions, verbal prompts and yes/no questions). All five pupils ignored the adults more frequently when the adults used "softer" directives (communication cues) compared to when they used more strident directives (behaviour directives). Sigman et al. (1986) reported similar findings to the effect that the young children on the AS in their study communicated more frequently when their caregiver used commands than when they used less directive utterances such as "suggestions". The findings in this current study indicate that, if given their choice during the pre-PD interactions, the pupils would not have engaged with the adults. These findings highlight the pivotal importance of developing a bond with pupils on the AS so that they seek to communicate with their classroom adults rather than interacting because they are commanded to do so.

Pupil language and adult directiveness.

The nature of the classroom adults' directiveness seemed to be influenced by the pupils' language abilities, mirroring previous findings (Kasari et al., 1988; Konstantareas et al., 1988; Strid et al., 2013). However, this study found that the pupil's individual characteristics also influence the adults' communication style. The adults of the nonverbal and minimally verbal pupils (Grindstone & Clonadoo) in this study used "*behaviour directives*" (communication to control and redirect the pupil's attention) more frequently than any other style of communication during the pre-PD interactions. The adults of two of the three more verbal pupils on the other hand used "*communication cues*" (communication that expected a response) more frequently than "*behaviour directives*". However, the adults of the fifth pupil (Windyvale) used considerably higher rates of "*behaviour directives*" than the adults of the three other verbal pupils. The Windyvale adults' use of "*behaviour directives*" may be attributed to the challenges they described in endeavouring to establish and maintain interactions with their pupil. They reported that the pupil had lots of speech but that she was difficult to work with. Her teacher described her as "*wilful...so determined to have her own way*". This pupil was heard to protest

significantly more frequently than the other four pupils during the pre-PD sessions. In their efforts to encourage appropriate social behaviour the adults were continually drawn into using directive verbal and nonverbal communication. The learning characteristics of this particular pupil seemed to influence the directiveness of the adults more than her language ability. This is in line with Sameroff's (2009) suggestion that interactions between adults and children are transactional with the behaviour of the child impacting on the behaviour of the adult and the behaviour of the adult impacting on the behaviour of the child. In this case the adults were drawn into use of elevated rates of "*behaviour directives*" in order to establish and maintain involvement from her, while the pupil may not have wanted to interact with them because of their use of "*behaviour directives*".

Adult style of communication and its influence on the interactions-Post PD.

Few studies have explored specifically whether the use of adult "directive" communication decreases following social-communication professional development. While it may be deduced that increasing the use of adult responsive communication will lead to reduced directive actions and utterances in adults, the negative impact of directiveness on adult-child interactions highlighted in the literature emphasised the need to specifically target its reduction in this current study. Thus, while increasing the adults' knowledge of responsive strategies, their attention was drawn to the need to reduce the use of directive communication. Only three studies were found that explored the relationship between social-communication training and the subsequent directiveness of adults interacting with young children on the AS. Mahoney and Pereles (2003; 2005) reported in both of their studies (procedure and content similar in both studies) that participation in the year-long social-communication intervention did not significantly impact on the parent's directiveness while Aldred et al. (2004) found that the directiveness of the parents in their year-long study had decreased by 7.6%.

Concurring with Aldred and colleagues' findings, the adults in this current study reduced their use of directive communication following their participation in the PD over an academic year. However, the directiveness of the adults in this current study had decreased by 33%. Possible explanations for the lack of reduced directiveness reported in Mahoney and Pereles' studies may be a) differences in content provided to the participants and b) how the learning occurred during the training. Mahoney and Pereles did not target the reduction of adult directiveness specifically within the content of their PD, unlike

Aldreds' and this current study. Mediation of the content within the training context also differed across the studies. In Mahoney's studies the facilitator met with the adults in their homes for an hour each week for an average of 30 sessions. During that hour the parent was introduced to one or two new social-communication strategies and the implementation of the content was also discussed. In Aldreds' research and in this current study, the adults regularly shared and discussed video of their implementation of previously learned strategies with the facilitator and with other adults. The protocols of specifically addressing "reflection on action" in the current study provided greater opportunities for the individual and the group to identify and discuss episodes of directiveness. A possible explanation for the differences in reduced adult directiveness in this current study compared to that found in Aldreds' may be that, in this current study the adults shared and discussed their interaction clips within a community of learners. A number of the participants reported in their post-PD interview that their knowledge was enhanced by what they saw and heard during these observation and discussion activities. The nature of *how* content is mediated within PD initiatives is identified as pivotal for effective PD outcomes (Desimone, 2009). This current study highlights the importance of reflection on action and opportunities for feedback from both a "more informed other" and from peers.

This study builds on the research on the use of facilitative actions and utterances by parents of children on the AS (Aldred et al., 2004; 2010; Giromalletto et al., 2007; Mahoney & Pereles, 2003; Oono et al., 2013; Siller et al., 2013; Venker et al., 2011) and by adults working in autism-specific classrooms (Kossyvaki et al., 2012; McAteer & Wilkinson, 2009). However, this current study also shows how participation in this PD empowered two highly directive classroom adults to make considerable positive changes to their interaction style, with the teacher quadrupling and the SNA doubling their respective use of nondirective communication. These positive findings in relation to decreased use of directive and increased use of nondirective communication highlight the value of professional development on the topic of social-communication as a means of supporting highly directive classroom staff in making positive changes to their interaction styles.

Shared attention post- professional development.

The reduction in the adults' use of "directive" communication and their increased use of social interactionist strategies were seen to significantly influence the duration of

positive engagement during the post-PD interactions, reflecting research carried out with parents (Oono et al., 2013; Girolametto et al., 2007; Aldred et al., 2004; Mahoney et al., 2003). However, only one study (Girolametto & colleagues) explored the nature of the shared attention occurring within adult-child interactions. They found that the frequency of child-initiated interactions within the shared engagement episodes was low during the initial observations but increased considerably between two of the three dyads following the adults' access to PD in social interactionist strategies. Nonetheless, no child-initiated interactions were observed within the third dyad's session, indicating that the parent of the third child had developed the skills to woo their child to remain engaged with them for longer (increasing the child's attention and responding abilities) but had not developed the skill to support their child to initiate an interaction. All three skills of attending, responding and initiating are necessary for a child to become an effective communicator. In this current study the frequency of child-initiated interactions increased with all eight adults across four of the cases (the fifth case did not supply the required number of post-PD interaction clips to allow a comparison). The participants in both Girolametto's study and this current study were taught strategies to support child initiations and both sets of adults had opportunities to implement the content and review its implementation with their peers and facilitator. However, this current study spanned over a nine-month period whereas the adults in Girolametto's study participated in an 11-week initiative suggesting that duration of the training programme may have had an impact on the participants' learning and that the parent in Girolametto's study required more time to develop a greater ability to implement the content.

This current study builds on the research carried out by Girolametto and colleagues (2007). This study explored the frequency and duration of each pupil-initiated interaction; the role of the adult in sustaining those interactions and evidence of reciprocity within the pupil-initiated interaction prior to and following adults' participation in a social interactionist PD. During the pre-PD interactions more than half of the pupil-initiated conversations on average terminated before they began, the majority of the conversations were very brief (2 turns or less), with only 3% continuing for six turns or more. These pupil-initiated interactions were cut short mainly by the adults' use of directive communication. There was also no evidence of reciprocity in the pre-PD conversations that lasted two turns or more with the pupils leading almost all of the interactions they initiated. Participation in the PD ensured the classroom adults supported more frequent

pupil initiated interactions. The adults also responded to the pupils' initiations in a positive manner more consistently as four-fifths of the pupil initiations developed into an interaction and a quarter of the conversations continued for 6 turns or more. However, reciprocity was not observed in those post-PD, pupil initiated interactions in three of the four cases as the pupils led the majority of the interactions they initiated. This latter finding suggests that either the adults were allowing the pupil to control the interactions to maintain their engagement for longer periods or that the adults had not acquired the skill to initiate within a pupil-led topic in a nondirective manner. The former explanation is the more plausible as during the PD the adults were continually encouraged to follow the pupils' lead so that the pupils had multiple opportunities to understand that they could control their environment. Further there was evidence that the adults in the fourth case were initiating in a nondirective manner within the interactions. While true reciprocity did not develop in the three cases, the initial steps of the pupil initiating and sustaining an interaction were firmly in place. Interestingly, the ability to turn-take within conversations is well established in neurotypical development by nine months (Trevvarthen & Hubley, 1978) yet three of the four school going pupils in this study had not achieved this compromised milestone over a nine-month intervention which highlighting the importance of classroom adults addressing this skill in an on-going basis.

To the researcher's knowledge, this is the first study to specifically explore the nature of pupil-initiated shared attention episodes following adults' participation in a social interaction professional development initiative. Two adult behaviours were pivotal in supporting prolonged pupil-initiated interactions in this current study; the consistent use of non-directive communication and allowing the pupil to lead the conversation. The former finding is not in line with Mahoney and Wheedens' (1999) suggestion that adult behaviour directives may be required to ensure more active levels of child participation. The latter led to predominately one-sided conversations between three of the four dyads. This finding suggests that on the path from being a responder (also one sided but the pupil is passive) to being actively involved in a reciprocal conversation, early communicators on the AS may need to go through a period of controlling the conversation. The findings identified in this study on what specifically supports prolonged pupil-initiated interaction may contribute to future social-communication professional development and further strengthen the argument for the use of social interaction strategies with early communicators. The task for the classroom adults will be to recognise when their pupils have reached the point

where they can be supported to successfully transition from being in control of the conversation to sharing that control. Evidence from this study shows that balanced communicative turn-taking within interactions between developmentally young pupils on the spectrum and their classroom adults requires very effective teaching and a considerable amount of time to develop.

Function of the pupils' social-communication.

Reflecting Kossvaki et al. (2012) finding; providing PD relating to social interaction strategies to classroom adults in this current study led to increased use of communication by the pupils to socially interact. The abilities of the pupils in this current study to “request social routines” and to “seek social attention” had increased considerably. This is in sharp contrast to the function of the pupils' communication observed during the pre-PD sessions when the majority of their interactive actions and utterances as a group were used to comply with the adults' requests, prompts and commands. Skills to socially interact are seen to be pivotal for cementing positive affective relationships between neurotypical young children and their caregivers as they increase the likelihood of more and longer episodes of positive engagement. They are particularly important for school going early communicators on the AS they support the pupils' movement towards an understanding that interactions can be enjoyable. Further, they empower them to request social interactions in an environment where the business of academic learning permeates.

Pupils' language use.

Positive change occurred in language use across all of the cases following the implementation of the social-communication strategies as the groups' speech/vocalisations increased and the main function of the pupils' communication was for social interaction purposes. The former finding concurs with that of Girolametto et al. (2007) and Ingersoll et al. (2005) who reported that rate of child speech increased following the communicative partners' use of social interactionist strategies. However, the rate and nature of language use in this current study varied across the four more verbal pupils. The youngest pupil who had some words at entry to the study, showed the greatest gains. His speech utterances increased 10-fold. This finding concurs with previous research which showed that children with minimal speech made the greatest gains in language development when their communicative partners used responsive communication (Aldred et al., 2004;

Ingersoll et al., 2005; Girolametto et al., 2007; McDuffie & Yoder, 2010; Haebig et al., 2013; Siller et al., 2013). The Shanbailey and Bridgestone pupils' speech increased by 35% and 3% respectively while the most verbal pupil at onset (Windyvale) decreased her use of speech by 16%. Pupil learning characteristics and context were found to account for the variance in the three more verbal pupils. The Shanbailey pupil who was reported to have a significant bank of words but spoke least often during the pre-PD sessions made the greatest gains suggesting that the use of a responsive interactive communication style was highly effective in supporting his use of speech. The decrease in language use by Windyvale pupil when the adults became more responsive to her suggests that the pupil was more motivated to speak when she perceived she was not in control of her environment. However, in contrast to the function of her pre-PD speech which was predominately for behaviour regulation purposes, her post-PD language was predominately used for social interaction purposes. The pupil who vocalised during the pre-PD interaction sessions increased his vocalisations and PECs use but did not acquire speech. Five of the six pupils in a classroom-based study by Kossyvaki et al. (2012) also did not speak at outset and while, the authors report that some pupils acquired words to initiate following a social-communication intervention, no specifics are given.

To the researcher's knowledge this is the first study to report specifically on the language outcomes for a pupil who had no words at the onset of a social interactionist intervention. The pupil who did not acquire words was the oldest in the group (75 months at entry) and perhaps his age had an impact on his non-acquisition of speech. The findings in this current study suggest that the age at which the pupil has access to a highly responsive style of adult communication may impact on speech outcomes. Further, the fact that the pupil who had minimal speech on entry to the study increased his use of speech considerably and the pupil who had no speech on entry did not acquire speech suggests that the use of predominately nondirective communication is highly suitable for increasing language use for young pupils on the autism spectrum with some speech but is not effective in supporting those pupils who have no speech to acquire speech. This multiple case study supports Wetherby's (2008) suggestion that even the most effective interventions will have different outcomes because of the individual child's characteristics and Warren and colleagues' (2011) proposition that even with effective interventions some individuals on the AS fail to improve.

Pupils' verbal initiations.

The verbal initiations of the four pupils with speech increased considerably when their communicative partners used highly responsive communication. This finding concurs with that of Ingersoll et al. (2005). However, the three children in Ingersoll's study were very young (average age 36 months), to the researcher's knowledge this is the first study that provides evidence that the use of social interactionist strategies are highly effective in supporting verbal initiations of school going children on the AS. This study shows that supporting classroom adults to use a more responsive and facilitative style of interaction enabled the pupils to partake in the transactional process of teaching and learning and to move towards seeing the power of speech as enacting those transactions. The increase in verbal initiations in school-going children ensures their communication signals are stronger, strengthening the possibility that the adults notice and act on what they say. These findings highlight that the highly responsive style of adult communication observed during the post-PD interactions enabled the pupils to take more control within the interactions supporting them to become active rather than passive participants. Acquiring the ability to initiate an interaction is an important characteristic for all learners as it empowers them to access increased opportunities for new and accelerated learning. It is of particular importance for pupils on the autism spectrum as it also addresses a skill known to be compromised in comparison to their neurotypical and special needs peers (Adamson et al., 2009; Meirsschaut et al., 2011).

Impact of Adult Strategy Use on Pupils' Language

The aim of this current study was to enhance classroom adults' knowledge of actions and utterances that previous studies had identified as supporting or hindering language development in children on the AS. Three adult styles of interaction ("directive" "facilitative" and "eliciting") were discussed throughout the professional development initiative. However, informed by social interactionist theories and previous research that identified "facilitative" style of communication as pivotal in supporting language development in this group of children, more emphasis was placed on the use of these strategies within the interactions.

The findings of this study provide the first insight into the specific impact of the communication strategies acquired by adults while participating in a social-communication promoting PD on the language use of their pupils on the AS. As expected the most

frequently used adult actions and utterances elicited the greatest number of speech utterances. However, a comparison between the frequency with which the strategy was used and the number of pupil utterances that followed, yielded an unexpected outcome. Adult utterances and actions that sought to “elicit” communication from the pupils such as “*Seeking Clarification*”, “*Choice Question*”, “*Open-ended Question*” were more effective in supporting language use than the more frequently used “facilitative” (e.g. *Linguistic mapping*; *Follow child’s lead*) or “directive” (e.g. *Command*, *Behaviour Control*) utterances and actions. Actions and utterances seeking to “elicit” communication from their pupils were used at low rates by the adults during the post-PD sessions, but they were three times more likely to be followed by pupil speech than when “facilitative” actions and utterances were used. A possible explanation for this finding may be that four of the pupils had speech and the use of this style of adult utterances provided the pupils with a sense of autonomy, a sense of having some level of control. The use of “eliciting” actions and utterances provides verbal pupils with the opportunity to make an active contribution to the learning process. Another possible explanation maybe that “eliciting” communication is a direct means of seeking communication (as opposed to directive) and this style of communication may be more apparent to the pupil than a style of communication that that is less obvious such as labelling, recasting, and extending.

The use of “communication cues” (directive utterances that expected communication) such as “*Verbal Prompt*”, “*Test Question*” and “*Yes/No*” questions were more effective in supporting language use than the use of “facilitative” or “behaviour directive” communication. This is an interesting finding as the researcher, concerned that classroom adults would over rely on this style of communication (in particular, “*Yes/No*” questions), encouraged the adults to use facilitative and eliciting communication over this style within the interactions. The adults reduced their use of “communication cues” during the post-PD interaction sessions. Nonetheless, when they were used they were an effective approach in supporting language use. Possible reasons for the success of these strategies maybe that, pupils on the AS may require a prompt to retrieve a word that is within their language repertoire. Further, while these pupils were school going age, their stage of language development is much younger and verbal prompts particularly in routines such as songs, poems and routines offer an unobtrusive scaffold for language use. These latter findings add support to Haebig et al.’s (2013) conclusion that pupils on the AS who have intact language require more than adult responsiveness to facilitate their language

development. This current study tentatively suggests that the use of “eliciting” strategies and “communication cues” are what support verbal-pupils’ use of speech, but a more in-depth study is required.

Context of the Interactions and its Impact on Teaching and Learning

Social constructivists emphasise the influence context has on learning (Bruner, 1990; Vygotsky, 1978a). The context of the interaction within this study was found to influence the communicative behaviours of the adults and pupils. The activities used in each interaction session were chosen by the classroom adults. These were categorised into three groups by the researcher for analysis; activities that could be carried out alone by the pupil (Solitary), activities that were Academic and activities that required the input of an adult (Co-operative). Previous research has shown that both classroom adults and parents interacting with children with SEN change their style of interaction according to context (Girolametto et al., 2000; Landry et al., 1994; Mahoney & Wheeden, 1999). Mirroring previous research carried out with parents of children with Down Syndrome (Landry et al., 1994) and teachers of young children with a range of SEN (Girolametto et al., 2000), the findings from the pre-PD data identify that classroom adults used elevated rates of directive communication within academic contexts compared to non-academic contexts. As in the study by Mahoney and Wheeden (1999) “*behaviour directives*” were used more frequently when *Academic* activities were used during the interaction sessions in this current study. A possible explanation for these elevated levels of “*behaviours directives*” may be that the adults had planned specific content to teach and, to achieve the lesson objective, sought the pupils’ active engagement through these types of actions and utterances.

An alternative explanation may be that academic tasks such as “stacking/matching” were pitched to the pupils’ chronological age rather than his/her developmental age and therefore far removed from what is meaningful and interesting for the pupil resulting in the teachers using “behaviour directives” to ensure their pupils’ participation in the tasks. Although “Directive” communication was used at almost similar rates during the pre-PD Co-operative and Solitary Activity sessions, the nature of the resource used during the Solitary sessions was found to impact on the adults’ directiveness. More “behaviour directives” were used when the resources were more sedentary e.g. books/jigsaw/blocks compared to when the resources were more inherently active e.g. baking/water play. This

study reinforce the lessons that classroom adults need to be aware of how certain contexts and resources influence their communication style and that the adults need to create contexts that are meaningful and interesting for their pupils so that the pupils are engaged in positive reciprocal interactions with them, thus optimising learning.

Context and shared engagement.

The literature on communication and language development within a social constructivist framework emphasises the importance of creating a context that supports and maintains shared engagement as a basis for language learning (Bruner, 1983; Vygotsky, 1978b). Adult communicative partners play their part by homing in on the interests of the child and using unobtrusive follow-in comments to create that context (Bakeman & Adamson, 1984). In neurotypical development the establishment of these interactive episodes occurs within the first two years in social contexts such as daily routines, book-sharing, playing with toys and lap games (Bruner, 1983). There is a dearth of research exploring the optimum forum for establishing these episodes with older children and in particular with children whose social interest is compromised. Mahoney and Wheeden (1999) found that the pupils with SEN engaged less with their teachers during play compared to academic activities. However, no description was given of the type of activities used. Adamson et al. (2009) reported that the children on the AS were less engaged during passive activities that were language laden (discussing a picture/object) compared to play activities that involved turn-taking (e.g., bubbles) or during activities where the child required the help of an adult. The adult-child dyads in this study spent more time in shared engagement during the Co-operative sessions (play activities that allowed the pupil control but required the aid of an adult e.g., playing shop, playdoh with utensils, bubbles, canisters of foam, fun turn-taking games) than during Solitary or Academic sessions. Solitary activities that could be carried out independently by the pupil (e.g., painting, book sharing, block building, playing with toys) were found to be least conducive contexts for prolonged shared engagement across the pre and post interaction sessions suggesting they are not ideal contexts for supporting social-communication development. The nature of the Academic Activity was also found to impact on the duration of shared engagement. Academic tasks that were pitched within the pupils' zone of proximal development supported more positive shared engagement than those that were beyond it. This study found that the context of the interaction plays a pivotal role for prolonging positive shared interactions between minimally verbal young

pupils on the AS and their classroom adults. It identifies the contexts most conducive to prolonged shared engagement as those that include the ingredients; “pupil in control” but “pupil requiring the active input of the adult”.

Context and the function of pupil social-communication.

The context of the interactions also influenced the function of the pupils’ social-communication in this current study. One teacher who had become highly responsive used Solitary Activities during all three of her post-PD sessions. The pupil’s social-communication increased considerably from the pre-PD sessions and her initiations were comparable in frequency to the other pupils. However, her initiations were for behaviour regulation purposes mainly (to request or reject an action or item) while the initiations of the other pupils were mainly for social interaction (e.g., to request a social routine, to show off, to begin a turn-taking sequence). While it is acknowledged that the context of the interaction impacts on the function of the pupils’ communication by its very nature, this finding highlights the importance of ensuring that classroom adults realise the impact of context in supporting their pupils’ use of social-communication to engage more for “social interaction” rather than for “behaviour regulation” purposes. It emphasises the need for school staff to have the skills to select resources and activities for their interactions with their pupils on the AS that support their pupils’ use of communication for social interaction purposes.

The context also influenced pupil language use. Combined pre and post-PD data indicate that the pupils spoke with considerable more frequency during the Co-operative Activity sessions compared to Academic or Solitary sessions. Further, the increase in language use by the Bridgeport pupil during the post-PD interactions was minimal (3%) even though her classroom adults had become highly responsive. The use of Solitary Activities in this case during all of the post-PD interaction sessions may be the explanation for this minimal increase further strengthening the argument that there is a link between the interaction context and language use. However, this was a very small study and a more in-depth study of the influence of context with a larger group of pupils is merited.

