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Educators’ Perceptions of Augmentative and Alternative Communication to Facilitate Communication Among Preschool Students With Disabilities

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Summer 2018

Educators’ Perceptions of Augmentative and Alternative Communication to Facilitate Communication Among Preschool Students With Disabilities

Honey Harris-Meadows
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EDUCATORS’ PERCEPTIONS OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION TO FACILITATE COMMUNICATION AMONG PRE-SCHOOL STUDENTS WITH DISABILITIES

by

Honey Harris-Meadows

A Dissertation

Presented in Partial Fulfillment of Requirements for the Degree of Doctor of Education In Inclusive Education In the Bagwell College of Education Kennesaw State University

Kennesaw, GA 30144
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DEDICATION

This document is dedicated to my family. First, to my loving husband, who, on occasion, reminded me that I was capable of completing this task. My grandmother, mother, and mother-in-law have been my backbone, unconditionally providing support to my family in my absence. Finally, this work is dedicated to my son, who provides ever constant motivation for me to persevere.
ABSTRACT

The purpose of this qualitative case study was to explore how preschool educators perceive augmentative and alternative communication (AAC) and how those perceptions influence AAC utilization in preschool classrooms. Specifically, this investigation focused on gaining better understandings about educators’ views, beliefs, and attitudes about AAC utilization to facilitate communication. The conceptual and theoretical frameworks at the crux of this research were the theory of planned behavior, sociocultural theory, and social justice theory. Ajzen’s theory of planned behavior has already been used to predict how beliefs come to pass, create reality, and influence behavior. Similarly, Vygotsky theorizes how language mediates behavior and human action. Social justice and sociocultural theories conceptualize how educators may perceive their roles as advocate, instructor, facilitator of communication, and equalizer. Semistructured, open-ended interviews, classroom observations, and document review were the data collection sources used. The study is framed around the following overarching research question and subquestion:

**RQ1:** How do early childhood special educators perceive utilization of AAC systems in facilitating communication among preschool-aged students?

**SQ1:** How do early childhood special educators’ perceptions of AAC systems influence how they utilize AAC techniques among preschool-aged students?

Findings suggest that preschool special educators value the use of AAC and understand the basic human right for all students to participate. However, special education teachers and special education paraprofessionals perceive their roles and responsibilities, as communicative partners and facilitators, differently. The data reveal that limited knowledge and resources are barriers to facilitating communication, through the use of AAC systems. It may be inferred that educators with more knowledge about disability, technology, and AAC systems perceive fewer barriers to
AAC utilization. In turn, those special educators typically utilize AAC more in their instructional practice. Additional findings suggest that special educators may be able to increase their utilization of AAC if provided with professional development related to communication, AAC devices, and updated technology. The increased prevalence of students with autism spectrum disorder, speech impairments, or intellectual and other developmental delays makes the population of students using AAC increasingly diverse. District-level professional development is critical to maximizing the communication and instructional experiences of students with complex communication needs.
EDUCATORS’ PERCEPTIONS OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION TO FACILITATE COMMUNICATION AMONG PRESCHOOL STUDENTS WITH DISABILITIES

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Chapter 1: Introduction

An estimated 51,046 young children in the United States are learning to communicate using augmentative and alternate communication (AAC) systems (U.S. Department of Education, 2011). Learning a mode of communication is an essential developmental milestone for young children. The ability to communicate allows young children to express needs and wants, socialize, learn new concepts, and develop more advanced language skills (Light, 1989). AAC is suggested when an individual is having difficulty communicating using speech. A delay in speech development is one of the earliest indicators of possible developmental deficits (Kaiser & Roberts, 2011). For many preschool-aged children, speech delays could be a result of speech impairments, autism spectrum disorders (ASD), or other development and intellectual disabilities. Preschool students with communication challenges are at a greater risk for poor development due to limited communicative interactions and limited access to communication-rich learning environments (Light & Drager, 2007). AAC, when used with intentionality and fidelity, can increase the quality of educational experiences for preschool children with complex communication needs.

The social interactions and relationships established in preschool classrooms are vital for the development of advanced social, cognitive, and language skills (Kaiser & Roberts, 2011). In 1986, the U.S. Congress passed Public Law 99-457 (PL 99-457) amending the Education of the Handicapped Act to expand the population of persons receiving special education services to include children with disabilities from ages 3 through 5 years. Furthermore, an Individual Education Plan (IEP) must be developed for all students receiving special education services, and assistive technology (AT) has to be considered. AAC is a form of AT that encompasses the communication methods used to supplement or replace speech. This investigation examined the
perceptions and attitudes of educators toward AAC utilization in preschool special education classrooms. Establishing how educators view AAC may encourage school districts, special education programs, and AT departments to redesign professional development training focused on current perceptions of AAC utilization.