Concluding Comments

This study focused on the moment to moment interactions between classroom adults and their young pupils prior to and following the adults’ participation in a social-

communication PD initiative. Prior to PD there was a mismatch between the adult support and the needs of the pupils, as the adults were observed to be highly directive. Pupil characteristics such as language ability, reluctance to communicate and the pupil's need to be in control were all seen to influence the directiveness of the adults. The adults had difficulty tuning in to the needs of the pupil and identifying ways of teaching that were meaningful and interesting for the pupils. The directiveness of the adults had a negative influence on the pupils' learning, they rarely attended to the adult, rarely initiated an interaction and when they did initiate, it was mainly for behaviour regulation purposes. Participation in the PD supported the adults to adapt their teaching and find new ways of teaching. The adults became highly responsive to their pupils and this style of communication was seen to support greater mutuality, to achieve balance within the interactions and to support the development of their pupils' compromised social-communication abilities. The pupils communicated more frequently and their initiations (in particular their verbal initiations) increased. The time spent in positive shared engagement increased considerably thereby optimising opportunities for learning. However, while the adults became more responsive, matching contexts to the learning needs of the pupil remained a difficulty for some of them.

The findings in this study point to the critical need to support adults working with pupils on the AS who are reluctant communicators to adapt their teaching and to embed the learning required in a context that is meaningful for the pupil. The study identifies how complex the task of optimising social-communication and language learning is for this group of learners and stresses the necessity for school staff to have a deep understanding of group and individual learning characteristics of pupils on the AS.

Section Two

Social constructivists emphasise the importance of social context for learning. Three fundamental principles underscore their theory of learning; the presence of a more knowledgeable other, the context in which the learning occurs, and the learner taking an active role in the learning process. These three principles served as the framework underpinning the model of professional development adopted by the researcher for this study. In this section these principles will act as a backdrop for the discussion of how the model of PD impacted on the learning of the adult participants. The discussion will be presented using three propositional statements;

- Contextualising the PD initiative played a strong role in supporting the adults' learning,
- Facilitating active learning supported a deeper understanding of the PCK,
- The presence of a More Knowledgeable Other (MKO) was pivotal in the learning that occurred.

Contextualising the Professional Development Played a Strong Role in Supporting the Adults' Learning

The researcher contextualised the PD through the selection of the participants and the centrality of specific PCK with the initiative.

The Participants

Recent reports have identified that the models of PD available to teachers working with pupils on the AS in Ireland are not addressing their context specific needs (Daly et al., 2016; NCSE, 2015). These reports confirmed the researcher's belief that staff working with young school-going minimally- or non-verbal communicators on the AS required a specific body of knowledge and skills to support social-communication and language development in their classes. It was this belief that led the researcher to seek only participants who worked with pupils on the AS at the very early stages of communication development. The PCK addressed at the PD meetings was identified in the social-communication literature as being effective in supporting the development of social-communication of young pupils on the AS.

The Composition of the Group

There was clear evidence in the findings that bringing a group with similar needs together was a highly effective forum for deepening and enhancing learning. The creation of this context allowed for the sharing of mutual interests, dilemmas and support. It generated a sense of collegiality and absence of judgement which led to the building of trust within the group. This sense of mutuality is fundamental to the social constructivist principles that underpinned the framework for the PD. The adults identified the importance of learning within that context specific group as it supported the open discussion of their difficulties, in an atmosphere of trust identified by Darling-Hammond and McLaughlin (2011) as fundamental for deep learning. This context also provided a

forum for knowledge building through the reciprocal exchange of good practice, comments and suggestions for improvement. Learning according to the social constructivist theorists occurs within a social context and learning with others who are “in the know” strengthens and accelerates learning (Hoban, 1996). Further, the adults appreciated learning within this group as they believed their own efforts and practice were not devalued because each participant understood and appreciated the complexities of the learning needs of this cohort of pupils. The group affirmed each other’s successes no matter how small and in doing so provided mutual, positive scaffolding which is pivotal in ensuring continued use of effective practice (Sparks & Loucks-Horsley, 1989) and for continued development.

The findings from this current study indicate the value of providing this type of context specific PD to school staff working with pupils on the AS. The group served as conduits for their own and each other’s learning about how best to develop social-communication within their classes. Further, the findings support the calls of principals and teachers from autism-specific classes for context specific PD (Daly et al., 2016) and from policy documents advising that PD for teachers of pupils on the AS is matched to their specific needs by considering the characteristics of the pupils they teach (NCSE, 2015). The evidence also confirms the suggestion of PD theorists and researchers (Curry, 2008; Guskey, 2002; Hoban & Erickson, 2004; Joyce & Showers, 2002; Kennedy 1998; 2005) that learning is optimised when the group includes members who come from similar backgrounds and settings.

While the ten adults from five similar settings participated in the PD, the group comprised of two classroom staff (a teacher and SNA) with very different roles from each of the settings. Including SNAs in a professional development initiative was a new departure from PD models on offer in Ireland, as teachers normally access PD as a professional group, while PD is not readily available to SNAs in Ireland (without great personal financial cost). The researcher considered the participation of both groups of adults was equally important based on her belief that the social-communication and language development of the pupils occurred throughout the day and was influenced by all of their communicative partners. Having adults with very different roles was a risk as one of the main activities of the PD required close scrutiny of each participant’s practice and adults with different roles critiquing each other’s work could have led to tensions both within the discussion activity and back in the classroom.

Benefits of teachers and SNAs accessing professional development together.

From the social constructivist viewpoint, new knowledge and new ways of thinking arises from interactions with others. The learning within this model of PD was enhanced in a number of ways because of the presence of two groups. Each group brought a wealth of knowledge and ideas arising from their different roles in the classroom, with the teachers suggesting that the SNAs brought a “softer” view of how best to interact with the pupil. Different perspectives provide the catalyst for dissonance, as they set the seed for questioning previously held beliefs (Taylor, Marienau & Fiddler, 2000). The shaping of new beliefs is easier to achieve within a group from similar backgrounds as their different views are respected. In effect, the presence of two groups acted as a scaffold for the learning of the other within the PD meeting which may not have been achieved had the group been comprised of all teachers or all SNAs. Social constructivism emphasises the active involvement of the learner in the learning process. The findings indicate that involvement of the teacher and SNA from each setting ensured the collaborative learning occurred beyond the PD meetings and into the classroom. Both adults contributed to, and extended each other’s understanding of the PD content through regular discussions between the PD meetings. They encouraged each other to use the strategies consistently, and both suggested and sourced resources to create optimal contexts for the development of communication and language within their settings. Thus, in effect participation of dyads ensured that the collaborative construction of the adults’ knowledge extended into each of the classrooms.

Possible difficulty arising from teachers and SNAs accessing professional development together.

The findings indicate that the contribution of each of the participants was valued and had an influence on the learning within the group and dyads. However, the adults were rarely heard to challenge each other’s practice, a requirement which theorists believe necessary for dissonance, the catalyst for real change (Grieve, 2009; Pedder & Opfer, 2013; Timperley, et al., 2007). Unlike adult-pupil interactions where the adults have the responsibility for guiding the teaching and learning, different dynamics are at play in adult role relationships. The difference in the roles of the two groups of adults may have had an impact on the level of critique observed with the SNAs reticent to challenge their teacher colleague and the teachers reticent to challenge each other in front of the SNAs.

However, an alternative explanation for this “lack of challenge” may be the limited opportunities for whole group discussion of the implementation of the content. The lifetime of the initiative spanned over an academic year during which the group met on six occasions for approximately six hours each meeting. However, discussion sessions were only held during the middle four meetings. The five sets of dyads did not know each other at the onset of the PD and may have needed more time to feel comfortable to unpick each other’s practice at a level that may have been perceived as personal criticism.

The Pedagogical Content Knowledge

Consideration of the participants’ specific needs arising from their particular settings is required when developing a model of PD as these needs underscore the outcomes (Annenberg Institute for School Reform, 2004; Guskey, 2009; Quick et al., 2009). All of the adults in this study were struggling to support the social-communication development of pupils who had not reached the stage of understanding and using speech readily. Proponents of effective models of PD acknowledge the importance of peer collaboration in the acquisition of new knowledge. However, they caution that the group may lack the expertise required to ensure the learning is informed by relevant theory and research (Corcoran et al., 2001; Kennedy, 2005) and that the group may not have the ability to source or develop the specific knowledge required (Guskey, 2009). The presence of a MKO with an expertise in the topic, who could source this PCK for the participants, guaranteed that they had evidence-based knowledge as a basis for their practice and subsequent discussions.

The concern to provide context specific PD within the framework of a professional learning community, was a guiding aim of this study. The findings here highlight the challenge of that aim in terms of achieving the appropriate match between the PD input and the teaching and learning needs of the participants where both the individual characteristics of the pupils and the needs of the adults are the focus of attention. New knowledge is more likely to be embraced when participants value its relevance (Richardson, 1998) and the adults believed that the PCK was extremely relevant to their specific contexts, and to the social-communication and language needs of their pupils and cited many examples of how they were using the PCK to support social-communication and language development within their classes. The adults’ active and consistent engagement with all aspects of the PD also indicated that they found the PCK was highly

relevant to them. Further they were actively talking about and developing their new knowledge daily and sharing it with other staff members in their classes and wider school community.

Pedagogical Content Knowledge and zone of proximal development.

The adults from Grindstone were highly appreciative of the new knowledge and understanding they had developed through their participation in the PD and reported using the PCK with the pupil participant and other pupils in their class. However, they had reservations about whether the PCK generated from the discussions within the PD matched the specific needs of their participant pupil who did not have speech. At the PD sessions/seminars, discussions of the implementation of the PCK focused on their pupil, were held as often as on the other four pupils. However, these adults believed that the discussions on the implementation of the PCK with verbal pupils did not address their needs in supporting social-communication development for their nonverbal pupil. Although the dyad in this setting participated until the end of the PD, the teacher provided only one of the three required 10-minute post-PD clips suggesting that she had lost heart. This finding reflects Guskey's (2009) proposition that PD outcomes are influenced by characteristics of the pupils. However, this finding is also linked to Vygotsky's zone of proximal development (1978b) where the learning is pitched within close proximity to the learner's level of development. While the PCK was relevant for a number of pupils in the Grindstone adults' class, the adults' motivation for learning was to address the needs of the nonverbal pupil. The Grindstone adults were not seeing the same improvements the others were seeing in terms of language, suggesting the PCK was beyond their zone of proximal development at that current time. It would seem that these adults required the support and input from a group of peers who had similar needs and experiences (i.e. working with a nonverbal pupil) so that the knowledge generated from within the group related to those pupils' characteristics. At the outset of the initiative, the researcher believed that the PCK was highly relevant for addressing the pedagogical knowledge needs of a particular group, however, there was a continuum of need even within this small group. This finding reiterates the need for PD which is context specific and recognises the need for very close alignment between the PD context and the specific needs of the participants. However, the finding also highlights the challenges and complexities inherent in structuring such context specific PD for this population where pupils' needs can be so individual and varied.

Facilitating Active Learning Supported a Deeper Understanding of the Professional Content Knowledge

The model of PD endeavoured to support the participants' learning by incorporating activities that sought their active engagement in the initiative.

Active Learning

Adhering to the researcher's social constructivist's belief that learners should be actively engaged in their own learning, three main activities were included within the PD initiative; consistent enacting of the PCK, group observation and discussion of the implementation of the PCK, and the writing of reflective diaries. To the researcher's knowledge post graduate autism-specific courses in Ireland (i.e., "Graduate Certificate in the Education of Pupils on the AS" (GCEAS) DCU, Dublin and "Post Graduate Certificate /Diploma in Special Educational Needs (ASD)" St. Angela's College, Sligo) include feedback to teachers on their observed implementation of the course content from a MKO but do not allow for peer critique, nor do they require on-going personal reflection throughout the initiative. There was strong evidence that these activities were pivotal in the learning process in this current study. The overall aim at the outset of the study was achieved i.e. to enhance the social interactions between the adults and their pupils. Further, the beliefs of how best to develop social-communication had changed and the adults were empowered in how best to support their pupils on the AS social-communication skills.

The classroom adults in this study used a predominantly directive style of interaction prior to their participation in the PD. Over the course of the initiative the adults' interaction style had transformed to a mainly facilitative style. However, change of this nature is extremely difficult. Change from a "directive" style of interaction is more than the adoption of facilitative strategies; it is a change in beliefs as it requires the individual to accept new ideas and let go of something they thought to be correct. The adults had changed from taking a lead role in the interactions and expecting passive compliance from their pupil to allowing the pupil to take the lead role in an effort to develop mutuality. The process of letting go is difficult as beliefs are the basis of who the individual is and to question their beliefs is to question their self-worth and competence (Davis & Andrzejewski, 2009). There was evidence in the PD transcripts, learning logs and reflective diaries of the adults' intellectual struggle with this change process throughout

the lifetime of the initiative indicating that they needed time for this transformation. However, according to Guskey (2009), time is crucial, but it alone will not bring about change, rather what happens during that time is what supports the change.

Creating dissonance.

It is widely held that change in beliefs will not occur unless dissonance occurs (Davis & Andrejewski, 2009; Pajares, 1992; Thompson & Zeuli, 1999; Timperley et al., 2007). Dissonance occurs when the beliefs of an individual are challenged by others or when the individual compares the new knowledge with their own beliefs and knowledge. The discussion activity afforded to the participants throughout the life-time of the PD provided a forum for this dissonance to occur. Interestingly, unlike Pajares (1992) suggestion that dissonance will only occur if the individual's beliefs are deliberately challenged, discussions and non-threatening critiques of the participants' practice were seen to be the catalyst for the adults to compare what they were observing and hearing with their own beliefs, thus igniting dissonance in a supportive atmosphere. Three previous studies had explored the impact of training in social interactionist strategies on the directiveness of parents with mixed results. The studies were of the same or longer duration as this current study. Two of the studies (Mahoney & Pereles, 2003; 2005) found no change while the other had reported a small decrease in the parent's directiveness. A transmission style of training was used in the former studies with no evidence of providing the adults with opportunities to discuss their implementation of the content while the latter study (Aldred et al., 2004) had incorporated individual feedback to each participant from a more knowledgeable other throughout the lifetime of PD. While the activity of discussion with a more knowledgeable other in Aldred's study ensured the learner was active in the learning process, being part of a group helps shape the new knowledge the learner creates in the learning process (Putnam & Borko, 2000) because of the multiple opportunities to explore and compare how others are interpreting the PD content. It would seem that the discussion and critiquing of each other's practice by peers was a major influence in supporting the level of change that had occurred in this current study. While this study corroborates the literature that participants require opportunities for discussion and critiquing of practice for real change to occur (Desimone, 2009; Pajares, 1992), it goes further and identifies that discussion with peers from similar contexts provide the optimum forum for influencing change in practice.

Enhancing learning through observations.

The requirement to share their implementation of the PD content through video clips was found to be extremely influential in supporting the adults' learning in this study. Teachers often complain that there is a mismatch between professional development initiatives and the reality of their particular classroom (Butler, et al. 2004; Timperley, et al, 2007). Allowing the group to be "a fly on the wall" on their own and others' classrooms provided the participants with a context specific view in which to situate the discussion of the PCK implementation, ensuring a greater understanding by the adults of what was happening. Further, video ensured that the "real truth" was being discussed rather than the truth that may have been seen through the rose-coloured glasses of the teller. The sharing of the video allowed the individuals to actively reflect on their own implementation of the PCK with a fresh lens and the subsequent discussion with peers ensured deeper understanding of the content.

The adults reported that "seeing" and "hearing" how the strategies were being implemented was more powerful than just "hearing". This outcome echoes teachers' views in Gibson and Brook's study (2012) that modelling of new content is pivotal for adults as much as for pupil learners. Affording the participants opportunities to witness the successful implementation of the content by others in similar but different contexts provided them with a range of ideas of how best to apply the PCK. These opportunities are what supported the adults to identify its value and to adopt the new knowledge (Guskey, 2002). Further, providing visual evidence of alternative effective practice acted as a subtle catalyst for creating dissonance as the participants questioned their own practice with one teacher remarking, "I just thought watching some of the SNAs on video you would have got a lot more from that child than I would have because I wouldn't have done it like that, but you know what, that is how I should have done it". Guskey also advises that if a participant experiences failure in implementation, the new content and their self-belief is threatened, then adoption of the suggested changes is unlikely. The video clips afforded the participants the opportunity to witness others struggling and supported them to continue as they could see that everyone was "in the same boat". Observation of the video clips also ensured the articulation and affirmation of good practice and identification of improvements that could have been omitted in a narrative. Praise from one's peers "in the know" is the most cherished type of praise.

The regular observation of each other's practice also developed the adults' observational acuity. One SNA remarked at the post-PD interviews, "I could see things they (owner of clip) did wrong or not even maybe wrong but things that I wouldn't have done, or I would have done differently" while a teacher spoke of observing another classroom staff member interacting with a pupil and identifying what needed to change. "Seeing" what was happening offered the adults opportunities to problematise the context and fuelled their confidence to offer insights and/or alternative views on the experiences of their peers.

The observation of others from similar contexts implementing the PCK successfully coupled with the opportunity to discuss the observed practice was identified as pivotal in supporting the adults' learning in this model of PD. However, access to video requires parental permission; the parents of the pupils in this study had readily allowed the sharing of their child's clips perhaps because the objective of the sharing had been explained to them. The success of future professional development for this type of PCK will hinge on the participants having access to the observation activity. While the bank of clips as a basis for discussion could be developed, the success of this current study would appear to be supported by the viewing and discussion of the real live happenings of the participants' context. Strong positive relations and a shared view between school staff and parents of how best to enhance pupils' social-communication and language will be major factors impacting on the use of this type of activity in future PD initiatives.

Enhancing learning through reflective diary writing.

Although the adults reported aversions to the writing of the diaries, there was a high rate of commitment to their completion each week. The writing of a weekly reflective diary was instrumental in supporting the learning of the group. The adults admitted the diaries ensured the consistent implementation of the PD content, while the process of writing the diaries ensured that the adults took the time to personally reflect on what had happened during the interaction sessions in between the PD meetings. This weekly process sought to support a weekly implementation of Clarke's and Hollingsworth's, (2002) cycle of change (enactment and reflection). The writing of the diaries ensured the adults made links between what they were doing and the PD content as they noted the strategies they used within the sessions. Noting the successes that occurred within the interactions provided personal affirmation to the individual that they were successfully

implementing the content and that the content was working; requirements identified by Guskey (2002) as fundamental for the adoption of the PD content. Further, the opportunities to read each other's entries deepened the adults' procedural knowledge as they reported gaining lots of ideas of what and how to do with their pupils; these two steps of, knowing "what to do" and "how to do" are the precursors for a conceptual understanding of the content (Ince, 2017).

Supporting deeper reflection.

The reflective diary supported the development of deeper reflection on the PCK over time. The participants earlier diary entries were mainly descriptive with the adults stating what they did and how, but over time the adults identified why the interactions were so successful, moving from attributing the success mainly to the resource or activity being used (she loved the glitter glue Yana RD 1) to identifying particular strategies that played a role in that success ("animation" really works with him Sunita RD10). Towards the end of the initiative all of the diaries were dotted with exemplars of the positive impact the PCK was having on the pupil (e.g. I realised that teasing Charlie and contradicting him in a fun and animated way made it fun for him and also it seemed to increase the amount of words and eye contact he would use Nuala RD15), and the adult-pupil relationship (Our relationship has also improved as we are now talking more to each other throughout the day Violet RD 16.) Knowing the content was having a positive effect ensures the adults will actually continue to use it (Guskey, 2002).

Need to support reflection on strategy use.

The diaries included comments on successes and difficulties that were occurring within the interactions mirroring Kolb's (1984) suggestion that reflection begins with identifying what went well, and not so well. The adults mainly attributed the difficulties encountered within the interactions to the resource/activity they used, and they identified other resources / activities they would use to ensure future sessions were more successful. While consideration of the environment is important for successful interactions, the adults rarely analysed their own actions, a skill required for true reflection (Bishop, Brownell, Klinger, Leko, & Galman, 2010). The fundamental aim of this PD was to support the adults' use of the social interactionist strategies and the diary writing activity was to support the adults' reflection on their own actions in practice. Although the MKO read the diaries regularly she did not comment on them. Perhaps this was what was required to

scaffold the adults to deeper reflection of making the links between their lack of strategy use and the lack of success of the interaction. The findings in this study identify that the diaries aided the adults to identify the positive impact of social-communication strategy use on the interactions, but more support was required to ensure the writing of the diaries supported greater introspective reflection, and recognition that difficulties within the interactions could be attributed to the participants' own failure to use those strategies.

Growth of Feeling of Empowerment

The growth of feelings of empowerment was one of the major themes that arose from the findings. The adults' understanding of the nature of communication and how best to support its development with pupils on the AS deepened through their participation in the PD activities. The expectation that the adults enacted the PD content daily in between the meetings, wrote weekly reflective diaries and videoed their implementation of the PCK for subsequent discussion with the group ensured that they were cyclically experiencing success, difficulty and dilemmas that were noted by them and discussed with their peers over the lifetime of the initiative. This cyclical process of enactment and discussion supported the embedding of the PCK into the adults' practice (Clarke & Hollingsworth, 2002). A teacher attributed her confidence to having, "to put it into practice, day in day out and those constant practising of all of those strategies I feel has fine-tuned my ability to do it". The adults acquired the language of pedagogy and the ability to problem solve as they implemented, reflected, discussed and critiqued their own and other participants' practice. Problem solving dialogues not only occurred at the PD meetings but also occurred between the teacher and SNA in their classes, indicating the adults' awareness of the importance of discussion for a deeper understanding of what best supports the pupils' learning. The outcome of this particular PD model resulted in a group of adults working with the most complex of learners on the AS being empowered with specialist knowledge to the extent that they were confidently mentoring others within their own environment, building capacity in a cascade manner at school level.

Capacity Building

The findings identify that this model of PD supported capacity building at a system and school level. The challenge is to sustain the change. At school level, school leaders need to allow for in-school capacity building by providing opportunities for teachers to take on a leadership role in collaborating and sharing effective practice in classes for

pupils on the AS. At a systems level this study identified that a group of adults working with the most complex pupils on the AS were empowered in their capacity to support the development of social communication and language in their classes. These adults could be utilised in future social interactionist PD initiatives by adapting the role of more knowledgeable other. Further, this study broke the mould of previous PD initiatives by inviting two groups of school adults for PD with very different roles to participate together. At a systems level recognition that SNAs working with pupils on the AS require specific professional development in supporting the social-communication and language development of the pupils they support is required. Acknowledgement that access to the same PD initiative for teachers and SNAs working with pupils on the AS will greatly enhance capacity building and in turn the learning should also be recognised and acted on.

Presence of a More Knowledgeable Other (MKO) was Pivotal in the Learning Process

The researcher adopted the role of MKO and facilitated the learning of the group by; managing group dynamics, supporting the embedding of the PD strategies and scaffolding a deeper understanding of the PCK.

Managing group dynamics.

Ascribing to the social constructivist view of learning the researcher sought to enhance the knowledge of a specific group of school staff through a PD learning community. However, research identifies a number of difficulties in allowing a group of learners to “go it alone” such as, a lack of the knowledge within group required to generate new and deeper knowledge, the possibility that the composition of the group could hinder the collaborative process and the dearth of abilities amongst the group members to ensure that change will occur (Corcoran et al., 2001; Dooner et al., 2008; Kennedy, 2005; Levine, 2011). The findings from this study afford unique insights into the teaching and learning processes within the Inside-In model of PD adopted for this study where the researcher acted as the More Knowledgeable Other.

As already discussed the context allowed for the collaborative construction of knowledge in an atmosphere of mutuality and respect. However, the study goes further in that it allows insights into the dynamics of discussion that fostered that atmosphere and the actual process of growth of knowledge and skills with adult learners.

The composition of the group in this study could have impacted negatively on the learning by undermining the collaborative discussions as it was composed of two distinct groups of classroom staff (teachers and SNAs) with very different roles. SNAs are a support to the teacher in assisting with care needs of pupils on the AS within the class (DES, 2014) while the remit of the teachers is to provide education for the pupil. This difference in roles could have had an impact on how individuals perceived the status of their contributions within the group discussions. According to the social constructivist approach, the role of the MKO is a “guide on the side” more than a “sage on the stage”. The protocol of seeking volunteers to share their practice and allowing the sharer to be the first to reflect on what was observed ensured autonomy within the group and supported the development of trust between the MKO and the individuals. This trust and respect of each member’s contribution was fostered by the use of a number of strategies. The MKO supported the adults to do most of the talking during the discussions through her use of group questions mainly, for example, “What do people think?”, unless she wanted to stretch an individual’s thinking. All contributions were listened to and discussed further where appropriate. However, she also sought the contribution of reticent contributors, calling on them by name “What do you think....?” This process instilled an awareness and expectation that everyone had worthwhile knowledge, experiences and views to share (Cordingley et al., 2003; Dooner et al., 2008; Hoban, 1996; Smith & Gillespie, 2007). This protocol was valued by the group; with one SNA remarking, “That’s one of the things I really, really about the sessions. Like nobody asked if you were the teacher or the SNA and I was spoken to in the same way as everybody else and so were the other SNAs and it was lovely because it made us feel so important that we also had something to offer” (PPDI). This mutual trust and respect spilled into the classrooms with the adults seeking and giving each other advice and support.

Embedding the pedagogical content knowledge.

The format of the owner of the interaction clip beginning the discussion was a subtle rather than a direct strategy to encourage her to reflect on her practice. Conscious that oral reflection is difficult as it forces the reflector to lay bare their thoughts to the scrutiny of others, the MKO structured the discussion to allow the owner to give their own account and interpretation (if they wished) of what happened before they heard any critique from the group. Minimising the owner’s discomfort of having their peers point out all of the faults observed within the interactions by allowing her control over what she wished to lay

bare was fundamental for ensuring the owners' trust in the process as trust arises from feeling safe (Parr & Ward, 2006).

Orally revisiting her interaction ensured that the owner was actively making links between her behaviours and the PD content for herself and the other adults. This was low level but vital learning as each owner identified and labelled the PD strategies they used, providing the group with numerous opportunities to link the label with the behaviour observed. The MKO supported the embedding of the PD content further through her use of a pause or "Connection" closed questions (e.g., what other strategies did she use?) to the group when the owner had finished talking. This approach ensured the other group members were making links as each speaker labelled strategies in the clip that may have been overlooked by the owner, often identifying where they had been observed. These opportunities were also used by the adults to clarify the label of the strategy they observed querying for example, "that's self- talk isn't it?" The MKO also brought another layer to the "making links" learning by posing questions such as, "What was the strategy she used?" when descriptions were given without the label or "Where did you see that?" when a strategy was labelled without a description of where it was observed. Repetitive use of these questions at each meeting in conjunction with the writing of the weekly diary entries supported incremental overlearning identified by Darling-Hammond and Richardson (2009) as a fundamental requirement for the internalising of the content. "Automaticity" is a worthwhile skill for any learner as it allows the learner to concentrate on other tasks (Dougherty & Johnston, 1996) such as a deeper understanding of the content.

Supporting conceptual change.

Clarke and Hollingsworth (2002), Timperley, (2008) and Darling-Hammond and McLaughlin (2011) all identify reflection as a fundamental element for supporting change in practice. The MKO encouraged the adults to go beyond "giving an account" and to reflect on what was impacting on the interactions with her use of "Descriptive Open" questions (e.g., talk about your interaction). However, the adults tended to reflect on what didn't work; rarely admitting to feeling pleased with the session. While acknowledging that dissatisfaction with practice is a necessary component for change (Ross & Regan, 1996), dwelling on failures alone can lead to a negative self-concept and an erosion of confidence. This in turn could culminate in reverting to previously used but less effective strategies (Guskey, 2002). The presence of the MKO was necessary to enable the

participants to take a balanced, critical view of their practice, allowing them to recognise and acknowledge their difficulties while ensuring they also gave themselves credit for what went well. Knowing they have the ability to implement the new content well ensures that content will be used into the future.

Supporting reflection in and on action.

Although the owners of the clip identified difficulties that occurred within their interaction sessions, they did not automatically identify what they might change to ensure that the next interaction could be successful. Kolb (1984) suggests that identification of alternatives, “reflection on action”, is the second aspect of reflection in that, the learners think about their practice and identify what to do next - the ability to independently problem solve. However, there was evidence in their talk that they were aware of what needed to change (e.g., I wasn’t giving her enough time to respond/I wasn’t attuning to her at all). Perhaps orally identifying how they would address the difficulties going forward was bringing themselves too much out of their comfort zone or perhaps for them, it was a “given” that articulating the difficulty with their practice meant that they would endeavour to address it (internal problem solving) going forward. However, the MKO ensured through direct questioning (e.g., Going forward, what do you think you would change?) that the owners thought about and, verbally identified possible modifications that would enhance future interactions. These questions may be seen as prompts and possibly were not supportive of the development of automatic reflection on action skills. While the role of the MKO is to support, the skill of the MKO in pitching the level of support and the nature of the support is pivotal. Further, the concept of “how to reflect” was not specifically addressed during the initiative. The findings in this study suggest that future PD initiatives should include a specific component on reflection to ensure the participants have the necessary skills to continually and comprehensively interrogate their own progress in the implementation of the PD content and the outcomes arising from that implementation.

The use of “Connection” questions (e.g., what other strategies did she use/ anything else?) posed to the group acted as a catalyst for spontaneous critique of what they were seeing, indicating that their ability to “reflect on practice” was developing within the discussions. In the main, the non-owners of the clips affirmed the owner’s practice. This peer affirmation provided objective acknowledgement that the owner was implementing

the content correctly. Knowing that you are good at something boosts your confidence ensuring that you will continue to use that skill. Peers also linked the use of the PD strategies with the positive outcomes observed (e.g., his attention was really on Síofra...his attention was fabulous PD 2). These questions also ensured that the peers thought about what they were seeing and enabled them to recognise and articulate that the PCK was being implemented successfully, even though they may have been struggling to implement the strategies themselves (e.g., Yeah, but say for example (talking to Síofra) your lesson was really good there and I have learned so much from that because I did struggle through the month, PD 2). Articulating positive outcomes in similar but different contexts to their own, increased the possibility that the content would be embraced (Guskey, 1998) and acted as a catalyst for cognitive dissonance for the adults (e.g., she can do it so why can't I?) thus scaffolding the adults to change in future interactions.

Need to support peer challenge.

The protocol of allowing the owner of the clip to begin the discussion of their interactions had its benefits as discussed above. However, on consideration this may not have been the best approach for supporting “challenge”, another fundamental requirement for ensuring “change” (Darling-Hammond and McLaughlin, 2011). Despite the MKO repeatedly modelling deeper questioning, probing, and challenge, group members seldom challenged their peer's practice when asked to comment on the session they had observed. Challenge requires the challenged to think about, defend and justify their practice and it is this challenge that is the catalyst for creating cognitive dissonance, a requirement for real and lasting change (Grieve, 2009; Pedder & Opfer, 2013; Timperley et al., 2007). The feedback from the group mainly included, affirmation of the practice they observed, and suggestions for alternative resources/activities that could address the shortcomings of the session. Perhaps the adults viewed the MKO as the leader (despite her efforts to blend into the group) and left the more difficult task of challenging their peers' practice to her. The MKO used “Challenge” style talk least often during the discussions preferring instead to support the adults' learning through a softer style of questioning, reflective dialogues and commentary. More frequent modelling of “Challenge” talk may have supported its use amongst the group and ensured more peer-led dissonance. The MKO did not explain to the group that all aspects of the interaction session for example, context, strategy use, role of adult required reflective interrogation and perhaps this direct explanation what was required.

Intra-group trust is identified as pivotal for the level of collaboration required to effect change (Parr & Ward, 2006). There was clear evidence that each owner of recorded footage provided for observation felt safe enough to reflect openly on their practice. However, the lack of challenge from other group members suggests a lack of comfort within the group in offering their views on the role of their peer and the strategy use when the interaction session under discussion was less than successful. The presence of teachers and SNAs within the group may have been a contributory factor for the lack of challenge; the SNAs were reluctant, perhaps, to criticise their teacher's practice and the teachers might have been reluctant to criticise another teacher's practice particularly while in the presence of the SNAs. Further, the group was composed of five dyads who didn't know each other at the beginning of the study and their lack of familiarity with each other may have hindered the possibility of deeper scrutiny of others' practice. The issue of time may also have had an impact on the level of reflection achieved as this level of conceptual change is considered a long and continuous process (Bell & Gilbert, 1996; Opfer & Pedder, 2011), perhaps the participants in this study required even longer than the seven months allotted to the initiative to acquire these higher order skills.

However, there was clear evidence from the quantitative data that all of the participants changed their communication style considerably following their participation in the PD. A number of theorists (Ertmer, 2005; Nespor, 1987; Pajares, 1992) suggest that when teachers encounter new knowledge they may choose to accept or reject it based on their beliefs. Educational beliefs like other beliefs, are influenced by knowledge and behaviours of others, past experiences and experiences in the classroom (Lortie, 1975; Pajares, 1992; Richardson, 1998). Perhaps the dissonance required for change emanated from the opportunities to consistently articulate their own personal reflection on their interaction sessions, to observe others successfully implementing the PCK and seeing the positive impact of the PD content in similar contexts to theirs. A longitudinal study to explore the use of the PD content over time would identify if true transformation in the adults' communication style had occurred.

Concluding Comments

The findings indicated the appropriateness of the Inside/Outside model of PD developed for this study in supporting the learning of this group of school staff. The presence of an MKO ensured elements identified in the literature as necessary for

professional growth were incorporated into the initiative. They included PCK relevant to the participant's context and activities that required enactment of the PCK, reflection and discussion. While the PCK was considered highly relevant for all of the settings, the knowledge for practice that emanated from the group discussions was perceived to be less appropriate for the adults working with the nonverbal pupil, highlighting the complexity of developing context specific PD where the specific needs of all the participants are met. The requirement to show evidence of consistent implementation of the PCK and the subsequent facilitated discussions at the PD meetings enabled the adults to fine tune their use of the strategies, to identify what worked well and to a certain extent, to identify what changes were required. The MKO acting as facilitator within the discussions was pivotal in supporting this learning. However, the findings indicate that the skill of introspective reflection did not truly develop by the end of the initiative, highlighting perhaps, the need to address the concept of what constitutes reflection at the outset of any similar PD programme in the future as it cannot be assumed that participants come to the PD with the innate skill. The ability to challenge peers' practice was also absent. The findings overall indicate that this model of PD was highly effective in enhancing the teaching and learning with classes for pupils on the AS without the development of the latter two skills. A longitudinal study exploring whether the changes identified at the end of the study are maintained over time, and a longer timeframe would allow for a more evaluation by the MKO of her/his own strategy use, including exploration of how to scaffold the further learning of participants towards introspection and towards the ability to challenge peers in appropriate and constructive ways.

Chapter Eight: Conclusions, Implications, Limitations and Recommendations

This chapter begins with a summary of the study and goes on to outline the conclusions reached. The implications of the study for future practice in the education of pupils on the autism spectrum and for the design and implementation of professional development programmes are also considered. The chapter concludes with recommendations for future research.

The Study

The impetus for this study was the researcher's belief that classroom adults working with pupils who were not yet frequent, clear, prelinguistic or linguistic communicators required a specific body of knowledge to support the development of these pupils' social-communication skills. This belief was confirmed by reports from teachers and from Government (Daly et al., 2016; DES, 2006; NCSE, 2015). Research has shown that social-communication PD is effective in altering the interactive styles of parents of children on the AS which in turn enhances their child's communication skills (Aldred et al., 2004; Carter et al., 2011; Girolametto et al., 2007; Green et al., 2010; Mahoney & Perales, 2003; Siller et al., 2013; Venker et al., 2011). However, there is a dearth of research exploring the provision of this specific knowledge to school staff. The researcher developed a model of PD based on her social constructivist view of learning. The model included PCK aligned to the needs of the participants, activities to support the participants' active engagement in developing deeper understanding of the PCK, and the presence of the researcher in the role of More Knowledgeable Other (MKO) to scaffold the adults' learning. A pragmatist view informed the selection of a multiple case study design for the study. A range of data collection methods (interviews, classroom observations, reflective dairies, discussion fora, learning logs, and evaluations) were used throughout the study to explore the model's effectiveness in supporting the overall aim.

The specific research questions were;

- Does professional development in social-communication-promoting strategies have a discernible impact on how the classroom adults interact with their pupils?
- What are the effects on the social-communication abilities of developmentally young pupils on the autism spectrum when their classroom staff participate in a social-communication-promoting professional development initiative?

- What are the adults' perceptions of their participation in the context-specific social-communication professional development initiative?
- How did the presence of a MKO impact on the adult participants' learning?

Conclusions

The main conclusions of this study are:

- A social-interactionist model of professional development, based on social-constructivist principles of teaching and learning, provided an effective framework within which to develop the interactive styles of classroom staff which brought about positive outcomes for the development of pupils' social-communication and language.
- The context specific nature of the model of professional development enabled the adults to grow in knowledge and understanding of the pupils' social-communication and language needs and facilitated change in their interactive styles.
- The MKO had a central role in guiding and supporting the learning within the professional development sessions.
- Changes in adult interactive styles from being predominantly directive, to more facilitative ways of engaging with the pupils, resulted in increased shared attention, positive communication and mutuality within the interactions.
- While all of the pupils made progress in development of social-communication and language, the outcomes varied for each individual pupil and were related to the pupils' individual characteristics as learners.
- The classroom contexts within which the interactions were structured influenced the nature of the communication that occurred.

A Social-constructivist Model of Professional Development is Pivotal in Enhancing the Teaching and Learning of Communication in Classes for Pupils on the AS

Participation in a professional development initiative that supported the adults to continually trial, reflect on, and discuss strategies known to enhance the social-communication of young pupils on the AS had a positive effect on their knowledge of this specific content and greatly enhanced their pedagogical knowledge. Gaining confidence in these two knowledge bases empowered the adults, enabling them to identify the strategies and learning environments that best suited their target pupil. They also began to modify

and adapt their knowledge of the strategies to suit the needs of other pupils in their classes. This ability to differentiate the content, aligning it with the needs of individual pupils, is what optimises learning in classes. Further, the adults reported that they were sharing and discussing their new knowledge with other staff members within their class and their school with one teacher supporting her classroom staff to implement the social-communication strategies. The findings show that empowering the participants had a positive knock-on effect causing a cascading model of PD to evolve within the schools.

The learning activities of observing and discussing each other's practice were what underpinned the adults' understanding of the PD content. They believed that seeing rather than hearing what others did was powerful in their knowing of "what to do", "not to do" and "how to do", thus strengthening their pedagogical knowledge. Seeing another's practice also allowed comparisons to be made between what was happening in their own classes and other classes supporting affirmation and provoking personal dissonance, both fundamental requirements for change (Ross & Regan, 1993; Sparks & Loucks-Horsley, 1989). The discussions of the observed practice led to collaborative learning and collegiality through the sharing of ideas /resources, problem-solving and mutual affirmation. This collaborative learning and collegiality strengthened within the classroom settings also. This mutual support was what supported the adults' implementation and modification of the PD content both at the PD meetings and in the classrooms.

The Importance of Context Specific Professional Development

The efforts of the Department of Education and Skills in Ireland to support enhanced teaching and learning in classes for pupils on the AS must be acknowledged as there are a range of PD opportunities available for teachers working in those classes. However, the main criticism directed at these initiatives is that they mainly deliver generic content with little regard to the participants' contexts and pupil cohort. A social constructivist paradigm views context as pivotal in motivating the learner to learn. Context includes the environment in which the learning occurs and the environment from which the learner comes. The PD model in this study focussed on specific knowledge about the development of social-communication skills for classroom staff working with a specific cohort of pupils on the AS. Addressing content relevant to the participants' needs encouraged their active participation in the learning process. Focussing on specific content ensured the adults had numerous opportunities to understand and to gain a deeper

knowledge of content that was tailored to the particular needs of their pupils. The model of PD ensured that the adults had time to implement and discuss this content, to reflect on it and on their successes and difficulties in the implementation of it. This focus on matching content to specific needs and learner characteristics led to successful outcomes for the adults with all of them changing their interaction style and embracing a predominately facilitative style of communication.

The PD group was composed solely of participants working with pupils who were not yet frequent communicators. Targeting participants who required a specific body of knowledge supported the enhanced learning in the group as all of the participants understood the daily experiences of each individual in the group and could collaborate together to develop new and deeper understandings of the content. Including participants from similar settings but with very different roles was found to enhance the overall learning and ensured learning occurred beyond the PD initiative. The combination of teachers and SNAs as participants in the PD initiative was different to what teachers had normally experienced but, all of the participants reported that this combination was highly beneficial in supporting their understanding and adoption of the PCK and ultimately the outcomes for the pupils. In particular, the teacher-SNA dyads were collaboratively planning the development of their pupils' social-communication in their classrooms. There is a need for future PD initiatives to consider the specific PCK requirements of the participants, and to ensure that the participants have similar needs and experiences so that the learning from the initiative is maximised.

The Role of the More Knowledgeable Other in the Learning Process

While bringing a group together from similar contexts and with similar needs to share, discuss, and to give each other feedback is considered a highly effective method of ensuring the participants take responsibility for their own learning, there is also recognition that the knowledge required for enhancing practice may not be available within the group (Kennedy, 2005; Mayer, 2004). The adults in this study all reported having difficulty interacting with their pupil and were struggling to support the development of their pupil's social-communication skills. Social constructivists propose that the presence of a MKO enhances the learning of the learners by the knowledge s/he brings about the topic and how the learning is scaffolded. The sharing of formal knowledge known to support the development of social-communication skills of pupils on the AS with the group throughout

the PD initiative ensured relevant content was accessed and time could be spent gaining greater understanding of the PCK and how it applied to the participants' settings. The inclusion of activities that required enactment, reflection and discussion supported the active engagement of the adults in their own learning. These activities were found to scaffold the participants in their development of new insights on how to use the PCK to optimise the learning in the classroom. Facilitation of the discussion fora ensured the adoption of the PD content. On a number of occasions, the adults articulated barriers to the implementation of the content (e.g., pupil characteristics, resources). Through her questioning, feedback, and affirmation the MKO supported the adults through difficult periods of content implementation. The presence of the MKO also ensured "hard questions" were asked, challenging individual's overly positive reflections - a challenge that did not come from within the group. The MKO's presence also ensured an atmosphere of trust was developed within the group through the protocols she developed and modelled within the meetings. The reflection activity in the form of diary writing also enabled the adults to develop the ability to reflect on the positive impact that the PCK had on the interactions occurring within the classes thereby ensuring the adoption of that PCK. However, the adults' abilities of "introspective reflection" and "challenging peer practice" did not develop through these activities. Facilitation of future PD initiative should not take for granted that adult participants have innate reflection skills but may require explicit coaching in those skills.

The Adults' Interaction Style Changed

Similar to previous research carried out with caregivers and parents, this study found that prior to their engagement in the PD initiative, the classroom teachers and SNAs controlled the interactions with their young pupils who were not yet frequent communicators, seeking to direct the attention of their young pupil on the AS through a range of "directive" actions and utterances. This interaction style was observed to have negative effects on the pupils' social-communication in terms of frequency and nature of communicative acts and the quality and time spent in shared engagement. Optimum learning occurs within a classroom when the adults and pupils are in harmony and this requires that the adults adopt a pedagogical approach that matches the needs of individual pupils (Jordan, 2008). Access to theoretical principles that promote communication and language, opportunities to implement these principles daily, reflection and feedback from peers and from a MKO supported the adults to facilitate rather than direct their pupils'

social-communication development. The adults' perceptions of, and sensitivity to, their pupil's needs and interests had improved. These changes in turn positively altered the adult-pupil social interactions in terms of increased shared attention, more positive communication and mutuality.

Teachers and SNAs accessing professional development together.

This study also identified that the SNAs could acquire the social interaction skills necessary to develop the pupils' social-communication abilities and recognises that this cohort of staff within educational provision for autism in Ireland could support social-communication and language development in a structured manner if allowed. Further, the involvement of the teacher and SNA from each setting enhanced the change process of both the adults and pupils. The presence of both adults supported the deepening of each other's knowledge and understanding of the PCK through collaboration and problem solving within and beyond the PD meetings. Two adults empowered with the specific content ensured the pupils and other class staff had greater access to this knowledge. The findings of this study point to the critical importance of supporting staff in autism-specific settings to develop a working knowledge of the theoretical principles of social-communication development and to enable them to apply that working knowledge to the specific communication needs of individual pupils on the AS.