**Background of the Study**

Historically, communication interventions were concerned with the remediation of isolated skills (Lyon, 1998). However, Light’s (1989) work surrounding communication competence and AAC began to examine the importance of using AAC interventions to focus on communication performance more holistically and within natural settings (Williams, Krezman, & McNaughton, 2008). During this time, the concentration shifted to functional communication for the purpose of inclusion and increased participation of persons with complex communication needs. Functional communication skills include the ability to express needs and wants, exchange information, and socialize using societal norms and etiquette.

Growing numbers of students require the use of and use AAC systems (Beukelman, 2012; Light & McNaughton, 2012). The increased prevalence of students with speech impairments, ASD, intellectual, and other developmental delays makes the population of students using AAC increasingly diverse. AAC is one of the primary tools used to facilitate communication among children with ASD. Data from the Centers for Disease Control and Prevention (2016) indicate that one in 68 school-aged children has a diagnosis of ASD. The increased number of students with communication challenges has created more awareness and acceptance of AAC use. Costigan and Light (2010) highlighted an expansion in preservice and in-service training to address the increased need to instruct and communicate with students who have complex communication needs.
AAC was once thought of as a requirement for students who were unable to verbally speak. However, it is now understood to be an effective intervention for students who are at risk for delayed acquisition of speech and other developmental milestones (Romski et al., 2010). The extent of AAC use for communicative needs has flourished with innovations in technology. Students with complex communication needs now use AAC systems to interact socially, exchange information, and develop relationships (De Leo, Lubas, & Mitchell, 2012). Technology and social media have provided new resources for establishing and maintaining social connectivity (Sundqvist & Ronnberg, 2010). The potential barriers to social networks and communication partners are countered by access to technology and social media platforms (Blackstone & Hunt Berg, 2003). However, the communication and operational competence needed to use these tools must be established and could still pose barriers to efficiently using AAC.

Participation in educational and vocational activities is a part of everyday life for students with complex communication needs. Thus AAC systems have evolved to support communication across home, work, school, and community settings (Mirenda, 2014). It is now highly likely that all students with complex communication needs have the means to maximize their potential through the use of evidence-based, effective, culturally appropriate AAC interventions (Beukelman, Fager, Ball, & Dietz, 2007). With the passage of the Individuals With Disabilities Education Improvement Act of 2004 (IDEIA), evidence-based teacher training and instructional practices emerged in the field of special education (Cook et al., 2014). Documentation of evidence-based practice (EBP) used in early childhood settings is limited (Stahmer, Collings, & Palinkas, 2005). With many barriers still in place, some students continue not to have access to appropriate AAC interventions that can provide them the fundamental basic
right to communicate (Baxter, Enderby, Evans, & Judge, 2012). The current study explored how educators who work with preschool students with disabilities perceive AAC and how those perceptions impact their students’ opportunities to communicate within the classroom.

The Importance of Socialization

The importance of social interactions and communicative resources in the development of all preschoolers, and especially preschoolers with disabilities, cannot be overstated. The National Association for the Education of Young Children (NAEYC; 2009) has considered understanding children’s social and cultural contexts when making decisions about their learning experiences in early childhood classrooms to be core. AAC is a tool special education teachers have to increase social interactions, develop greater capacity for development, and provide students with disabilities a voice to combat social inequality. This study has provided an understanding of preschool special education teachers’ perceptions of AAC use in the classroom and examined how these perceptions may influence classroom practices. How might educators’ perceptions influence the way they implement and facilitate AAC systems and interventions? How might their perceptions enhance or inhibit effective implementation and use of AAC? Furthermore, this research identified the perceptions, beliefs, knowledge, experiences, and other related factors that contribute to rich communication and learning environments for young students with disabilities. It also looked at the communication challenges posed by the aforementioned associated factors.

Some students with disabilities present communication challenges that make it difficult to interact with peers and adults. AAC interventions can be used to make interactions easier by augmenting, replacing, or supporting verbal communication. Despite extensive research on AAC for persons with disabilities, little is known about how special education teachers view
their preparedness to teach and implement recommended practices such as AAC, making this investigation particularly timely and relevant (Ruppar, Neeper, & Dalsen, 2016). Most of the empirical studies have focused on the effectiveness of AAC devices through the use of single case studies, but the studies have not addressed how educators perceive the utilization of AAC systems and devices (Ganz et al., 2012). This is problematic, considering that 7.7% of children in the United States ages 3–17 have had a communication-related disorder related to voice, speech, language, or swallowing (Vahratian & Hoffman, 2012). Moreover, Vahratian and Hoffman (2012) found that 34% of children between the ages of 3 to 10 years who have communication disorders actually have multiple communication disorders. The need for early interventions is critical, as preschool-aged children have the highest prevalence of communication disorders. Slightly more than half of the children in the United States receive intervention services to address their communication issues (Vahratian & Hoffman, 2012). This implies that slightly less than half the students do not receive any type of communication intervention.

Also contributing to the need to understand educators’ perceptions and the use of AAC is the increased prevalence of ASD diagnoses of young persons. Communication impairment is one of the criteria for a diagnosis of ASD. Approximately one-half of persons with ASD are unable to speak in a functional manner and require some type of intervention service (National Research Council, 2001). Although speech and language pathologists provide speech intervention services for students who qualify, the sessions are often located in isolated settings outside of the classroom and are generally provided in short time segments. Therefore children with ASD rely heavily on the AAC resources provided within the classroom environment, where they spend a considerable amount of time.
The omnipresent question is, How are special education early childhood educators utilizing AAC to address communication deficits? How do educators perceive their roles as facilitators of communication when students with limited and no verbal abilities enter their classrooms? One assumption by the researcher is that special education preschool educators utilize the knowledge they gain during preservice training and professional development to facilitate communication. The researcher also assumes that accompanying factors, such as an educator’s culture, values, beliefs, conceptualization of disability, and experiences, inform their classroom practice as it relates to using AAC. The current study questioned the influence of educators’ perceptions of AAC on their pedagogical practice as related to the facilitation of communication in the classroom.

**Purpose of the Study**

The purpose of this research was to better understand the perspectives and motivations of educators who use AAC. Developing an understanding of educators’ perspectives and how they influence the use of AAC can assist in the professional development of preschool special educators. It seems important to study how preschool special educators can maximize the communication and instructional experiences of students with complex communication needs. The current study was framed around the following overarching research question and subquestion:

RQ1: How do early childhood special educators perceive utilization of AAC systems in facilitating communication among preschool-aged students?

SQ1: How do early childhood special educators’ perceptions of AAC systems influence how they utilize AAC techniques among preschool-aged students?
Teachers, administrators, and school districts may be able to tailor professional development training to address the needs of special educators once the perceptions of AAC to facilitate communication among preschool students with disabilities are identified. Customizing professional development opportunities to address current and specific needs will increase the chances that students with communication challenges will indeed have the resources to communicate with the peers and adults in their learning environments. Individualized professional development will lead to educators facilitating more humanistic interactions and equitable educational experiences for students with disabilities.

**Significance of the Study**

This study is significant because it increases understandings about how educators perceive each student’s human right to communicate and social right to full participation, both within and outside of the classroom. Although students with disabilities have a long history of exclusion, perceptions and beliefs about disability in the United States experienced a paradigm shift during the 1960s followed by two decades of significant legislation protecting the rights of individuals with disabilities. Both the civil rights and women’s rights movements encouraged the passage of legislation increasing rights for persons with disabilities (Winzer, 1993). Nonetheless, the historic and cultural marginalization of persons with disabilities still impacts the way they are perceived and determines who and what gets valued in classrooms.

It is the goal of this study that the findings will help educators examine their positions on AAC utilization and also aid in the development of professional development training. Professional development can be tailored to address gaps in knowledge about communication acquisition and strategically focus on the AAC needed for successful interventions as well as create thriving implementation of these techniques in the classroom. This study provides critical
insights into how and why resources such as knowledge, experience, beliefs, values, and preferences influence the perceptions educators have about the use of AAC.

The application of AAC creates more equitable communication opportunities for students with communication challenges (Ganz et al., 2012; Hartmann & Weismer, 2016; Kaiser & Roberts, 2011; Talkington, McLaughlin, Derby, & Clark, 2013). AAC also enables students with communication challenges to participate in the social aspects of the classroom environment, make choices about their needs and wants, and stimulate development through interactions with others. This study was designed to aid the district in further recognizing the importance of AAC use as an early intervention tool and a basic need for preschool students with communication challenges. The impact of this study will be improved professional development opportunities that meet the needs of educators working with preschoolers with disabilities.

Definition of Terms

The following definitions establish a common understanding for comprehension of terms used throughout this study:

*Augmentative and alternative communication* refers to a form of communication to supplement (augmentative) or replace (alternative) typical forms of spoken or written words for individuals with impaired communication skills (Murray & Goldbart, 2009). Various forms of AAC include no-tech, which is AAC that does not require anything beyond the user’s body—low-tech AAC are devices requiring something external to the user that may be nonelectronic or a simple electronic device—and high-tech AAC, comprising electronic AAC devices similar to computers (Murray & Goldbart, 2009).