The Pupils' Communicative Abilities were Enabled

This study found that the attention given by pupils on the AS to classroom adults who used a predominately "directive" style of communication was sporadic and brief. Further, the pupils' communicative acts were infrequent, they rarely initiated within interactions and if they did so it was to have their needs met. The study shows that supporting the adults to become highly responsive enabled the pupils' communicative behaviours. The pupils' interest in engaging with their classroom adults and others in their school environment improved dramatically, they initiated social interactions more frequently, their verbal initiations increased considerably and the length of time they spent in shared engagement increased significantly. There was also evidence of reciprocity developing within the interactions.

The findings show that outcomes for the pupils' language use were mixed and were influenced by a number of factors other than the interaction style of their communicative

partner. The pupil characteristics of age, language abilities and learning characteristics prior to their classroom adults' participation in the PD were found to influence the pupils use of language. The nonverbal pupil increased his vocalisations but did not acquire speech. However, he was the oldest of the five pupils at the beginning of the study and perhaps that had an influence. The youngest pupil had the least number of words at outset and made the greatest gains in language use.

The number of pupils involved in this study was small and despite being described as prelinguistic, they had a wide range of abilities in terms of language use. While the findings show that the language outcomes are mixed, they also give a view of the complexities of supporting minimally verbal pupils to use their speech. There is a need to carry out studies using the social interaction strategies with the three distinct groups identified; the nonverbal pupils; the minimally verbal pupils and the verbal but reluctant pupils.

The Context of the Classroom Interactions Influenced the Adult-pupil Communication

The context in which the interactions occurred had an influence on the nature of communication that occurred between the adults and the pupils. The adults were drawn into a predominately "directive" style of communication when interacting with their pupil during an Academic Activity. Directives were also used more frequently when the non-academic task was sedentary (e.g., book sharing, jig-saws, blocks) than when it was more active (e.g. baking, water play, painting). Contexts in which the pupil had a sense of control but still required the input of an adult (e.g., bubbles, turn-taking games, shaving foam) were optimum for positive transactional interactions between the adults and pupils. The adults use of "directive" communication decreased, the duration spent in positive shared attention increased and the pupils communicated and initiated more frequently during these Co-operative Activities. These findings point to the pivotal need for staff working with pupils who are not yet frequent communicators to have knowledge of how classroom interaction contexts impact on communication and language development. In particular, the findings highlight that prolonged positive shared engagement (a requirement identified in the literature as pivotal for communication and language development) was not supported by the classroom adults' use of Academic Activities with this group of school going pupils.

Implications for Future Educational Practice with Pupils on the Autism Spectrum

The findings from this current study have implications for educational practices with pupils on the AS.

Knowledge of social-interaction strategies.

The analysis of the pre-PD interaction clips in this study gave a snapshot of what was happening in classes for pupils on the AS in five different primary schools in Ireland and points to the likelihood that classroom staffs are not using communication strategies that are likely to maximize opportunities for social-communication and language development in their classes. Reports have acknowledged the pivotal need for highly qualified teaching in autism-specific provision. This study identified the styles of classroom adult practice that supported the development of social-communication skills in pupils who are not yet frequent communicators. Currently there are more than 800 teachers and more than double that number of SNAs working in autism-specific early intervention, primary and special school classes (NCSE, 2015) who would benefit from accessing professional development similar to the model carried out for this study.

The policy advice document developed by the NCSE (2015) for the Minister for Education advised that teachers working with pupils on the AS need “specialist training in ASD” (p. 53) before they take up that specific teaching role and highlight a range of evidence-based approaches that should be included in the training. However, the majority of the approaches mentioned in the document have either behavioural or cognitive behavioural focus. This current study identifies the powerful impact of a social constructivist approach on the communication development of pupils on the AS who are infrequent communicators. It points to the importance of emphasising such an approach in this list need for teachers to have a deep understanding of social-constructivist approaches and in any policy advice/policy on educating/supporting pupils on the AS.

Creating communication enabling contexts.

The social-communication skills of the five school-going pupils on the AS from five different settings in this study were severely compromised in terms of; attention to and engagement with others, frequency of their communication and their language abilities. Communication and language development occurs within a social context. However, opportunities for learning are minimised when the pupil is not motivated to attend and

engage with others. The findings indicate that pupils on the spectrum were positively engaged when the adults were extremely responsive and when resources that were motivating and interesting to the pupil were used. Communication development opportunities were optimised in this study during Co-operative Activities. These activities supported more shared engagement, less use of adult directive communication and more pupil speech than Academic Activities or activities that the pupil could potentially carry out on his or her own. As communication and language underpins the academic learning that occurs in schools, staff working with school going pupils on the AS who are not yet frequent communicators would benefit from understanding how different classroom activities impact on the quality of adult-pupil interactions. Further, staff should be actively encouraged to use contexts that are more conducive to pupil participation.

Matching strategy use to individual needs.

The five pupils involved in the study had similar but also individual needs. The learning opportunities afforded to this group of learners following their adults' participation in the PD yielded very positive social-communication and language outcomes. However, the nature of the development was influenced by the pupil's individual characteristics and the challenge of matching the strategy use to the learning needs of the individual pupil. Staff will need to be cognisant that while implementation of this specific content will support them in developing social-communication and language in their classes, optimum outcomes will occur when staff have a deep understanding of the pupil's learning characteristics and can adapt the content, their pedagogical approach and the environment to match those needs. Staff will require support in developing these skills.

The cohort of pupils in this study were older than most children who had participated in previous social interactionist studies, yet the outcomes were highly promising in terms of duration of interactive engagement, pupil initiations and the pupils' use of communication for social interaction with the classroom adults. These findings suggest that in order to maximise developmentally appropriate opportunities for social-communication and language learning there is a need to consider how pupils on the AS are grouped within autism-specific classes. Older pupils who are early communicators and who spend little time in shared engagement with others should have the opportunity to develop these skills no matter what age they are. Perhaps broadening the age band criteria

for preschool classes to allow older early communicators access and ensuring all staff in such classes are well versed in social interactionist strategies is what is required.

SNA Professional Development

Since the establishment of autism-specific provision in 1998, there has been a phenomenal growth in the number of SNAs supporting pupils on the AS in these classrooms, with the NCSE reporting a minimum of 1,898 in 2015. This group of school staff is employed to support the care needs of the pupils (DES, 2014). However, a recent Oireachtas report confirms that the role has expanded and evolved over the years with many SNAs taking on an administrative, pedagogical and/or behavioural management role and advises stakeholders and policy makers that it may not be possible to revert to a care only role (Government of Ireland, 2016). Despite the growth in numbers and change in role, there is a dearth of PD opportunities available for this cohort of school staff (Daly et al., 2016; Government of Ireland, 2016). The researcher's belief that social-communication and language development occurs across contexts and with a range of communicative partners, influenced her decision to include the SNAs in the PD initiative. Including this cohort of staff in this study addressed the recommendation of the Oireachtas report that "SNAs should be provided with opportunities to avail of PD relevant to their work and similar to that of teachers" (Government of Ireland, 2016, p.13).

Evidence shows that the SNAs implemented the PD content successfully, their knowledge and confidence of how best to support the development and social-communication and language of their pupils grew and they actively contributed to the collaborative development of new knowledge within the group meetings. The teachers and SNAs accessing the same PD initiative was highly beneficial for the teaching and learning processes within the classroom. A growth of collegial trust and respect emerged as the adults engaged in the collaborative process of enhancing each other's understanding of the PD content beyond the PD meetings through discussion, affirmation and problem solving. This collegial partnership ensured the positive outcomes for the pupils in their classes. These outcomes strengthen the recommendation of the Oireachtas report that policy makers and stakeholders should consider "the potential benefits in utilising the strong skill base which exists among SNAs" because of the potential benefits for the pupil. (Government of Ireland, 2016, p. 17).

Implications for Access and Inclusion Model:

The findings from this study will have implications for those operating the “Access and Inclusion Model (AIM)”, a programme of supports launched by the DES in 2016 with a remit to ensure that barriers which limit the access and participation of children with disabilities in mainstream, state-funded preschool programmes, are minimised. (Inter-Departmental Group Report, 2015). “A Qualified and Confident Workforce” and “Expert Educational Advice and Support” are recognised as essential elements of the support to be provided. The PCK, identified in this current study as pivotal in supporting social-communication, will be required for the workforce so that they are confident in meeting the needs of young infrequent communicators on the AS. Further, the experts employed in an advisory and supporting role will need to have the ability to assist the early childhood practitioners in nuancing the PCK so that individual children’s social-communication abilities are maximised.

Limitations

- While the outcomes from this study were very positive it must be acknowledged that all of the adults self-selected to participate indicating their motivation to change, this motivation may have impacted on their participation and commitment to the initiative and thus positively influenced the outcomes.
- The data derived from the observations relied on pre-post analysis only and therefore cannot rule out other variables (e.g., maturation) that may have impacted on the positive outcomes. Analysis of the observations over the lifetime of the PD would have strengthened the validity and reliability of the findings. However, because the researcher took this study on as an individual this was not possible in terms of time. Further, time did not allow the opportunity to determine if the positive changes in the adults’ interaction style and pupils’ social-communication skills endured and developed. There is a need for future research to explore intermediate and longer-term effects of the PD content to ascertain early and subsequent effects.
- The researcher undertook the study as an individual hence there is a possibility of bias in the collection and analysis of the data. Every effort was made to eliminate bias through the use of multiple data sources and use of an objective research buddy to review the analysis of the observations and the qualitative data transcripts. However,

the final interpretation of the data was the researchers and bias may not have been totally eliminated. Further, as the participants were aware of the researcher's role as MKO and researcher, their responses may have been influenced by the relationship built with them over time and they may have given me the responses they thought the researcher wanted.

- The resources brought by each of adults to the post-PD sessions differed from what they used during the pre-PD sessions, although the context may have been the same. While the use of different resources gave rich insights on the impact of context on interactions, the reuse of the pre-PD resources during the post-PD interactions could have facilitated stronger comparison of the changes that occurred in communicative relationship of the dyads. However, allowing the classroom adults autonomy in the selection of the context in which to interact with their pupil offered insights into the effectiveness of the activities in supporting individual pupils' social-communication use.
- The researcher acknowledges the small sample size within this study and the importance of randomised large sampled studies. However, she recognises the challenges of applying this strategy to education contexts in terms of time and costs. The heterogeneity that occurs within the population of pupils on the AS complicates research further. Therefore, to effectively identify the nuances of communication dynamics, smaller more in-depth studies yield a truer picture for this cohort of pupils.
- Although the numbers in this study were low and statistical comparisons could not be carried out, the use of a case study framework offered strength to the findings of this study. The case studies identified the impact of a responsive communication style on pupils who differed in age, language abilities and personalities.
- The context specific model of PD was seen to be highly influential in supporting the changes observed in the adults' style of communication. To recruit staff with similar needs, participants were recruited across Ireland. These adults engaged with the PD activities in their own time. The future roll out of the model will have implications in terms of time, money and participant commitment.
- The researcher's background in teachers' professional development and her teaching experience in a class for pupils on the AS for many years gave her an advantage in understanding the needs of this group of adults when developing the model of PD.

This may impact on the future roll-out of this model of PD as such expertise would take time to develop. However, the abilities developed by the participants in this study could be built on to a level that would allow them to adopt this role.

Recommendations for Future Research

- This study used adult and pupil communication outcomes measures immediately following the termination of the nine-month initiative. It would be beneficial to carry out a follow up study to ascertain subsequent outcomes for the pupils and to explore the long-term use of the strategies by the adults.
- This study emphasised the classroom adults' use of facilitative actions and utterances and while "eliciting" strategies were also addressed, they were not emphasised to the same extent. Future research could explore the effects of these strategies on the language use of reluctant speakers in settings where a positive relationship is already established.
- The study found that communicative balance was not evident within episodes of shared engagement initiated by three of the four pupils following a nine-month intervention. A longitudinal study is merited to ascertain if continued adult use of a facilitative style of communication would encourage a more equal balance within the interactions.
- Although all five pupils in this study are described as early communicators, there was heterogeneity within this small group. Future research could further examine the use of the PD content with three specific groups of early communicators; nonverbal pupils; pupils with a very limited range of vocabulary and pupils who have a good range of speech but who do not communicate regularly.
- The nonverbal pupil did not acquire speech after the nine-month intervention. However, he was seven years and three months old on joining the study. A study using the PD content with non-verbal pupils who have just arrived in a preschool setting is merited.
- This study encouraged the adults to interact with the pupils in fun laden contexts that included resources that were motivating and of high-interest to the particular pupil. A longitudinal study is required to explore the transition for the dyads from such

contexts to more academic oriented contexts when the pupils' early social-communication skills are more robust.

- The study encouraged both staff members to set aside ten minutes each day for the implementation of the PD content. Twenty minutes per pupil each day maybe too costly in terms of time and resources in a class of six pupils. Future research could explore the use of the strategies within small groups.
- A study of SNAs using the social-communication strategies in their daily interactions as outlined in the DES circular is merited.
- This study was carried out with staff who worked in autism-specific classes where the age and language abilities of the pupils vastly differed. The study suggests that the communication of the early communicator from each of the five classes benefited enormously when the adults' knowledge of social interactionist strategies was enhanced. Future research should focus on providing staff in autism-specific preschool classes with such knowledge so that the outcomes for all of the pupils within that age bracket are monitored.
- The findings in this study make tentative suggestions that many of the difficulties observed during the initial interactions arose from the adult domination of control within the interactions. It would seem that the adults did not have the skills to enable the pupils to share the balance of control within the interactions. A study is merited in classes for pupils on the autism spectrum in terms of the pupils' level of control and autonomy.
- Sequential coding in this study identified that the use of "eliciting" actions and utterances supported the verbal pupils' language use. A more in-depth study on this style of adult communication with a cohort of verbal but reluctant speakers on the AS is merited.

Implications for Future Professional Development

In recent years, reports and policy documents have called for professional development initiatives that are practical and relevant to the specific needs of the teachers and to the cohort of pupils they teach (Daly et al. 2016; NCSE, 2015; Teaching Council, 2011; 2016). The PD initiative developed for this study addressed the needs of a specific group of school staff and the PCK was specific to the needs of their particular group of

pupils. The findings confirm and stress the value of contextualising PD as the participants constructed and shared knowledge that was tailored to the characteristics of their pupils and to similar experiences and challenges in their practice. This in-turn led to significant enhanced outcomes for the pupils. However, the study identifies a number of elements that were pivotal in the learning process and which should be considered when developing PD initiatives for staff working with pupils on the AS.

The Teaching Council (2011; 2016) advocates that learning occurs within a learning community and that it would occur within schools or across a cluster of schools. This study involved a cluster of schools to take account of the specific needs of the participants and the community met on Saturdays over an academic year. Involvement in such a community of learners was found to be central to the adults' pedagogical empowerment. However, planning for future communities of learners from autism provision will have implications. Currently staff working in autism provision in Ireland, do not receive extra remuneration, nor are they required to take responsibility for improving their professional knowledge. The key challenge will be to encourage staff to become involved in such a community without compromising the integrity of the school year and without causing disruption to pupil learning.

While the outcomes for the adults were considerable, the presence of the MKO was required to facilitate enhanced and accelerated learning for this particular community of learners. She sourced the appropriate content knowledge, facilitated discussion of that content taking account of the participants' specific contexts and she ensured the participants were active in their own learning through the activities of implementation, observation, reflection and discussion. The challenge going forward is the sourcing of MKOs with the skills in formal and pedagogical knowledge and skills in facilitating the participants' active engagement. The expertise developed by participants involved in this study could be harnessed to meet this challenge.

The Teaching Council (2016) advocates a culture of teachers' active engagement in their own learning. Within the social constructivist framework of this study the participants enacted, reflected and discussed the content throughout the lifetime of the PD. These activities supported the embedding and deeper understanding of the content and enabled the adults to match the content to their particular pupil's learning needs. However, the findings show that it cannot be presumed that participants come to PD with

intact abilities to critically reflect on their own and others' practice. Future PD should support the adults' understanding of what constitutes reflection before embarking on such an activity.

Concluding Comments

Evidence reported in this study identifies that, prior to their participation in the PD the classroom adults were observed to use a predominately directive style of communication during interactions with their prelinguistic pupils on the AS. This directive style had a negative transactional impact on the adult-pupil interactions. However, the findings show that an Inside/Outside model of PD underpinned by social constructivist principles of learning was highly effective in; deepening the adults' understanding of the nature of communication and its development; transforming their communication to a predominately responsive style and empowering the adults to support the development of social-communication and language in pupils on the AS in their classes and wider school community. The study describes the PD structures and adult learning processes that brought about these changes. The findings also provide a unique insight into the styles of classroom practice which enable the social-communication and language skills of pupils on the AS who are not yet frequent communicators. The changes on the adults' interaction styles supported increased duration of positive shared engagement, increased pupil social-communication, greater frequency of initiations and growth in mutuality. Further, this study describes the nature of that development and how it is influenced by pupil's individual characteristics as learners and the context in which the interactions occurred.

To the researcher's knowledge this is the first national or international comprehensive study to explore the efficacy of an Inside/Outside model of professional development on the adult and pupil outcomes in autism-specific settings. Through this PD initiative, the researcher sought to enhance social interactions that occurred between classroom adults and their pupils on the AS who are infrequent communicators. The significance of the study lies in the exploration of the use of social interactionist strategies by school staff and the effects of these strategies on the social-communication and language outcomes for their young school-going pupils on the AS. The study also reports on the impact of the particular model of PD developed for the study on the adults' learning and in particular the role of the MKO in this model. The findings from this study should make a distinct contribution to the scant body of research available on professional development of classroom staff working with young pupils on the autism spectrum.

References

- Adamson, L. B., Bakeman, R., Deckner, D. F., & Ronski, M. A. (2009). Joint engagement and the emergence of language in children with autism and Down syndrome. *Journal of Autism and Developmental Disorders*, 39(1), 84-96. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=8826943d-0895-44fc-ac26-256e93f74e53%40sessionmgr4009>
- Adamson, L. B., McArthur, D., Markov, Y., Dunbar, B., & Bakeman, R. (2001). Autism and joint attention: Young children's responses to maternal bids. *Journal of Applied Developmental Psychology*, 22(4), 439-453. [https://doi.org/10.1016/S0193-3973\(01\)00089-2](https://doi.org/10.1016/S0193-3973(01)00089-2)
- Aldred, C., Green, J., & Adams, C. (2004). A new social-communication intervention for children with autism: Pilot randomised controlled treatment study suggesting effectiveness. *Journal of Child Psychology and Psychiatry*, 45(8), 1420-1430. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=a430ee54-8940-4321-af61-4a1a97c3eb30%40sessionmgr4008>
- Ambrose, R., Philipp, R., Chauvot, J., & Clement, L. (2003). A web-based survey to assess prospective elementary school teachers' beliefs about mathematics and mathematics learning: An alternative to Likert scales. *International Group for the Psychology of Mathematics Education*, 2, 33-40. Retrieved from <https://files.eric.ed.gov/fulltext/ED500894.pdf>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington: VA: American Psychiatric Publishing.
- Anderson, D. K., Lord, C., Risi, S., DiLavore, P. S., Shulman, C., Thurm, A., ... Pickles, A., (2007). Patterns of growth in verbal abilities among children with autism spectrum disorder. *Journal of Consulting and Clinical Psychology*, 75(4), 594-604. Retrieved from <https://pdfs.semanticscholar.org/5f70/f7caeeb6dd4938a8d0d8162ce8cf4ebdc098.pdf>
- Annenberg Institute for School Reform. (2004). *Professional learning communities: Strategies that improve instruction*. Providence: Annenberg Institute for School Reform. Retrieved from

<http://www.annenberginstitute.org/sites/default/files/product/270/files/ProfLearning.pdf>

- Awais Bhatti, M., & Kaur, S. (2010). The role of individual and training design factors on training transfer. *Journal of European Industrial Training*, 34(7), 656-672.
<https://doi.org/10.1108/03090591011070770>
- Bailey, A. J. (2008). The neuroscience of autism education. *Autism Research*, 1(4), 207-207. <https://doi.org/10.1002/aur.36>
- Bakeman, R., & Adamson, L. B. (1984). Coordinating attention to people and objects in mother-infant and peer-infant interaction. *Child Development*, 1278-1289.
Retrieved from
<https://pdfs.semanticscholar.org/6292/9d069f18ee7dccc91ada83d0e52ba8962ff7.pdf>
- Baker, J. K., Messinger, D. S., Lyons, K. K., & Grantz, C. J. (2010). A pilot study of maternal sensitivity in the context of emergent autism. *Journal of Autism and Developmental Disorders*, 40(8), 988-999. Retrieved from
<http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=babe1f8d-eb8f-4b35-beaf-eb3727758834%40sessionmgr103>
- Baviskar S. N., Hartle, R. T., & Whitney, T. (2009). Essential criteria to characterize constructivist teaching: Derived from a review of the literature and applied to five constructivist-teaching method articles. *International Journal of Science Education*, 31(4), 541-550. Retrieved from
<https://www.tandfonline.com/doi/abs/10.1080/09500690701731121>
- Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report*, 13(4), 544-559.
Retrieved from
<http://nsuworks.nova.edu/cgi/viewcontent.cgi?article=1573&context=tqr>
- Becker, H. J., & Riel, M. M. (1999). Teacher professionalism and the emergence of constructivist-compatible pedagogies. Paper presented at the *American Educational Research Association*, Montreal, Canada. Retrieved from
<file:///C:/Users/spduser/Downloads/AERJ-Becker-Riel-Final.pdf>

- Bell, B., & Gilbert, J. K. (1996). *Teacher development: A model from science education*. Psychology Press. Retrieved from <https://files.eric.ed.gov/fulltext/ED395763.pdf>
- Bishop, A. G., Brownell, M. T., Klingner, J. K., Leko, M. M., & Galman, S. A. (2010). Differences in beginning special education teachers: The influence of personal attributes, preparation, and school environment on classroom reading practices. *Learning Disability Quarterly*, 33(2), 75-92.
<https://doi.org/10.1177/073194871003300202>
- Blank, R. K., de las Alas, N., & Smith, C. (2007). *Analysis of the quality of professional development programs for mathematics and science teachers: Findings from a cross-state study* (Review). Washington: Council of Chief State School Officers.
- Blazer, C. (2005). *Literature review on professional development for teachers* (Review). Miami, Florida: Office of Accountability and System wide Performance.
Retrieved from
<http://drs.dadeschools.net/AdditionalReports/Professional%20Development.pdf>
- Bochner, S. & Jones, J. (2003). *Child language development: Learning to talk*. London: Whurr Publishers.
- Boilson, A.M., Staines, A., Ramirez, A., Posada, M., Sweeney, M. R. (2016). Operationalisation of the European protocol for autism prevalence (EPAP) for autism spectrum disorder prevalence measurement in Ireland. *Journal of Autism and Developmental Disorders*, 46(9), 3054-3067. <https://doi.org/10.1007/s10803-016-2837-y>
- Bolam, R., & Weindling, D. (2006). *Synthesis of research and evaluation projects concerned with capacity-building through teachers' professional development*. London: Retrieved from
http://www.gtce.org.uk/research/commissioned_research/cpd/synthesis_cpd_projects/
- Bolam, R., McMahon, A., Stoll, L., Thomas, S., Wallace, M., Greenwood, A., ...Smith, M. (2005). *Creating and sustaining effective professional learning communities*. Bristol, UK: University of Bristol, Department of Education and Skills. Retrieved from
[https://s3.amazonaws.com/academia.edu.documents/34620163/Creating_and Sustaining PLCs_tcm4-631034.pdf?;](https://s3.amazonaws.com/academia.edu.documents/34620163/Creating_and_Sustaining_PLCS_tcm4-631034.pdf?;)

- Bondy, A. S., & Frost, L. A. (1995). Educational approaches in preschool. In E. Schopler, & G. B. Mesibov (Eds.), *Learning and cognition in autism*, (pp. 311-333). Boston, MA: Springer Publishers.
- Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher*, 33(8), 3-15.
<https://doi.org/10.3102/0013189X033008003>
- Borko, H., & Putnam, Ralph T. (1995). Expanding a teacher's knowledge base: A cognitive psychological perspective on professional development. In Guskey, T. R., & Huberman, M (Eds.), *Professional development in education: New paradigms & practices*, (pp. 35-65). New York: Teachers College Press.
- Borko, H., Jacobs, J., Eiteljorg, E., & Pittman, M. E. (2008). Video as a tool to fostering productive discussions in mathematics professional development. *Teaching and Teacher Education*, 24(2), 417-436. <https://doi.org/10.1016/j.tate.2006.11.012>
- Bornstein, M. H., & Tamis-LeMonda, C. (2008). Mother-infant interaction. In Bremner, G., & Fogal, A. (Eds.), *Blackwell handbook of infant development*, (pp. 269-295). New Jersey, USA: John Wiley & Sons.
- Boud, D. (2001). Using journal writing to enhance reflective practice. *New Directions for Adult & Continuing Education*, 2001(90), 9-18. Retrieved from
<http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=9178941&site=ehost-live>
- Boudah, D. J., Blair, E., & Mitchell, V. J. (2003). Implementing and sustaining strategies instruction: Authentic and effective professional development or "business as usual"? *Exceptionality*, 11(1), 3-23. https://doi.org/10.1207/S15327035EX1101_2
- Boylan, M., Coldwell, M., Maxwell, B., & Jordan, J. (2017). Rethinking models of professional learning as tools: A conceptual analysis to inform research and practice. *Professional Development in Education*, 1-20.
<https://doi.org/10.1080/19415257.2017.1306789>
- Breakwell, G. M. (2012). Diary and narrative methods. In Breakwell, G. M., Smith, J.A., & Wright, D. B. (Eds.), *Research methods in psychology* (1st ed., pp. 301-410). London: Sage Publications.

- British Educational Research Association (BERA). (2011). *Ethical guidelines for educational research*. Retrieved from <https://www.bera.ac.uk/researchers-resources/publications/ethical-guidelines-for-educational-research-2011>
- Broad, K., & Evans, M. (2006). *A review of literature on professional development content and delivery modes for experienced teachers* (Review). Ontario Canada: University of Toronto, Ontario Institute for Studies in Education. Retrieved from <https://www.oise.utoronto.ca/ite/UserFiles/File/AReviewofLiteratureonPD.pdf>
- Brodin, J., & Stancheva-Popkostadinova, V. (2009). Early interventions in children with intellectual disabilities. *Annals of union of scientists: Science, culture and education* (pp. 215-220). Blagoevgrad: Faculty of Public Health and Sport.
- Brophy, J. (2003). Discussion. In J. Brophy (Ed.), *Using video in teacher education* (pp. 287-304). N.Y. USA: Emerald Group Publishing Limited.
- Bruner, J. S., Roy, C., & Ratner, N. (1982). The beginnings of request. In K. E. Nelson (Ed.), *Children's language*. (3rd ed., pp. 91-138). New York: LEA.
- Bruner, J. S. (1981). The social context of language acquisition. *Language & Communication*, 1(2-3), 155-178. [https://doi.org/10.1016/0271-5309\(81\)90010-0](https://doi.org/10.1016/0271-5309(81)90010-0)
- Bruner, J. S. (1983). *Child's talk: Learning to use language*. New York: Norton Publishers.
- Bryan, L. A., & Atwater, M. M. (2002). Teacher beliefs and cultural models: A challenge for science teacher preparation programs. *Science Education*, 86(6), 821-839. <https://doi.org/10.1002/sce.10043>
- Bubb, S. & Earley, P. (2010). *Helping staff develop in schools*. London U.K.: Sage Publications.
- Buchanan, M. L., Morgan, M., Cooney, M., & Gerharter, M. (2006). The University of Wyoming early childhood summer institute: A model for professional development that leads to changes in practice. *Journal of Early Childhood Teacher Education*, 27(2), 161-169. <https://doi.org/10.1080/10901020600675125>
- Buckley, B. (2003). *Children's communication skills: From birth to five years*. London: Routledge Publications.

- Butler, D. L., Lauscher Novak, H., Jarvis-Selinger, S., & Beckingham, B. (2004). Collaboration and self-regulation in teachers' professional development. *Teaching and Teacher Education*, 20(5), 435-455. <https://doi-org.dcu.idm.oclc.org/10.1016/j.tate.2004.04.003>
- Camaioni, L. (2008). Early language. In Bremner, G., & Fogal, A. (Eds.), *Blackwell handbook of infant development* (pp. 404-426). New Jersey, USA: John Wiley & Sons.
- Carey, J. (2012). *An introduction to using video for research*. (No. 3). London: NCRM: National Centre for Research Methods. Retrieved from http://eprints.ncrm.ac.uk/2259/4/NCRM_workingpaper_0312.pdf
- Carpenter, M., Nagell, K., & Tomasello, M. (1998). *Social cognition, joint attention, and communicative competence from 9 to 15 months of age*. University of Chicago Press: Monographs of the Society for Research in Child Development. Retrieved from <http://www.jstor.org/stable/1166214>
- Carter, A. S., Messinger, D. S., Stone, W. L., Celimli, S., Nahmias, A. S., & Yoder, P. (2011). A randomized controlled trial of Hanen's 'More than words' in toddlers with early autism symptoms. *Journal of Child Psychology and Psychiatry*, 52(7), 741-752. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=23d259ca-8b40-4326-8968-ae67a5976b96%40sessionmgr4007>
- Chappuis, S., Chappuis, J., & Stiggins, R. (2009). Supporting teachers. *Educational Leadership*, 66(5), 56-60. Retrieved from http://www.studentachievement.org/wp-content/uploads/Supporting-Teacher-Learning-Teams_Ed-Leadership.pdf
- Charman, T. (2003). Why is joint attention a pivotal skill in autism? *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences*, 358(1430), 315-324. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1693124/pdf/12639329.pdf>
- Charmaz, K. (2012). The power and potential of grounded theory. *Medical Sociology Online*, 6(3), 2-15. Retrieved from <https://pdfs.semanticscholar.org/93d2/8c60474e31cedd4464c5b24ae0af2efbc090.pdf>

- Chawarska, K., & Volkmar, F. R. (2005). Autism in infancy and early childhood. In Volkmar, F. R., Paul, R., Klin, A., & Cohen, D. (Eds.), *Handbook of autism and pervasive developmental disorders* (3rd ed., pp. 223-246). N.J. USA: Wiley & Sons.
- Chen, K. L., Chiang, F. M., Tseng, M. H., Fu, C. P., & Hsieh, C. L. (2011). Responsiveness of the psychoeducational profile-for children with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 41(12), 1658-1664. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=bab51397-ef0f-468f-bcb6-5b4432e5129c%40sessionmgr102>
- Chiang, H. M. (2009a). Naturalistic observations of elicited expressive communication of children with autism: An analysis of teacher instructions. *Autism*, 13(2), 165-178. <https://doi.org/10.1177/1362361308098513>
- Chiang, H. M. (2009b). Differences between spontaneous and elicited expressive communication in children with autism. *Research in Autism Spectrum Disorders*, 3(1), 214-222. <https://doi.org/10.1016/j.rasd.2008.06.002>
- Chiang, H. M., & Carter, M. (2008). Spontaneity of communication in individuals with autism. *Journal of Autism and Developmental Disorders*, 38(4), 693-705. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=5a7b3012-b304-4b42-86c6-011510ffe6e8%40sessionmgr104>
- Christensen, D., Bilder, D., Zahorodny, W., Pettygrove, S., Durkin, M., Fitzgerald, R., . . . Yeargin-Allsopp, M. M. (2016). Prevalence and characteristics of autism spectrum disorder among 4-year-old children in the autism and developmental disabilities monitoring network. *Journal of Developmental & Behavioral Pediatrics*, 37(1), 1-8. Retrieved from <https://www.cdc.gov/mmwr/volumes/65/ss/ss6503a1.htm?scid=ss6503a1w>
- Clarke, D., & Hollingsworth, H. (2002). Elaborating a model of teacher professional growth. *Teaching and Teacher Education*, 18(8), 947-967. [https://doi.org/10.1016/S0742-051X\(02\)00053-7](https://doi.org/10.1016/S0742-051X(02)00053-7)
- Clifford, S., Hudry, K., Brown, L., Pasco, G., & Charman, T. (2010). The modified-classroom observation schedule to measure intentional communication (M-

- COSMIC): Evaluation of reliability and validity. *Research in Autism Spectrum Disorders*, 4(3), 509-525. <https://doi-org.dcu.idm.oclc.org/10.1016/j.rasd.2009.11.008>
- Coburn, C. E. (2001). Collective sensemaking about reading: How teachers mediate reading policy in their professional communities. *Educational Evaluation and Policy Analysis*, 23(2), 145-170. Retrieved from <http://www.jstor.org/stable/3594127>
- Cochran-Smith, M., & Lytle, S. L. (2001). Beyond certainty: Taking an inquiry stance on practice. In Leibenman A., & Miller, L. (Eds.), *Teachers caught in the action: Professional development that matters* (pp. 45-58). Colombia University NY: Teachers College Press.
- Cochran-Smith, M., & Lytle, S. L. (1999). Relationships of knowledge and practice: Teacher learning in communities. *Review of Research in Education*, 1(24), 249-305. Retrieved from <http://www.jstor.org/stable/1167272>
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th. ed.). New York: Routledge.
- Corbett, B. A., Schupp, C. W., Simon, D., Ryan, N., & Mendoza, S. (2010). Elevated cortisol during play is associated with age and social engagement in children with autism. *Molecular Autism*, 1(1), 1-13. <https://doi.org/10.1186/2040-2392-1-13>
- Corcoran, T., Fuhrman, S. H., & Belcher, C. L. (2001). The district role in instructional improvement. *Phi Delta Kappan*, 83(1), 78-84. Retrieved from http://repository.upenn.edu/cgi/viewcontent.cgi?article=1006&context=gse_pubs
- Cordingley P., Bell, M., Evans, D., & Firth, A. (2005). *The impact of collaborative CPD on classroom teaching and learning: What do teacher impact data tell us about collaborative CPD?* (Review). London: EPPI-Centre, University of London. Retrieved from https://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/CPD_rv3.pdf?ver=2006-03-02-124807-593;
- Cordingley, P., Bell, M., Isham, C., Evans, D., & Firth A. (2007). *What do specialists do in CPD programmes for which there is evidence of positive outcomes for pupils and teachers?* (Technical Report). London: EPPI-Centre, University of London.

Retrieved from

<https://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/CPD4%20Tech%20Report%20-%20SCREEN.pdf?ver=2007-10-01-123304-810;>

Cordingley, P., Bell, M., Rundell, B., Evans, D., & Curtis, A. (2003). *The impact of collaborative CPD on classroom teaching and learning: How does collaborative continuing professional development (CPD) for teachers of the 5–16 age range affect teaching and learning?* (Review). London: EPPI-Centre. Retrieved from https://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/CPD_rv1.pdf?ver=2006-02-27-231004-323;

Cordingley, P., Bell, M., Thomason, S., & Firth A. (2005). *The impact of collaborative continuing professional development (CPD) on classroom teaching and learning* (Review). London: EPPI Centre, University of London. https://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/cpd_rv2.pdf?ver=2006-03-02-124802-077;

Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. (4th ed.). Thousand Oaks, California: Sage Publications.

Cumine, V., Leach, J., & Stevenson, G. (2000). *Autism in the early years: A practical guide*. London: David Fulton.

Curry, M. (2008). Critical friends groups: The possibilities and limitations embedded in teacher professional communities aimed at instructional improvement and school reform. *Teachers College Record*, 110(4), 733-774. Retrieved from <http://www.schoolreforminitiative.org/wp-content/uploads/2014/02/CFG-impact-Curry.pdf>

Czaplicki, K. A. (2012). *Investigation of in-service teachers' use of video during a critical friends group* (Unpublished PhD). Georgia State University, Georgia USA. Retrieved from https://scholarworks.gsu.edu/cgi/viewcontent.cgi?referer=https://scholar.google.com/&httpsredir=1&article=1014&context=ece_diss

Dallos, R. (2012). Observational methods. In Breakwell, G. M., Smith, J. A., & Wright, D. B. (Eds.), *Research methods in psychology* (pp. 344-366). London: Sage Publications.

- Daly, P., Ring, E., Egan, M., Fitzgerald, J., Griffin, C., Long, S.,...Wall, E. (2016). *An evaluation of education provision for students with autism spectrum disorder in Ireland*. (No. 21). Trim: National Council for Special Education.
- Darling-Hammond, L. (1999). *Teacher quality and student achievement: A review of state policy evidence*. (Review). Washington: Center for the Study of Teaching and Policy. Retrieved from http://www.education.uw.edu/ctp/sites/default/files/ctpmail/PDFs/LDH_1999.pdf:
- Darling-Hammond, L., & Richardson, N. (2009). Research review/teacher learning: What matters? *Educational Leadership*, 66(5), 46-53. Retrieved from <http://outlier.uchicago.edu/computerscience/OS4CS/landscapestudy/resources/Darling-Hammond-and-Richardson-2009.pdf>
- Darling-Hammond, L., & McLaughlin, M. W. (2011). Policies that support professional development in an era of reform. *Phi Delta Kappan*, 92(6), 81-92. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=59243750&site=ehost-live>
- Davis, H. A. (2003). Conceptualizing the role and influence of student-teacher relationships on children's social and cognitive development. *Educational psychologist*, 38(4), 207-234. Retrieved from https://www.researchgate.net/profile/Heather_Davis7/publication/232938449_Conceptualizing_the_Role_and_Influence_of_Student-Teacher_Relationships_on_Children's_Social_and_Cognitive_Development/links/0deec52d436eb20d5f000000/Conceptualizing-the-Role-and-Influence-of-Student-Teacher-Relationships-on-Childrens-Social-and-Cognitive-Development.pdf
- Davis, H. A., & Andrzejewski, C. E. (2009). Teacher beliefs. In Anderman, E., & Anderman, L. (Eds.), *Psychology of classroom learning: An encyclopedia (PCL)* (pp. 909-915). New York: Macmillan.
- Dawson, G., Toth, K., Abbott, R., Osterling, J., Munson, J., Estes, A., & Liaw, J. (2004). Early social attention impairments in autism: Social orienting, joint attention, and attention to distress. *Developmental Psychology*, 40(2), 271-283. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=b171cd00-1a26-425d-9f3e-bbd5430e2d30%40sessionmgr4009>

- Dawson, G., Hill, D., Spencer, A., Galpert, L., & Watson, L. (1990). Affective exchanges between young autistic children and their mothers. *Journal of Abnormal Child Psychology*, 18(3), 335-345. Retrieved from https://www.researchgate.net/profile/Deborah_Hill4/publication/20778748_Affective_Exchanges_Between_Young_Autistic-Children_and_Their_Mothers/links/00b7d52eac2c5348a2000000.pdf
- Day, C. (1993). Reflection: A necessary but not sufficient condition for professional development. *British Educational Research Journal*, 19(1), 83-93. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=9603041329&site=ehost-live>
- deMesquita, P. B., Dean, R., & Young, B. (2010). Making sure what you see is what you get: Digital video technology and the pre-service preparation of teachers of elementary science. *Contemporary Issues in Technology and Teacher Education*, 10(3), 275-293. Retrieved from [file:///C:/Users/spduser/Downloads/article_32406%20\(1\).pdf](file:///C:/Users/spduser/Downloads/article_32406%20(1).pdf)
- Denzin, N. K., & Lincoln, Y. S. (2000). Introduction: The discipline and practice of qualitative research. In Denzin, N. K., & Lincoln, Y. S. (Eds.), *Handbook of qualitative research* (2nd ed., pp. 1-28). Thousand Oaks, CA: Sage Publications.
- Department for Education and Skills (2002). *Autistic spectrum disorders good practice guidance*. Nottingham, UK: DfES Publications.
- Department of Education and Science (2002). *Circular 07/02: Applications for full-time or part-time special needs assistant support to address the special care needs of children with disabilities*. Dublin: Department of Education and Skills. Retrieved from <https://www.education.ie/en/Circulars-and-Forms/Archived-Circulars/Applications-for-Full-or-Part-time-Special-Needs-Assistant-Support-to-Address-the-Special-Care-Needs-of-Children-with-Disabilities-.pdf>
- Department of Education and Science (2001). *The report of the task force on autism: Educational provision and support for persons with autistic spectrum disorders*. Dublin: The Stationary Office.
- Department of Education and Science (2006). *An evaluation of Educational Provision for children with Autistic Spectrum Disorders*. Dublin: The Stationery Office.

- Department of Education and Skills (2014). *Circular 0030/2014: Applications for full-time or part-time special needs assistant support to address the special care needs of children with disabilities*. Dublin: Department of Education and Skills. Retrieved from <https://www.education.ie/en/Circulars-and-Forms/Archived-Circulars/Applications-for-Full-or-Part-time-Special-Needs-Assistant-Support-to-Address-the-Special-Care-Needs-of-Children-with-Disabilities-.pdf>
- Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181-199. <https://doi.org/10.3102/0013189X08331140>
- Desimone, L. M., Porter, A. C., Garet, M. S., Yoon, K. S., Birman, B. F. (2002). Effects of professional development on teachers' instruction: Results from a three-year longitudinal study. *Educational Evaluation and Policy Analysis*, 24(2), 81-112. Retrieved from <http://www.jstor.org.dcu.idm.oclc.org/stable/3594138>
- Diken, O., & Mahoney, G. (2013). Interactions between Turkish mothers and preschool children with autism. *Intellectual and Developmental Disabilities*, 51(3), 190-200. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=684b569d-d0a1-4269-bd07-e0577b9ea0c5%40sessionmgr4006>
- Dooner, A. M., Mandzuk, D., & Clifton, R. A. (2008). Stages of collaboration and the realities of professional learning communities. *Teaching and Teacher Education*, 24(3), 564-574. <https://doi.org/10.1016/j.tate.2007.09.009>
- Dougherty, K. M., & Johnston, J. M. (1996). Overlearning, fluency, and automaticity. *The Behavior Analyst*, 19(2), 289-292. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2733607/pdf/behavan00020-0147.pdf>
- Doussard-Roosevelt, J. A., Joe, C. M., Bazhenova, O. V., & Porges, S. W. (2003). Mother-child interaction in autistic and nonautistic children: Characteristics of maternal approach behaviors and child social responses. *Development and Psychopathology*, 15(2), 277-295. <https://doi.org/10.1017/S0954579403000154>
- Duffy, G. G., & Kear, K. (2007). Compliance or adaptation: What is the real message about research-based practices? *Phi Delta Kappan*, 88(8), 579-581. Retrieved from

<http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=d77cd168-ccb9-4db2-a72f-9ef09a8be65e%40sessionmgr4009>

- Dunst, C., & Kassow, D. (2004). Characteristics of interventions promoting parental sensitivity to child behavior. *Bridges*, 3(3), 1-17. Retrieved from www.researchtopractice.info/bridges/bridges_vol2_no5.pdf
- Eatough, V., & Smith, J. A. (2017). Interpretative phenomenological analysis. In Willig, C., & Stainton R. W. (Eds.), *The Sage handbook of qualitative research in psychology* (2nd ed., pp. 193-211). UK: Sage Publications.
- Elder, J. H., & Goodman, J. J. (1996). Social turn-taking of children with neuropsychiatric impairments and their parents. *Issues in Comprehensive Pediatric Nursing*, 19(4), 249-261. <https://doi.org/10.3109/01460869609026868>
- Elmore, R. F. (2002). *Bridging the gap between standards and achievement: The imperative for professional development in education*. Harvard, USA: Albert Shanker Institute. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.103.3510&rep=rep1&type=pdf>;
- Emam, M. 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. <https://doi.org/10.1080/08856250903223070>
- Englert, C. S., & Tarrant, K. L. (1995). Creating collaborative cultures for educational change. *Remedial & Special Education*, 16(6), 325. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=9511075235&site=ehost-live>
- Erickson, F. (1992). Ethnographic microanalysis of interaction. In M. D. LeCompte, M. L. Millroy, & Preissle, J. (Eds.), *The handbook of qualitative research in education* (pp. 201-225). Orlando, Florida: Academic Press.
- Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development*, 53(4), 25-39. Retrieved from

<http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=81eaaad0-2c54-4cba-bcac-de9083100d7f%40pdc-v-sessmgr01>

- Feilzer, M. Y. (2010). Doing mixed methods research pragmatically: Implications for the rediscovery of pragmatism as a research paradigm. *Journal of Mixed Methods Research*, 4(1), 6-16. <https://doi.org/10.1177/1558689809349691>
- Fenson, L., Dale, P. S., Reznick, J. S., Thal, D., Bates, E., Hartung, J. P., Pethick, S. & Reilly, J. S. (1993). *MacArthur Communicative Development Inventory: Users guide and technical manual*. San Diego, CA: Singular Publishing Company.
- Field, T., Field, T., Sanders, C. & Nadel, J. (2001). Children with autism display more social behaviors after repeated imitation sessions. *Autism*, 5(3), 317-323. <https://doi.org/10.1177/1362361301005003008>
- Field, K. (2011). Reflection at the heart of effective continuing professional development. *Professional Development in Education*, 37(2), 171-175. <https://doi.org/10.1080/19415257.2011.559700>
- Fielding, M., Bragg, S., Craig, J., Cunningham, I., Eraut, M., Gillinson, S., ... Thorp, J. (2005). *Factors influencing the transfer of good practice*. DfES Publications, Nottingham, UK
- Fombonne, E. (2003). Epidemiological surveys of autism and other pervasive developmental disorders: An update. *Journal of Autism and Developmental Disorders*, 33(4), 365-382. <https://doi.org/10.1023/A:102505461>
- Forde, I., Holloway, J., Healy, O., & Brosnan, J. (2011). A dyadic analysis of the effects of setting and communication partner on elicited and spontaneous communication of children with autism spectrum disorder and typically developing children. *Research in Autism Spectrum Disorders*, 5(4), 1471-1478. <https://doi-org.dcu.idm.oclc.org/10.1016/j.rasd.2011.02.008>
- Fraser, C., Kennedy, A., Reid, L., & Mckinney, S. (2007). Teachers' continuing professional development: Contested concepts, understandings and models. *Journal of in-Service Education*, 33(2), 153-169. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=9e5f074f-a17c-4729-a5b7-6c0b4acaa0a7%40sessionmgr4010>

- Fraser, D. (2005). *Professional learning in effective schools: The seven principles of highly effective professional learning*. (No. 1). Melbourne, Australia: Victorian Institute of Teaching. Retrieved from <http://www.education.vic.gov.au/documents/school/teachers/profdev/proflearningeffectivesch.pdf>
- Freed, S. A. (2003). Metaphors and reflective dialogue online. *New Horizons in Adult Education and Human Resource Development*, 17(3), 4-19. <https://doi.org/10.1002/nha3.10169>
- Freeman, S., & Kasari, C. (2013). Parent–child interactions in autism: Characteristics of play. *Autism*, 17(2), 147-161. <https://doi.org/10.1177/1362361312469269>
- Fullan, M. (2006). Change theory. Paper presented at the *Seminar Series. A Force for School Improvement*, Retrieved from https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=fullan+2006+change+theory&oq=fullan+2006+
- Garet, M. S., Porter, A. C., Desimone, L., Birman, B. F., & Yoon, K. S. (2001). What makes professional development effective? Results from a national sample of teachers. *American Educational Research Journal*, 38(4), 915-945. <https://doi.org/10.3102/00028312038004915>
- Gerland, G. (2003). *A real person; life on the outside*. London, UK: Souvenir Press.
- Gibson, S. E., & Brooks, C. (2012). Teachers' perspectives on the effectiveness of a locally planned professional development program for implementing new curriculum. *Teacher Development*, 16(1), 1-23. <https://doi.org/10.1080/13664530.2012.667953>
- Girolametto, L., Hoaken, L., Weitzman, E., & van Lieshout, R. (2000). Patterns of adult-child linguistic interaction in integrated day care groups. *Language, Speech, and Hearing Services in Schools*, 31(2), 155-168. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=ee002799-3059-4537-994f-d5460309e8bd%40pdc-v-sessmgr01>
- Girolametto, L., Sussman, F., & Weitzman, E. (2007). Using case study methods to investigate the effects of interactive intervention for children with autism

- spectrum disorders. *Journal of Communication Disorders*, 40(6), 470-492.
<https://doi.org/10.1016/j.jcomdis.2006.11.001>
- Girolametto, L., Weitzman, E., van Lieshout, R., & Duff, D. (2000). Directiveness in teachers' language input to toddlers and preschoolers in day care. *Journal of Speech, Language, and Hearing Research*, 43(5), 1101-1114.
<https://doi.org/10.1044/jslhr.4305.1101>
- Gottfredson, D. C., Marciniak, E. M., Birdseye, A. T., & Gottfredson, G. D. (1995). Increasing teacher expectations for student achievement. *The Journal of Educational Research*, 88(3), 155-163. Retrieved from
<http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=0b309e29-cb0d-4ba3-9f35-aacb21a86ecc%40sessionmgr4007>
- Government of Ireland (2016). *Houses of the Oireachtas joint committee on education and Social Protection on the role of the special needs assistant*. Dublin, Ireland: Government of Ireland. Retrieved from
<https://www.oireachtas.ie/parliament/media/committees/educationandskills/archiv e-educationandsocialprotection/SNA-Report.pdf>
- Grandin, T. (2006). A conversation with Temple Grandin. Retrieved from
<http://www.npr.org/templates/story/story.php?storyId=5165123>
- Grandin, T. (2006). *Thinking in pictures, my life with autism*. New York: Vintage.
- Green, J., Charman, T., McConachie, H., Aldred, C., Slonims, V., Howlin, P.,....Byford, S. (2010). Parent-mediated communication-focused treatment in children with autism (PACT): A randomised controlled trial. *The Lancet*, 375(9732), 2152-2160. [https://doi.org/10.1016/S0140-6736\(10\)60587-9](https://doi.org/10.1016/S0140-6736(10)60587-9)
- Greenspan, S. I., & Wieder, S. (1999). A functional developmental approach to autism spectrum disorders. *Journal of the Association for Persons with Severe Handicaps*, 24(3), 147-161. Retrieved from
<http://www.phoenixchildrens.org/sites/default/files/assets/pdfs/a-functional-developmental-approach-to-autistic-spectrum-disorders.pdf>
- Gregson, J. A., & Sturko, P. A. (2007). Teachers as adult learners: Re-conceptualizing professional development. *Journal of Adult Education*, 36(1), 1. Retrieved from
<https://files.eric.ed.gov/fulltext/EJ891061.pdf>

- Grieve, A. M. (2009). Teachers' beliefs about inappropriate behaviour: Challenging attitudes? *Journal of Research in Special Educational Needs*, 9(3), 173-179. <https://doi.org/10.1111/j.1471-3802.2009.01130.x>
- Guskey, T. R. (1997). Research needs to link professional development and student learning. *Journal of Staff Development*, 18, 36-41. Retrieved from <http://www.nsdc.org/educatorindex.htm>
- Guskey, T. R. (2002a). Does it make a difference? Evaluating professional development. *Educational Leadership*, 59(6), 45-51. Retrieved from https://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1005&context=edp_facpub
- Guskey, T. R. (2002b). Professional development and teacher change. *Teachers and Teaching*, 8(3), 381-391. <https://doi-org.dcu.idm.oclc.org/10.1080/135406002100000512>
- Guskey, T. R. (2009). Closing the knowledge gap on effective professional development. *Educational Horizons*, 87(4), 224-233. Retrieved from <https://files.eric.ed.gov/fulltext/EJ849021.pdf>
- Guskey, T. R., & Sparks, D. (1996). Exploring the relationship between staff development and improvements in student learning. *Journal of Staff Development*, 17(4), 34-38. Retrieved from <https://eric.ed.gov/?id=EJ535078>
- Guskey, T. R., & Yoon, K. S. (2009). What works in professional development? *Phi Delta Kappan*, 90(7), 495-500. Retrieved from <https://keystoliteracy.com/wp-content/pdfs/orc-implement-science/What%20works%20in%20PD.pdf>
- Gustafsson, J. (2017). Single case studies vs. multiple case studies: A comparative study. Retrieved from <http://www.diva-portal.org/smash/get/diva2:1064378/FULLTEXT01.pdf>
- Haebig, E., McDuffie, A., & Weismer, S. E. (2013). The contribution of two categories of parent verbal responsiveness to later language for toddlers and preschoolers on the autism spectrum. *American Journal of Speech-Language Pathology*, 22(1), 57-70. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=dd38704c-c649-490b-b9ac-2bcf3711103a%40sessionmgr4006>

- Hammersley, M. (1987). Some notes on the terms 'validity' and 'reliability'. *British Educational Research Journal*, 13(1), 73-82. Retrieved from <http://www.jstor.org.dcu.idm.oclc.org/stable/pdf/1501231.pdf>
- Hargreaves, D. H. (2003). *Education epidemic: Transforming secondary schools through innovation networks*. London, UK: Demos.
- Hartley, J. (1994). Case studies in organizational research. In C. Cassell, & G. Symon (Eds.), *Qualitative methods in organizational research, a practical guide* (pp. 208-229). London: Sage Publications.
- Hartley, J. (2004). Case study research. In C. Cassell, & G. Symon, (Eds.), *Essential guide to qualitative methods in organizational research*. (pp. 323-333). London: Sage Publications.
- Harwell, S. H. (2003). *Teacher professional development: It's not an event, it's a process*. Waco, Texas: CORD. Retrieved from <http://www.northernc.on.ca/leid/docs/teacher%20professional%20development.pdf>
- Hattie, J. A. C. (2003). (2003). Teachers make a difference: What is the research evidence? Paper presented at the *Building Teacher Quality: What does the Research Tell Us*, ACER Research Conference: Melbourne, Australia. Retrieved from [http://research.acer.edu.au/research_conference_2003/4/;](http://research.acer.edu.au/research_conference_2003/4/)
- Hawley, W. D., & Valli, L. (2000). Learner-centered professional development. *Phi Delta Kappa Center for Evaluation, Development, and Research*, 27, 7-10. Retrieved from http://www.paadultedresources.org/uploads/8/6/3/4/8634493/learner_centered_pr_o.pdf
- Henwood, K., & Pidgeon, N. (2012). Grounded theory. In G. M., Breakwell, J.A., Smith, & D. B., Wright (Eds.), *Research methods in psychology* (pp. 461-4484). London: Sage Publications.
- Hill, AP., Zuckerman, K. & Fombonne, E. (2015). Epidemiology of autism spectrum disorders. In M de I. A., Robinson-Agramonte (Eds.), *Translational approaches to autism spectrum disorder* (pp. 13-38). Switzerland: Springer.

- Hill, H. C. (2007). Learning in the teaching workforce. *The Future of Children*, , 111-127.
Retrieved from <https://files.eric.ed.gov/fulltext/EJ795882.pdf>
- Hoban, G. (1996). *A professional development model based on interrelated principles of teacher learning*. (Unpublished PhD). University of British Columbia, Canada.
Retrieved from
<https://open.library.ubc.ca/cIRcle/collections/ubctheses/831/items/1.0054954>
- Hoban, G., F., & Erickson, G. (2004). Dimensions of learning for longterm professional development: Comparing approaches from education, business and medical contexts. *Journal of in-Service Education*, 30(2), 301-324. Retrieved from
<https://www.tandfonline.com/doi/pdf/10.1080/13674580400200247>
- Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review*, 26(1), 55-88. <https://doi.org/10.1016/j.dr.2005.11.002>
- Hoff, E., & Naigles, L. (2002). How children use input to acquire a lexicon. *Child Development*, 73(2), 418. Retrieved from
<http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=6327026&site=ehost-live>
- Hollingsworth, H. (2005). Learning about teaching and teaching about learning: Using video data for research and professional development. Paper presented at the *Using Data to Support Learning*, Melbourne, Australia. Retrieved from
https://research.acer.edu.au/cgi/viewcontent.cgi?article=1015&context=research_conference_2005
- Hollins, E.R., McIntyre, L.R., DeBose, C., Hollins, K.S., & Towner, A. (2004). Promoting a self-sustaining learning community: Investigating an internal model for teacher development. *International Journal of Qualitative Studies in Education*, 17(2), 247-264. Retrieved from <https://doi-org.dcu.idm.oclc.org/10.1080/09518390310001653899>
- Hord, S. M. (1997). *Professional learning communities: Communities of continuous inquiry and improvement*. (Report). Austin Texas: Southwest Educational Development Laboratory. Retrieved from
<https://files.eric.ed.gov/fulltext/ED410659.pdf>

- Howitt, D., & Cramer, D. (2011). *Introduction to research methods in psychology* (3rd ed.). Essex, U.K.: Pearson Education.
- Hwang, B., & Hughes, C. (2000). Increasing early social-communicative skills of preverbal preschool children with autism through social interactive training. *Journal of the Association for Persons with Severe Handicaps*, 25(1), 18-28. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.873.237&rep=rep1&type=pdf>
- Ince, A. (2017). Managing risk in complex adult professional learning: The facilitator's role. *Professional Development in Education*, 43(2), 194-211. <https://doi-org.dcu.idm.oclc.org/10.1080/19415257.2016.1164743>
- Ingersoll, B. & Dvortcsak, A. (2010). *Teaching social-communication to children with autism: A practitioner's guide to parent training and a manual for parents*. New York: Guildford Press.
- Ingersoll, B., Dvortcsak, A., Whalen, C., & Sikora, D. (2005). The effects of a developmental, social—pragmatic language intervention on rate of expressive language production in young children with autistic spectrum disorders. *Focus on Autism and Other Developmental Disabilities*, 20(4), 213-222. Retrieved from <https://search.proquest.com/docview/205056597/fulltextPDF/A7789B274F8E4878PQ/1?accountid=15753>
- Ingvarson, L., Meiers, M., & Beavis, A. (2005). Factors affecting the impact of professional development programs on teachers' knowledge. *Education Policy Analysis Archives*, 13(10), 1-28. Retrieved from <http://www.redalyc.org/html/2750/275020513010/>
- Inter-Departmental Group Report (2015). *Supporting Access to the Early Childhood Care and Education (ECCE) Programme for Children with a Disability*. Retrieved from <http://aim.gov.ie/wp-content/uploads/2016/06/Inter-Departmental-Group-Report-launched-Nov-2015.pdf>
- Isaksen, J., Diseth, T. H., Schjølberg, S., & Skjeldal, O. H. (2013). Observed prevalence of autism spectrum disorders in two Norwegian counties. *European Journal of*

- Pediatric Neurology*, 16(6), 592-598. Retrieved from <https://doi.org/10.1016/j.ejpn.2013.03.003>
- Johnson, C. C., & Fargo, J. D. (2010). Urban school reform enabled by transformative professional development: Impact on teacher change and student learning of science. *Urban Education*, 45(1), 4-29. Retrieved from <https://doi-org.dcu.idm.oclc.org/10.1177/0042085909352073>
- Johnson, R. B. (2009). Comments on Howe: Toward a more inclusive “scientific research in education”. *Educational Researcher*, 38(6), 449-457. Retrieved from <http://www.jstor.org.dcu.idm.oclc.org/stable/25592134>
- Johnson, R.B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26. Retrieved from <http://www.jstor.org.dcu.idm.oclc.org/stable/3700093>
- Jordan, R. (2005). Autistic spectrum disorders. In A. Lewis, & B. Norwich (Eds.), *Special teaching for special children: Pedagogies for inclusion* (pp. 110-122). U.K: Open University Press.
- Jordan, R. (2008). Autistic spectrum disorders: A challenge and a model for inclusion in education. *British Journal of Special Education*, 35(1), 11-15. <https://doi.org/10.1111/j.1467-8578.2008.00364.x>
- Joyce, B.R., & Showers, B. (2002). *Student achievement through staff development*. (3rd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.
- Kagan, D. M. (1992). Implication of research on teacher beliefs. *Educational Psychologist*, 27(1), 65-90. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=318056f4-b8fe-4d0b-99a1-5000abcf5c59%40sessionmgr4007>
- Kasari, C., Sigman, M., Mundy, P., & Yirmiya, N. (1988). Caregiver interactions with autistic children. *Journal of Abnormal Child Psychology*, 16, 45-56. <https://doi.org/10.1007/BF00910499>
- Knapp, M. S. (2003). Professional development as a policy pathway. *Review of Research in Education*, 27, 109-157. <https://www.jstor.org/stable/pdf/3568129>
- Kasari, C., Sigman, M., Mundy, P., & Yirmiya, N. (1990). Affective sharing in the context of joint attention interactions of normal, autistic, and mentally retarded children.

- Journal of Autism and Developmental Disorders*, 20(1), 87-100. Retrieved from https://www.researchgate.net/profile/Peter_Mundy/publication/21017059_Affective_sharing_in_the_context_of_joint_attention_interactions_of_normal_autistic_and_mentally_retarded_children/links/00b7d539f0f77ec903000000.pdf
- Kassow, D. Z., & Dunst, C. J. (2004). Relationship between parental contingent-responsiveness and attachment outcomes. *Bridges*, 2(4), 1-17. Retrieved from http://www.evidencebasedpractices.org/bridges/bridges_vol2_no6.pdf.
- Kennedy, A. (2005). Models of continuing professional development: A framework for analysis. *Journal of in-Service Education*, 31(2), 235-250. Retrieved from <http://www.tandfonline.com/doi/pdf/10.1080/13674580500200277>
- Kennedy, M. M. (1998). *Form and substance in mathematics and science professional development*. Wisconsin USA: National Science Foundation and the University of Wisconsin-Madison. Retrieved from <https://files.eric.ed.gov/fulltext/ED435552.pdf>.
- Key, E. (2006). Do they make a difference? A review of research on the impact of critical friends groups. Paper presented at the *National School Reform Faculty Research Forum*, 11(January) Retrieved from http://www.schoolreforminitiative.org/wp-content/uploads/2011/12/research.key_.pdf
- Khumwong, P. (2004). *Research design: Quantitative, qualitative and mixed methods approach*. Unpublished manuscript. Retrieved from <http://community.csusm.edu/mod/resource/view.php?id=359>.
- Kim, J. M., & Mahoney, G. (2005). The effects of relationship focused intervention on Korean parents and their young children with disabilities. *Research in Developmental Disabilities*, 26(2), 117-130. <https://doi.org/10.1016/j.ridd.2004.08.001>
- Kim, S. H., Paul, R., Tager-Flusberg, H., & Lord, C. (2014). Language and communication in autism. In F. R., Volkmar, R., Paul, S. J., Rogers, & K. A., Pelphrey, (Eds.), *Handbook of autism and pervasive developmental disorders, diagnosis, development and brain mechanisms*, (4th. ed., pp. 230-262). New York: John Wiley & Sons, Inc.

- Kirkpatrick, D. L. (1979). Techniques for evaluating training programs. *Training and Development Journal*, (June), 78-92. Retrieved from [http://iptde.boisestate.edu/FileDepository.nsf/c317180a11767f0785256499006b15a3/693b43c6386707fc872578150059c1f3/\\$FILE/Kirkpatrick_79.pdf](http://iptde.boisestate.edu/FileDepository.nsf/c317180a11767f0785256499006b15a3/693b43c6386707fc872578150059c1f3/$FILE/Kirkpatrick_79.pdf)
- Klingner, J. K. (2004). The science of professional development. *Journal of Learning Disabilities*, 37(3), 248-255. Retrieved from <https://pdfs.semanticscholar.org/a1dc/dc38c9401628616a1efa2de3d097957e8882.pdf>
- Klinger, L. G., & Dawson, G. (1992). Facilitating early social and communicative development in children with autism. In S.F., Warren, & J., Reichle, (Eds.), *Causes and effects in communication and language intervention* (pp. 157-186). Baltimore: Paul H. Brookes Publishing.
- Kochanska, G., & Kuczynski, L. (1991). Maternal autonomy granting: Predictors of normal and depressed mothers' compliance and noncompliance with the requests of five-year-olds. *Child Development*, 62(6), 1449-1459. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&id=cc7f0f56-6f31-4cc0-b5c9-bde2c2b74322%40sessionmgr4007>
- Koenig, R. (2010). *Learning for keeps: Teaching the strategies essential for creating independent learners*. Alexandria, Virginia, USA: Association for Supervision & Curriculum Development. Retrieved from http://npu.edu.ua!/e-book/book/djvu/A/iif_kgpm_Koenig_Learning_for_Keeps.pdf.pdf
- Kolb, D. A. (1984). The process of experiential learning. *Experiential learning: Experience as the source of learning and development* (pp. 20-38). NJ USA: Prentice Hall. Retrieved from <http://academic.regis.edu/ed205/kolb.pdf>
- Konstantareas, M. M., Zajdeman, H., Homatidis, S., & McCabe, A. (1988). Maternal speech to verbal and higher functioning versus nonverbal and lower functioning autistic children. *Journal of Autism and Developmental Disorders*, 18(4), 647-656. <https://doi.org/10.1007/BF02211882>
- Kossyvaki, L., Jones, G., & Guldberg, K. (2012). The effect of adult interactive style on the spontaneous communication of young children with autism at school. *British Journal of Special Education*, 39(4), 173-184. Retrieved from

<http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=0841fe09-7a92-4112-9451-b50f1192a10b%40sessionmgr4007>

- Krauss, S. E. (2005). Research paradigms and meaning making: A primer. *The Qualitative Report*, 10(4), 758-770.
- Ladson-Billings, G. (1994). What we can learn from multicultural education research. *Educational Leadership*, 51(8), 22-26. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=d0d3e7f1-d4a0-4295-b243-b3f26d1f01fe%40sessionmgr102>
- Lalitha, H. (2005). *Development of a model for the continuing professional development of teachers: A qualitative investigation*. (Unpublished PhD). University of Wollongong, Australia. Retrieved from <http://ro.uow.edu.au/theses/527/>
- Landry, S. H., Garner, P. W., Pirie, D., & Swank, P. R. (1994). Effects of social context and mothers' requesting strategies on down's syndrome children's social responsiveness. *Developmental Psychology*, 30(2), 293. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=642b55f8-dea0-43b3-865b-3312076bbf6d%40sessionmgr4007>
- Landry, S. H., Taylor, H. B., Guttentag, C., & Smith, K. E. (2008). Responsive parenting: Closing the learning gap for children with early developmental problems. *International review of research in mental retardation*, (pp. 27-60) Elsevier. [https://doi.org/10.1016/S0074-7750\(08\)00002-5](https://doi.org/10.1016/S0074-7750(08)00002-5)
- Landry, S. H., Garner, P. W., Pirie, D., & Swank, P. R. (1994). Effects of social context and mothers' requesting strategies on down's syndrome children's social responsiveness. *Developmental Psychology*, 30(2), 293-302. <http://dx.doi.org/10.1037/0012-1649.30.2.293>
- Larkin, M., & Thompson, A. (2012). Interpretative phenomenological analysis. *Qualitative Research Methods in Mental Health and Psychotherapy: A Guide for Students and Practitioners*, 101-116. <https://doi.org/10.1002/9780470776278.ch10>
- Larrivee, B. (2000). Transforming teaching practice: Becoming the critically reflective teacher. *Reflective Practice*, 1(3), 293-307. <https://doi.org/10.1080/713693162>

- Leach, D., & LaRocque, M. (2011). Increasing social reciprocity in young children with autism. *Intervention in School and Clinic*, 46(3), 150-156.
<https://doi.org/10.1177/1053451209349531>
- Leekam, S. R., & Ramsden, C. A. H. (2006). Dyadic orienting and joint attention in preschool children with autism. *Journal of Autism and Developmental Disorders*, 36(2), 185-197. Retrieved from
<http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=7c8fd5cf-ce30-4882-871b-ec6484ec5230%40sessionmgr103>
- Lemanek, K. L., Stone, W. L. & Fishel, P. T. (1993). Parent-child interactions in handicapped preschoolers: The relation between parent behaviors and compliance. *Journal of Clinical Child Psychology*, 22(1), 68-77. Retrieved from
<http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=24059efd-e20b-4d19-9d36-3327e41ade74%40ses>
- Levine, T. H. (2011). Experienced teachers and school reform: Exploring how two different professional communities facilitated and complicated change. *Improving Schools*, 14(1), 30-47. <https://doi-org.dcu.idm.oclc.org/10.1177/1365480211398233>
- Little, J. W. (1993). Teachers' professional development in a climate of educational reform. *Educational Evaluation and Policy Analysis*, 15(2), 129-151.
<https://doi.org/10.3102/01623737015002129>
- Little, J. W. (2003). Inside teacher community: Representations of classroom practice. *Teachers College Record*, 105(6), 913-945. Retrieved from
https://www.researchgate.net/profile/Judith_Warren_Little/publication/280017903_Inside_Teacher_Community_Representations_of_Classroom_Practice/links/55acd4c08aed884620d917d/Inside-Teacher-Community-Representations-of-Classroom-Practice.pdf
- Lock, A. (2008). Preverbal communication. In G., Bremner, & A., Fogal, (Eds.), *Blackwell handbook of infant development* (pp. 379-403). New Jersey, USA: John Wiley & Sons.
- Lord, C., Risi, S., DiLavore, P. S., Shulman, C., Thurm, A., & Pickles, A. (2006). Autism from 2 to 9 years of age. *Archives of General Psychiatry*, 63(6), 694-701.
Retrieved from [file:///C:/Users/spduser/Downloads/YOA50311%20\(1\).pdf](file:///C:/Users/spduser/Downloads/YOA50311%20(1).pdf)

- Lord, C., Wagner, A., Rogers, S., Szatmari, P., Aman, M., Charman, T., . . . Sigman, M. (2005). Challenges in evaluating psychosocial interventions for autistic spectrum disorders. *Journal of Autism & Developmental Disorders*, 35(6), 695-708. Retrieved from https://deepblue.lib.umich.edu/bitstream/handle/2027.42/44626/10803_2005_Article_17.pdf?sequence=1&isAllowed=y
- Lortie, D. (1975). *School teacher: A sociological perspective*. Chicago: University of Chicago.
- Loveland, K. A., & Landry, S. H. (1986). Joint attention and language in autism and developmental language delay. *Journal of Autism and Developmental Disorders*, 16(3), 335-349. <https://doi.org/10.1007/BF01531663>
- Luneta, K. (2012). Designing continuous professional development programmes for teachers: A literature review. *Africa Education Review*, 9(2), 360-379. <https://doi.org/10.1080/18146627.2012.722395>
- Mahoney, G., & Perales, F. (2003). Using relationship-focused intervention to enhance the social—emotional functioning of young children with autism spectrum disorders. *Topics in Early Childhood Special Education*, 23(2), 74-86. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=1a9a61ea-e62c-4cc2-b0b7-41599be3ab85%40sessionmgr4009>
- Mahoney, G., & Perales, F. (2005). Relationship-focused early intervention with children with pervasive developmental disorders and other disabilities: A comparative study. *Journal of Developmental & Behavioral Pediatrics*, 26(2), 77-85. Retrieved from http://msass14.case.edu/downloads/cicf/RF_and_PDD.pdf
- Mahoney, G., & Powell, A. (1988). Modifying parent-child interaction: Enhancing the development of handicapped children. *The Journal of Special Education*, 22(1), 82-96. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=08ac3f7b-7851-439b-8e79-9d4a901f76cd%40sessionmgr4007>
- Mahoney, G., & Wheeden, C. A. (1999). The effect of teacher style on interactive engagement of preschool-aged children with special learning needs. *Early Childhood Research Quarterly*, 14(1), 51-68. Retrieved from

<http://www.centerforthe developingmind.com/sites/default/files/agementofpreschool-agedchildrenwithspeicallearningneeds.pdf>

- Mahoney, G., Perales, F., Wiggers, B., & Herman, B. (2006). Responsive teaching: Early intervention for children with down syndrome and other disabilities. *Down Syndrome Research and Practice*, 11(1), 18-28. Retrieved from <https://www.down-syndrome.org/perspectives/311/>
- Maldonado, L., & Victoreen, J. (2002). Effective professional development: Findings from research. *K-12 Professional Development*, 1-12. Retrieved from https://secure-media.collegeboard.org/apc/ap05_profdev_effectiv_41935.pdf;
- Manolson, A. (1992). It takes two to talk: The Hanen program for parents of children with language delays. *Toronto: The Hanen Centre [Www.Hanen.Org]*,
- Masur, E. F., Flynn, V., & Eichorst, D. L. (2005). Maternal responsive and directive behaviours and utterances as predictors of children's lexical development. *Journal of Child Language*, 32(1), 63-91. <https://doi.org/10.1017/S0305000904006634>
- Mayer, R. E. (2004). Should there be a three-strikes rule against pure discovery learning? *American Psychologist*, 59(1), 14-19. Retrieved from <http://anitacrawley.net/Resources/Articles/Mayer%20Should%20there%20be%20a%20three%20strike%20rule%20against%20pure%20discovery%20learning.pdf>
- Maykut, P., & Morehouse, R. (1994). *Beginning qualitative research: A philosophic and practical guide*. UK: Falmer Press.
- McArthur, D., & Adamson, L. B. (1996). Joint attention in preverbal children: Autism and developmental language disorder. *Journal of Autism and Developmental Disorders*, 26(5), 481-496. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=a84ecbea-2c2d-47d9-acd0-7cd9984bbf2b%40sessionmgr102>
- McAteer, M., & Wilkinson, M. (2009). Adult style: What helps to facilitate interaction and communication with children on the autism spectrum? *Good Autism Practice (GAP)*, 10(2), 57-63. Retrieved from <http://www.aettraininghubs.org.uk/wp-content/uploads/2012/05/31.2-McAteer-effect-of-adult-style.pdf>
- McConachie, H., Randle, V., Hammal, D., & Le Couteur, A. (2005). A controlled trial of a training course for parents of children with suspected autism spectrum disorder.

- The Journal of Pediatrics*, 147(3), 335-340. Retrieved from <https://infiniteach.com/wp-content/uploads/2015/07/McConachie.pdf#page=63>
- McDuffie, A., & Yoder, P. (2010). Types of parent verbal responsiveness that predict language in young children with autism spectrum disorder. *Journal of Speech, Language, and Hearing Research*, 53(4), 1026-1039. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=2&sid=46158bed-1b6f-4b7d-a723-872b3074fcf4%40sessionmgr4007>
- McNamara, C. (2014). General guidelines for conducting research interviews. Retrieved from <https://managementhelp.org/businessresearch/interviews.htm>
- Meirink, J. A., Meijer, P. C., Verloop, N., & Bergen, T C. (2009). How do teachers learn in the workplace? An examination of teacher learning activities. *European Journal of Teacher Education*, 32(3), 209-224. <https://doi.org/10.1080/02619760802624096>
- Meirsschaut, M., Roeyers, H., & Warreyn, P. (2011). The social interactive behaviour of young children with autism spectrum disorder and their mothers: Is there an effect of familiarity of the interaction partner? *Autism*, 15(1), 43-64. <https://doi.org/10.1177/1362361309353911>
- Meltzoff, A. N., & Moore, M. K. (1977). Imitation of facial and manual gestures by human neonates. *Science (New York, N.Y.)*, 198(4312), 75-78. Retrieved from <http://www.jstor.org.dcu.idm.oclc.org/stable/1744187>
- Mertens, D. M., & McLaughlin, J. A. (2004). *Research and evaluation methods in special education*. (6th. ed.). Thousand Oaks California: Corwin Press.
- Mesibov, G. B., Shea, V., & Schopler, E. (2005). *The TEACCH approach to autism spectrum disorders* Springer Science & Business Media.
- Mohamed, N. (2006). *An exploratory study of the interplay between teachers' beliefs, instructional practices & professional development*. Unpublished Research Space@ Auckland, Retrieved from <https://researchspace.auckland.ac.nz/bitstream/handle/2292/311/02whole.pdf?sequ;id=46158bed-1b6f-4b7d-a723-872b3074fcf4%40sessionmgr4007>
- Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability and validity in qualitative research.

International Journal of Qualitative Methods, 1(2), 13-22.

<https://doi.org/10.1177/160940690200100202>

- Mundy, P., Sigman, M., Ungerer, J., & Sherman, T. (1986). Defining the social deficits of autism: The contribution of non-verbal communication measures. *Journal of Child Psychology and Psychiatry*, 27(5), 657-669. <https://doi.org/10.1111/j.1469-7610.1986.tb00190.x>
- Nadel, J., Guérini, C., Pezé, A., & Rivet, C. (1999). The evolving nature of imitation as a format for communication. In J. Nadel & G. Butterworth (Eds.), *Cambridge studies in cognitive perceptual development: Imitation in infancy* (pp. 209-234). New York, USA: Cambridge University Press.
- National Council for Special Education. (2015). *Supporting students with autism spectrum disorders in schools*. (Policy Advice Paper No. 5). Trim, Ireland: NCSE.
- National Initiative for Autism: Screening & Assessment (NIASA). (2003). *National autism plan for children, the NIASA guidelines*. London: National Autistic Society.
- National Research Council. (2001). *Educating children with autism*. Washington, DC: The National Academies Press.
- Nespor, J. K. (1987). *The role of beliefs in the practice of teaching: Final report of the teachers' beliefs study*. (Research/Technical No. 143). University of Texas at Austin. Center for Teacher Education. Retrieved from <http://repositorio.minedu.gob.pe/bitstream/handle/123456789/2491/The%20role%20of%20beliefs%20in%20the%20Practice%20of%20Teaching%20Final%20Report%20of%20the%20Teacher%20Beliefs%20Study.pdf?sequence=1>
- Olmedo, I. M. (1997). Challenging old assumptions: Preparing teachers for inner city schools. *Teaching and Teacher Education*, 13(3), 245-258. [https://doi.org/10.1016/S0742-051X\(96\)00019-4](https://doi.org/10.1016/S0742-051X(96)00019-4)
- Oono, I. P., Honey, E., & McConachie, H. (2013). Parent-mediated early intervention for young children with autism spectrum disorders (ASD). *Evidence-Based Child Health: A Cochrane Review Journal*, 8(6), 2380-2479. Retrieved from <http://research.ncl.ac.uk/cargo-ne/CD009774.pdf>

- Opfer, V. D., & Pedder, D. (2011). Conceptualizing teacher professional learning. *Review of Educational Research*, 81(3), 376-407. Retrieved from <http://www.jstor.org.dcu.idm.oclc.org/stable/pdf/23014297.pdf>
- Osterling, J., & Dawson, G. (1994). Early recognition of children with autism: A study of first birthday home videotapes. *Journal of Autism and Developmental Disorders*, 24(3), 247-257. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=390afae6-4e61-436a-9d23-e1847e41e97d%40sessionmgr104>
- Ozonoff, S., & Cathcart, K. (1998). Effectiveness of a home program intervention for young children with autism. *Journal of Autism and Developmental Disorders*, 28(1), 25-32. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&id=4ec76ee4-565d-4b25-aac2-d3a4f8dbff6e%40sessionmgr4006>
- Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, 62(3), 307-332. Retrieved from <http://www.jstor.org.dcu.idm.oclc.org/stable/1170741>
- Panerai, S., Ferrante, L., & Zingale, M. (2002). Benefits of the treatment and education of autistic and communication handicapped children (TEACCH) programme as compared with a non-specific approach. *Journal of Intellectual Disability Research*, 46(4), 318-327. Retrieved from <https://glenwood.org/wp-content/uploads/2013/06/article-benefits-of-TEACCH.pdf>
- Panerai, S., Zingale, M., Trubia, G., Finocchiaro, M., Zuccarello, R., Ferri, R., & Elia, M. (2009). Special education versus inclusive education: The role of the TEACCH program. *Journal of Autism and Developmental Disorders*, 39(6), 874-882. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=a56220cf-65ad-47b4-b932-7b5a8bb69d99%40pdc-v-sessmgr01>
- Parker, M., Patton, K., & Tannehill, D. (2012). Mapping the landscape of communities of practice as professional development in Irish physical education. *Irish Educational Studies*, 31(3), 311-327. Retrieved from <http://www.doi.org.dcu.idm.oclc.org/10.1080/03323315.2012.710067>

- Parr, J., & Ward, L. (2006). Building on foundations: Creating an online community. *Journal of Technology and Teacher Education*, 14(4), 775-793. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=a8ddd8d4-5aa8-439e-9c26-711399432e84%40sessionmgr104>
- Patterson, S. Y., Elder, L., Gulsrud, A., & Kasari, C. (2014). The association between parental interaction style and children's joint engagement in families with toddlers with autism. *Autism*, 18(5), 511-518. <https://doi.org/10.1177/1362361313483595>
- Patton, K., Parker, M., & Tannehill, D. (2015). Helping teachers help themselves: Professional development that makes a difference. *NASSP Bulletin*, 99(1), 26-42. <https://doi.org/10.1177/0192636515576040>
- Paul, R. (2008). Communication development and assessment. In K., Chawarska, A., Klin, & F.R. Volkmar, (Eds.), *Autism spectrum disorders in infants and toddlers: Diagnosis, assessment, and Treatment* 20, (pp. 50-75). New York: Guildford Press.
- Paul, R. (2008a). Interventions to improve communication. *Child and Adolescent Psychiatric Clinics of North America*, 17(4), 835-853. <https://doi.org/10.1016/j.chc.2008.06.011>
- Pedder, D., & Opfer, V. D. (2013). Professional learning orientations: Patterns of dissonance and alignment between teachers' values and practices. *Research Papers in Education*, 28(5), 539-570. <https://doi.org/10.1080/02671522.2012.706632>
- Piggot-Irvine, E. (2006). Establishing criteria for effective professional development and use in evaluating an action research based programme. *Journal of in-Service Education*, 32(4), 477-496. <https://doi.org/10.1080/13674580601024432>
- Plowman, L. (1999). *Using video for observing interaction in the classroom*. Scottish Council for Research in Education Edinburgh. Retrieved from <http://www.sfu.ca/media-lab/cmns362/spotlight72.pdf>
- Porter, A. C., Garet, M. S., Desimone, L., Yoon, K. S., & Birman, B. F. (2000). *Does professional development change teaching practice? Results from a three-year*

- study*. (No. 143). Washington: Department of Education. Retrieved from <https://files.eric.ed.gov/fulltext/ED455227.pdf>
- Powell, J. C., & Anderson, R. D. (2002). Changing teachers' practice: Curriculum materials and science education reform in the USA. *Studies in Science Education*, 37(1), 107-135. Retrieved from www.tandfonline.com/doi/pdf/10.1080/03057260208560179
- Prizant, B. M., Wetherby, A. M., & Ryndell, P. J. (2000). Communication intervention issues for young children with autism spectrum disorders. In A.M., Wetherby & B. M., Prizant, (Eds.), *Autism spectrum disorders: A transactional developmental perspective* (pp. 193-224). Baltimore Maryland: Brookes.
- Putnam, R. T., & Borko, H. (2000). What do new views of knowledge and thinking have to say about research on teacher learning? *Educational Researcher*, 29(1), 4-15. Retrieved from www.researchgate.net/profile/Hilda_Borko/publication/216458567_What_Do_New_Views_of_Knowledge_and_Thinking_Have_to_Say_About_Research_on_Teacher_Learning/links/5574563608aeacff1ffcbbd4.pdf
- Quick, H. E., Holtzman, D. J., & Chaney, K. R. (2009). Professional development and instructional practice: Conceptions and evidence of effectiveness. *Journal of Education for Students Placed at Risk*, 14(1), 45-71. Retrieved from <https://doi-org.dcu.idm.oclc.org/10.1080/10824660802715429>
- Rarieya, J. F. (2005). Reflective dialogue: What's in it for teachers? A Pakistan case. *Journal of in-Service Education*, 31(2), 313-336. Retrieved from https://ecommons.aku.edu/cgi/viewcontent.cgi?referer=https://scholar.google.com/&httpsredir=1&article=1059&context=pakistan_ied_pdck
- Rathgen, E. (2006). In the voice of teachers: The promise and challenge of participating in classroom-based research for teachers' professional learning. *Teaching and Teacher Education*, 22(5), 580-591. <https://doi.org/10.1016/j.tate.2006.01.004>
- Ravet, J. (2011). Inclusive/exclusive? Contradictory perspectives on autism and inclusion: The case for an integrative position. *International Journal of Inclusive Education*, 15(6), 667-682. <https://doi.org/10.1080/13603110903294347>

- Remillard, J. T. (2005). Examining key concepts in research on teachers' use of mathematics curricula. *Review of Educational Research*, 75(2), 211-246.
<https://doi.org/10.3102/00346543075002211>
- Rice, M. L. (1993). "Don't talk to him, he's weird". A social consequence account of language and social interactions. In A.P., Kaiser, & D., Gray, (Eds.), *Enhancing children's communication: Research foundations for early language intervention*. (pp. 139-158). Baltimore, USA: Paul H. Brookes.
- Richards, J. C., Gallo, P. B., & Renandya, W. A. (2001). Exploring teachers' beliefs and the processes of change. *PAC Journal*, 1(1), 41-58.
- Richardson, V. (1998). How teachers change: What will lead to change that most benefits student learning. *Focus on Basics*, 2(4), 7-11. Retrieved from
<http://www.ncsall.net/index.html?id=771&pid=395.html>
- Robertson, K., Chamberlain, B., & Kasari, C. (2003). General education teachers' relationships with included students with autism. *Journal of Autism & Developmental Disorders*, 33(2), 123-130. Retrieved from
<http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=10838400&site=ehost-live>
- Rogers, S. (2008). Evidence-based interventions for language development in young children with autism. In T., Charman, & W., Stone, (Eds.), *Social and communication development in autism spectrum disorders*, (pp. 143-179). New York: The Guildford Press.
- Rogers, S.J., & Dawson, G. (2010). *Early start Denver model for children with autism: Promoting language, learning, and engagement*. New York: Guilford Press.
- Rosenstein, B. (2002). Video use in social science research and program evaluation. *International Journal of Qualitative Methods*, 1(3), 22-43. Retrieved from
<http://journals.sagepub.com/doi/pdf/10.1177/160940690200100302>
- Ross, J. A., & Regan, E. M. (1993). Sharing professional experience: Its impact on professional development. *Teaching and Teacher Education*, 9(1), 91-106. Retrieved from
<https://tspace.library.utoronto.ca/bitstream/1807/29500/1/Ross%20%26%20Regan%201993a.pdf>

- Ruble, L., McDuffie, A., King, A. S., & Lorenz, D. (2008). Caregiver responsiveness and social interaction behaviors of young children with autism. *Topics in Early Childhood Special Education*, 28(3), 158-170.
<https://doi.org/10.1177/0271121408323009>
- Sameroff, A. J. (2009). The transactional model. In A. J. Sameroff (Ed.), *The transactional model of development: How children and contexts shape each other*. (pp. 1-18). USA: American Psychological Association.
- Sameroff, A. J., & Fiese, B. H. (2000). Transactional regulation: The developmental ecology of early intervention. In J. P., Shonkoff, & S. J., Meisels, . (Eds.), *Handbook of early childhood intervention* (pp. 135-159). New York: Cambridge University Press.
- Sanders, J. (2009). The use of reflection in medical education: AMEE guide no. 44. *Medical Teacher*, 31(8), 685-695. <https://doi.org/10.1080/01421590903050374>
- Saxe, G. B., & Gearhart, M. (2001). Enhancing students' understanding of mathematics: A study of three contrasting approaches to professional support. *Journal of Mathematics Teacher Education*, 4(1), 55-79.
<https://doi.org/10.1023/A:100993510>
- Schon D (1983). *The Reflective Practitioner*. London: Temple Smith Publishers
- Schopler, E., Lansing, M., Reichler, R., & Marcus, L. (2005). Examiner's manual of psychoeducational profile. *Vol.3 Pro-Ed Inc, Austin, TX*.
- Schreibman, L. (1988). Diagnostic features of autism. *Journal of Child Neurology*, 3(1), 57-64. <https://doi.org/10.1177/0883073888003001S11>
- Schuck, S., & Kearney, M. (2006). Using digital video as a research tool: Ethical issues for researchers. *Journal of Educational Multimedia and Hypermedia*, 15(4), 447-463. Retrieved from
<http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=89ec495a-c3ef-4936-8653-9bacc3ecaa4e%40sessionmgr4006>
- Schultz, T. R., Schmidt, C. T., & Stichter, J. P. (2011). A review of parent education programs for parents of children with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities*, 26(2), 96-104. Retrieved from <https://doi-org.dcu.idm.oclc.org/10.1177/1088357610397346>

- Schwartz, S. (2004). *The new language of toys: Teaching communication skills to children with special needs: A guide for parents and teachers*. (3rd ed.). USA: Bethesda, MD: Woodbine House.
- Schwille, J., Dembélé, M., & Schubert, J. (2007). *Global perspectives on teacher learning: Improving policy and practice*. France: International Institute for Educational Planning UNESCO. Retrieved from <https://files.eric.ed.gov/fulltext/ED496753.pdf>
- Shapiro, T., Frosch, E., & Arnold, Susan. (1987). Communicative interaction between mothers and their autistic children: Application of a new instrument and changes after treatment. *Journal of the American Academy of Child & Adolescent Psychiatry*, 26(4), 485-490. <https://doi.org/10.1097/00004583-198707000-00004>
- Shea, V., & Mesibov, G., B. (2005). Adolescents and adults with autism. In F. R. Volkmar, R. Paul, A. Klin & D. Cohen (Eds.), *Handbook of autism and pervasive developmental disorders* (pp. 288-311). U.K.: John Wiley & Sons, Ltd.
- Sherin, M. G. (2003). New perspectives on the role of video in teacher education. In J. Brophy (Ed.), *Using video in teacher education* (pp. 1-27). U.K.: Emerald Group Publishing Limited.
- Shore, S. (2015). Teaching to learning styles in people on the autism spectrum. *Autism Asperger Digest*, 3, 23-40. Retrieved from http://www.autismasperger.net/writings_teaching_to_learning_styles.htm
- Sigman, M., Mundy, P., Sherman, T., & Ungerer, J. (1986). Social interactions of autistic, mentally retarded and normal children and their caregivers. *Journal of Child Psychology and Psychiatry*, 27(5), 647-656. <https://doi.org/10.1111/j.1469-7610.1986.tb00189.x>
- Siller, M., & Sigman, M. (2002). The behaviors of parents of children with autism predict the subsequent development of their children's communication. *Journal of Autism and Developmental Disorders*, 32(2), 77-89. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=b0ecf97f-6776-4f9a-be45-da47cc75c40c%40sessionmgr120>
- Siller, M., & Sigman, M. (2008). Modeling longitudinal change in the language abilities of children with autism: Parent behaviors and child characteristics as predictors of

- change. *Developmental Psychology*, 44(6), 1691-1704. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=81ac822e-2240-443e-be62-2c4f29e2ac89%40sessionmgr104>
- Siller, M., Hutman, T., & Sigman, M. (2013). A parent-mediated intervention to increase responsive parental behaviors and child communication in children with ASD: A randomized clinical trial. *Journal of Autism and Developmental Disorders*, 43(3), 540-555. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=a62e9786-f738-4c0b-9662-197e7271bcd0%40pdc-v-sessmgr01>
- Smith, C., & Gillespie, M. (2007). Research on professional development and teacher change: Implications for adult basic education. *Review of Adult Learning and Literacy*, 7(7), 205-244. Retrieved from https://s3.amazonaws.com/academia.edu.documents/33906480/smith-gillespie-07.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1511972525&Signature=NO%2BiOftzBCLL3LpIM2WuY96JR8M%3D&response-content-disposition=inline%3B%20filename%3DResearch_on_Professional_Development_and.pdf
- Smith, C., Hofer, J., Gillespie, M., Solomon, M., & Rowe, K. (2003). *How teachers change*. (No. 25). Harvard Graduate School of Education, USA: National Center for the Study of Adult Learning and Literacy. Retrieved from <http://ncsall.net/fileadmin/resources/research/report25a.pdf>
- Snow, C. E. (1999). Social perspectives on the emergence of language. In B. MacWhinney (Ed.), *The emergence of language* (pp. 257-276). UK: Taylor & Francis.
- Solomon, D., Battistich, V., & Hom, A. (1996). Teacher beliefs and practices in schools serving communities that differ in socioeconomic level. *The Journal of Experimental Education*, 64(4), 327-347. Retrieved from <http://search.ebscohost.com.dcu.idm.oclc.org/login.aspx?direct=true&db=ehh&AN=9612022103&site=ehost-live;>
- Sparks, D., & Loucks-Horsley, S. (1989). Five models of staff development. *Journal of Staff Development*, 10(4), 40-57. Retrieved from <http://www.nsdc.org/educatorindex.htm>

- Spiker, D., Boyce, G. C., & Boyce, L. K. (2002). Parent-child interactions when young children have disabilities. In M. L. Glidden (Ed.), *International review of research in mental retardation* (vol. 25) (pp. 35-70). San Diego, CA: Academic Press.
- Stake, R. E. (2000). Case studies. In N. K., Denzin, & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 435-453). Thousand Oaks, CA: Sage Publications.
- Stevens, D. D., & Palincsar, A. S. (1992). Urban teachers' beliefs and knowledge about literacy teaching and learning: An examination from mechanistic and contextualistic perspectives. Paper presented at the *Annual Meeting of the American Educational Research Association*, San Francisco, USA. Retrieved from <https://files-eric-ed.gov.dcu.idm.oclc.org/fulltext/ED348452.pdf>
- Stoll, L., Harris, A., & Handscomb, G. (2012). Great professional development which leads to great pedagogy: Nine claims from research. *Nottingham, UK: National College for School Leadership*, Retrieved from <http://exeterconsortium.com/sites/default/files/resource/Great-professional-development-which-leads-to-great-pedagogy-nine-claims-from-research.pdf>
- Stone, W. L., Ousley, O. Y., Yoder, P. J., Hogan, K. L., & Hepburn, S. L. (1997). Nonverbal communication in two- and three-year-old children with autism. *Journal of Autism and Developmental Disorders*, 27(6), 677-696. Retrieved from <http://vkmc.vanderbilt.edu/yoder/pdfs/stone-w-ousley-o-yoder-p.pdf>
- Strid, K., Heimann, M., & Tjus, T. (2013). Pretend play, deferred imitation and parent-child interaction in speaking and non-speaking children with autism. *Scandinavian Journal of Psychology*, 54(1), 26-32. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=d3cd4928-0a59-4d8c-b0f6-43a4d6c2eabc%40sessionmgr4008>
- Suhrheinrich, J., Stahmer, A. C., Reed, S., Schreibman, L., Reisinger, E., & Mandell, D. (2013). Implementation challenges in translating pivotal response training into community settings. *Journal of Autism & Developmental Disorders*, 43(12), 2970-2976. <https://doi.org/10.1007/s10803-013-1826-7>
- Swettenham, J., Baron-Cohen, S., Charman, T., Cox, A., Baird, G., Drew, A., ... Wheelwright, S. (1998). The frequency and distribution of spontaneous

attention shifts between social and nonsocial stimuli in autistic, typically developing, and nonautistic developmentally delayed infants. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, 39(5), 747-753.

Retrieved from

[+http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=902cfe8f-4+7a2-4a95-bc1b-5b2abfff1746%40sessionmgr4007](http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=902cfe8f-4+7a2-4a95-bc1b-5b2abfff1746%40sessionmgr4007)

Tager-Flusberg, H., Joseph, R., & Folstein, S. (2001). Current directions in research on autism. *Developmental Disabilities Research Reviews*, 7(1), 21-29. Retrieved from <http://www.bu.edu/autism/files/2010/04/Tager-Flusberg-Joseph-Folstein-2001.pdf>

Tamis-LeMonda, C., Bornstein, M. H., & Baumwell, L. (2001). Maternal responsiveness and children's achievement of language milestones. *Child Development*, 72(3), 748-767. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=5552084&site=ehost-live>

Taylor, J. L. (2005). Summary of key sections of the individuals with disabilities education improvement act (IDEA) of 2004 public law 108-466 Retrieved from <http://www.afb.org/info/afb-national-education-program/jltli-2005-education-summary/summary-of-key-sections-of-the-idea-of-2004-pl-108-446/235>

Taylor, K., Marienau, C., & Fiddler, M. (2000). *Developing adult learners: Strategies for teachers and trainers. The Jossey-Bass higher and adult education series*. Jossey-Bass Publishers, 350 Sansome Street, San Francisco, CA 94104

Teddlie, C., & Tashakkori, A. (2012). Common “core” characteristics of mixed methods research: A review of critical issues and call for greater convergence. *American Behavioral Scientist*, 56(6), 774-788. <https://doi.org/10.1177/0002764211433795>

Convention on the rights of the child. Treaty Series, 1577, (1989).

Thompson, C. L., & Zeuli, J. S. (1999). The frame and the tapestry: Standards-based reform and professional development. In L., Darling-Hammond, & G., Sykes (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 341-375). Jossey-Bass Publishers, 350 Sansome Street, San Francisco, CA 94104

- Timperley, H. (2008). *Teacher professional learning and development. educational practices series* UNESCO: International Academy of Education:.. Retrieved from http://www.ibe.unesco.org/fileadmin/user_upload/Publications/Educational_Practices/EdPractices_18.pdf
- Timperley, H. S., & Parr, J. M. (2005). Theory competition and the process of change. *Journal of Educational Change*, 6(3), 227-251. Retrieved from https://www.researchgate.net/profile/Judy_Parr/publication/225666898_Theory_Competition_and_the_Process_of_Change/links/00b495327b932a714c000000.pdf
- Timperley, H., & Alton-Lee, A. (2008). Reframing teacher professional learning: An alternative policy approach to strengthening valued outcomes for diverse learners. *Review of Research in Education*, 32(1), 328-369. Retrieved from <http://www.jstor.org.dcu.idm.oclc.org/stable/20185120>
- Timperley, H., Wilson, A., Barrar, H., & Fung, L. (2007). *Teacher professional learning and development: Best evidence synthesis iteration (BES)*. (Review). Wellington, New Zealand: Ministry of Education, New Zealand. Retrieved from https://www.educationcounts.govt.nz/_data/assets/pdf_file/0017/16901/TPLandDBESentireWeb.pdf;
- Tjus, T., Heimann, M., & Nelson, K. E. (2001). Interaction patterns between children and their teachers when using a specific multimedia and communication strategy: Observations from children with autism and mixed intellectual disabilities. *Autism*, 5(2), 175-187. Retrieved from https://www.researchgate.net/profile/Mikael_Heimann/publication/11647895_Interaction_Patterns_Between_Children_and_their_Teachers_when_Using_a_Specific_Multimedia_and_Communication_Strategy_Observations_from_Children_with_Autism_and_Mixed_Intellectual_Disabilities/links/0fcfd5103e4f5ba57a000000.pdf
- Tomasello, M., & Farrar, M. J. (1986). Joint attention and early language. *Child Development*, 1454-1463. Retrieved from <http://www.jstor.org/stable/1130423>
- Trevarthen, C. (1975). Early attempts at speech. In R. Lewin (Ed.), *Child alive: New insights into child development* (pp. 62-80). London UK: Temple Smith.

- Trevarthen, C., & Aitken, K. J. (2001). Infant intersubjectivity: Research, theory, and clinical applications. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, 42(1), 3-48. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=a2506d7b-841b-4a1a-b030-073c1f48bf39%40sessionmgr101>
- Tsatsanis, K. D. (2005). Neuropsychological characteristics in autism and related conditions. In Volkmar, F. R., Paul, R., Klin, A., & Cohen, D. (Eds.), *Handbook of autism and pervasive developmental disorders* (3rd ed., pp. 365-381). N.J USA: Wiley & Sons.
- Twachtman-Cullen, D., & Twachtman-Reilly, J. (2007). Communication and language issues in less able school-age children with autism. In R.L., Gabriels, & D.E., Hill (Eds.), *Growing up with autism: Working with school age children and adolescents* (pp. 73-94). New York: Guilford Press.
- United Nations (UN) (1990). United Nations Convention on the Rights of the Child. Geneva: United Nations.
- U.S. Department of Education (2002). *No child left behind act*. (No. Public Law PL 107-110). Washington: U S Government. Retrieved from <http://www.ed.gov/policy/elsec/leg/esea02/107-110.pdf>
- Uzgiris, I. C. (1999). Imitation as activity: Its developmental aspects. In J., Nadel, & G., Butterworth (Eds.), *Imitation in infancy* (pp. 186-206). Cambridge: Cambridge University Press.
- van Es, E. A., Stockero, S.L., Sherin, M. G., Van Zoest, L. R., & Dyer, E. (2015). Making the most of teacher self-captured video. *Mathematics Teacher Educator*, 4(1), 6-19. Retrieved from https://www.researchgate.net/profile/Miriam_Sherin/publication/283329294_Making_the_Most_of_Teacher_Self-Captured_Video/links/564b47e308ae4ae893b7b30c.pdf
- Van Lare, M. D., & Brazer, S. D. (2013). Analyzing learning in professional learning communities: A conceptual framework. *Leadership and Policy in Schools*, 12(4), 374-396. <https://doi.org/10.1080/15700763.2013.860463>

- Venker, C. E., McDuffie, A., Weismer, S., & Abbeduto, L. (2011). Increasing verbal responsiveness in parents of children with autism: A pilot study. *Autism, 16*(6), 568-585. <https://doi.org/10.1177/1362361311413396>
- Vescio, V., Ross, D. & Adams, A. (2008). A review of research on the impact of professional learning communities on teaching practice and student learning. *Teaching and Teacher Education, 24*(1), 80-91. <https://doi-org.dcu.idm.oclc.org/10.1016/j.tate.2007.01.004>
- Villegas-Reimers, E. (2003). *Teacher professional development: An international review of the literature* International Institute for Educational Planning Paris. Retrieved from <file:///C:/Users/spduser/Downloads/teacher+professional+development+an+international+review+from+the+literature.pdf>
- Volkmar, F.R., Chawarska, K., & Klin, A. (2008). Autism spectrum disorders in infants and toddlers. In K., Chawarska, A., Klin, & F.R., Volkmar (Eds.), *Autism spectrum disorders in infants and toddlers; diagnosis, assessment and treatment* (pp. 1-22). New York: The Guildford Press.
- Volkmar, F. R., & Wiesner, L. A. (2009). *A practical guide to autism: What every parent, family member, and teacher needs to know* John Wiley & Sons.
- Volkmar, F. R., Paul, R., Rogers, S. J., & Pelphrey, K. A. (2014). In Rogers S. J., Pelphrey K. A. (Eds.), *Handbook of autism and pervasive developmental disorders, diagnosis, development, and brain mechanisms : Diagnosis, development, and brain mechanisms*. New York: John Wiley & Sons, Incorporated.
- Vygotsky, L. (1978a). Interaction between learning and development. In M., Gauvain, & M., Cole (Eds.), *Readings on the development of children*. (2nd. ed., pp. 34-40). New York: Scientific American Books.
- Vygotsky, L. (1978b). *Mind in society: The development of higher psychological processes*. Cambridge MA: Harvard University Press.
- Wai Wan, M. W., Green, J., Elsabbagh, M., Johnson, M., Charman, T., Plummer, F., & BASIS Team. (2012). Parent–infant interaction in infant siblings at risk of autism. *Research in Developmental Disabilities, 33*(3), 924-932. <https://doi.org/10.1016/j.ridd.2011.12.011>

- Warren, S. F. & Yoder, P. J. (1996). Enhancing communication and language development in young children with developmental delays and disorders. *Peabody Journal of Education*, 71(4), 118-132. Retrieved from <http://vkmc.vanderbilt.edu/yoder/pdfs/warren-s-f--yoder-p-j-1996.pdf>
- Warren, S. F., & Brady, N. C. (2007). The role of maternal responsivity in the development of children with intellectual disabilities. *Developmental Disabilities Research Reviews*, 13(4), 330-338. <https://doi.org/10.1002/mrdd.20177>
- Warren, S. F., & Yoder, P. J. (1998). Facilitating the transition from preintentional to intentional communication. In A. M., Wetherby, S. F., Warren, & J. Reichle (Eds.), *Transitions in prelinguistic communication* (pp. 365-385). USA: P. H., Brookes Publishing Baltimore, MD.
- Warren, S. F., Brady, N., Sterling, A., Fleming, K., & Marquis, J. (2010). Maternal responsivity predicts language development in young children with fragile X syndrome. *American Journal on Intellectual and Developmental Disabilities*, 115(1), 54-75. <https://doi.org/10.1352/1944-7558-115.1.54>
- Warren, Z., McPheeters, M. L., Sathe, N., Foss-Feig, J. H., Glasser, A., & Veenstra-Vanderweele, J. (2011). A systematic review of early intensive intervention for autism spectrum disorders. *Pediatrics*, 127(5), e1303-e1314. Retrieved from http://www.psy.miami.edu/faculty/dmessenger/c_c/rsrscs/rdgs/autism_clinical/warren_early_intervention.peds2011-0426.full.pdf
- Watson, L. R. (1998). Following the child's lead: Mothers' interactions with children with autism. *Journal of Autism and Developmental Disorders*, 28(1), 51-59. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=df6d7f3d-51d9-40ae-ad5a-3a7a4c023309%40sessionmgr102>
- Watson, L. R. McComish, C., Lanter, E., & Poston Roy. (2004). Enhancing the communication development of toddlers with autism spectrum disorders. *Journal of Cognitive & Behavioral Psychotherapies*, 4(2), 179-201.
- Weiss, I. R., & Pasley, J. D. (2006). *Scaling up instructional improvement through teacher professional development: Insights from the local systemic change initiative*. Philadelphia: Consortium for Policy Research in Education (CPRE) Policy Briefs. Retrieved from http://repository.upenn.edu/cpre_policybriefs/32;

- Wennergren, A., & Rönnerman, K. (2006). The relation between tools used in action research and the zone of proximal development. *Educational Action Research*, 14(4), 547-568. <https://doi.org/10.1080/09650790600975791>
- Wetherby, A. M., Warren, S. F., & Reichle, J. (1998). Introduction to transitions in prelinguistic communication. In A. M., Wetherby, S. F., Warren, & J., Reichle (Eds.), *Transitions in prelinguistic communication* (pp. 1-11). USA: Paul H. Brookes Baltimore, MD.
- Wetherby, A. M. (2008). Understanding and measuring social-communication in children with autism spectrum disorders. In Charman, T. & Stone, W. (Eds.), *Social and communication development in autism spectrum disorders: Early identification, diagnosis, and intervention*. (pp. 3-34). New York: The Guildford Press.
- Wetherby, A.M., & Prizant, B. M. (1992). Profiling young children's communicative competence. In S.F., Warren, & J., Reichle (Eds.), *Causes and effects in communication and language intervention* (pp. 217-254). London, U.K: Brookes.
- Wetherby, A.M., Prizant, B. M., & Schuler, A. L. (2000). Understanding the nature of communication and language impairments. In A.M., Wetherby, & B. M., Prizant (Eds.), *Autism spectrum disorders: A transactional developmental perspective*. (pp. 109-141). Baltimore, Maryland: Brookes.
- Wetherby, A. M., Prizant, B. M., & Hutchinson, T. A. (1998). Communicative, social/affective, and symbolic profiles of young children with autism and pervasive developmental disorders. *American Journal of Speech-Language Pathology*, 7(2), 79-91. Retrieved from <https://search-proquest-com.dcu.idm.oclc.org/docview/204263361?accountid=15753>
- Wideman, H. (2010). *Online teacher learning communities: A literature review*. (Review No. 2). York UK: Institute for Research on Learning Technologies, York University. Retrieved from <http://irdl.info.yorku.ca/files/2014/01/TechReport2010-2.pdf>
- Willemsen-Swinkels, S. H. N., Buitelaar, J. K., & Engeland, H. (1997). Children with a pervasive developmental disorder, children with a language disorder and normally developing children in situations with high-and low-level involvement of the caregiver. *Journal of Child Psychology and Psychiatry*, 38(3), 327-336. <https://doi.org/10.1111/j.1469-7610.1997.tb01517.x>

- Williams, J. H. G., Whiten, A., & Singh, T. (2004). A systematic review of action imitation in autistic spectrum disorder. *Journal of Autism and Developmental Disorders*, 34(3), 285-299. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=3c46b9ad-d32c-4fc5-9588-d99a4d310426%40sessionmgr4010>
- Wilson, S. M., & Berne, J. (1999). Teacher learning and the acquisition of professional knowledge: An examination of research on contemporary professional development. *Review of Research in Education*, 24, 173-209. Retrieved from [http://outlier.uchicago.edu/computerscience/OS4CS/landscapestudy/resources/Wilson%20and%20Berne,%201999%20\(1\).pdf](http://outlier.uchicago.edu/computerscience/OS4CS/landscapestudy/resources/Wilson%20and%20Berne,%201999%20(1).pdf)
- Wimpory, D. C., Hobson, R. P., & Nash, S. (2007). What facilitates social engagement in preschool children with autism? *Journal of Autism and Developmental Disorders*, 37(3), 564-573. Retrieved from <http://web.a.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=55abd344-d8cb-4eae-a975-378eabecd657%40sessionmgr4008>
- Wimpory, D. C., Hobson, R. P., Williams, J. M. G., & Nash, S. (2000). Are infants with autism socially engaged? A study of recent retrospective parental reports. *Journal of Autism and Developmental Disorders*, 30(6), 525-536. Retrieved from <http://web.b.ebscohost.com.dcu.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=1&sid=8ad613c6-b8ae-4c98-9686-dd131bbb9c58%40sessionmgr103>
- Wodka, E., Mathy, P., & Kalb, L. (2013). Predictors of phrase and fluent speech in children with autism and severe language delay. *Pediatrics*, 131(4), 1128-1134. Retrieved from https://www.researchgate.net/profile/Pamela_Mathy/publication/235787901_Predictors_of_Phrase_and_Fluent_Speech_in_Children_With_Autism_and_Severe_Language_Delay/links/564c941008ae020ae9fabf77/Predictors-of-Phrase-and-Fluent-Speech-in-Children-With-Autism-and-Severe-Language-Delay.pdf
- Woods, J. J., Wetherby, A. M., Kasinath, S., & Daly Holland, R. (2012). Social interaction project. In P. A. Prelock, & R. J., McCauley, (Eds.), *Treatment of autism spectrum disorders: Evidence-based intervention strategies for communication and social interactions* (pp. 189-220) Paul H. Brookes Publishing Company.

- Woods, J. J., & Wetherby, A. M. (2003). Early identification of and intervention for infants and toddlers who are at risk for autism spectrum disorder. *Language, Speech, and Hearing Services in Schools*, 34(3), 180-193. Retrieved from <https://pdfs.semanticscholar.org/58ab/6de846747352e10b1e36a03db54bb4d8cb16.pdf>
- Yin, R. (2009). *Case study research: Design and methods* (4th. ed.). Thousand Oaks, CA: Sage Publications.
- Yoder, P. J., & Warren, S. F. (2002). Effects of prelinguistic milieu teaching and parent responsivity education on dyads involving children with intellectual disabilities. *Journal of Speech, Language & Hearing Research*, 45(6), 1158-1174. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=ehh&AN=8914160&site=ehost-live>
- Yoon, K. S., Duncan, T., Lee, S. W., Scarloss, B., & Shapley, K. L. (2007). *Reviewing the evidence on how teacher professional development affects student achievement, issues & answers* (No. 33). Washington DC: Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest. Retrieved from <https://files.eric.ed.gov/fulltext/ED498548.pdf>