*Autism spectrum disorder* is a neurological and developmental disorder that begins early in childhood and lasts throughout a person’s life. It affects how a person acts and interacts with
others, communicates, and learns. ASD is characterized by impairments in several areas, such as communication skills, reciprocal social interaction, and the presence of stereotyped behavior, interests, and activities. It includes what used to be known as Asperger’s syndrome and pervasive developmental disorders (American Psychiatric Association, 2013).

*Communication* is a transactional process of ongoing verbal and nonverbal behaviors from a minimum of two people, in which one person provides the opportunity or initiates the communication and the other person responds (Olswang, Svensson, & Astley, 2010).

*Early childhood education* refers to the schooling of young children where developmentally appropriate instructional strategies are used to encourage learning and development. *Preschool* is often used synonymously with *early childhood education* (NAEYC, 2009).

*Self-contained classroom* is a separate class that includes students who receive special education and related services outside of the general education classroom for more than 60% of the school day (U.S. Department of Education, 1995).

*Special education* is specially designed instruction to meet the unique needs of a child with a disability. Specially designed instruction means adapting the content, methodology, or delivery of instruction to meet the needs of the child that result from the child’s disability (U.S. Department of Education, 2007).

*Evidence-based practice* is an approach that emphasizes the use of validated research in decision-making. The use of EBPs results in improved outcomes and narrows the research–practice gap (Schlosser, 1999).

*Sociocultural theory* suggests that learning is based on interactions with other people. Once social interactions occur, information is then integrated on the individual level.
Sociocultural theory focuses on how socialization influences individual learning and how cultural beliefs and attitudes impact how instruction and learning take place (Vygotsky, 1934/1963).

*Social justice theory* is based on the goal and process of social justice. Social justice is defined as “equal participation of all groups in a society that is mutually shaped to meet their needs . . . in which distribution of resources is equitable and all members are physically and psychologically safe and secure” (Bell, 2007, p. 1).

*Theory of planned behavior* links beliefs to behavior. Proposed by Ajzen (1991), the theory suggests that behavior is determined by intentions, attitudes, and subjective norms (beliefs about others’ attitudes toward a behavior).

**Overview of Chapters**

This manuscript consists of 6 chapters. Chapter 1 has provided a rationale for exploring the perspectives of educators and how their knowledge, experience, beliefs, values, and preferences influence their application of AAC. Also presented were the overarching research question and subquestion framing the study and which also provide the foundation for subsequent chapters. Chapter 2 outlines an extensive review of the literature detailing three principal areas: teacher perceptions, preschool students who utilize AAC, and AAC. Also discussed are the relationships between culture, social justice, teacher perspective, and teacher practice. The conceptual, theoretical, and methodological frameworks are presented in this chapter. Chapter 3 presents the methods used in the current study. This chapter details how the researcher conducted the investigation and how data were collected and analyzed. Descriptions of the author’s assumptions are offered in this chapter. Additionally, the researcher previews the participants. Chapter 4 presents each case with in-depth descriptions based on data sources.
Chapter 5 explores interpretive findings through within-case and cross-case analysis. The tension between varying perspectives, roles, responsibilities, and utilization of AAC is presented in this chapter. Chapter 6 concludes with a discussion of findings, implications for educational practice, and recommendations for continued research.
Chapter 2: Review of Related Literature

This literature review was designed to answer how educators’ perspectives influence the use of AAC to facilitate communication among preschool-aged students with disabilities. The review first outlines the search methods utilized. A synopsis of relevant literature is then reviewed. Next, the conceptual and theoretical frameworks are presented. In conclusion, the methodological framework is detailed. This review of the literature was framed around the following research question and subquestion:

RQ1: How do early childhood special educators perceive utilization of AAC systems in facilitating communication among preschool-aged students?

SQ1: How do early childhood special educators’ perceptions of AAC systems influence how they utilize AAC techniques among preschool-aged students?

Literature Search Methods

A variety of databases and search engines were used to locate sources. The researcher entered terms and alternate terms with similar meanings in various combinations to exhaust all possible results. The following terms were entered into search engines: teacher perceptions, teacher attitudes, teacher beliefs, teacher experiences, augmentative and alternative communication, assistive technology, disability, special education, special needs, students with disabilities, preschool, early childhood education, teacher perceptions + disability, teacher perceptions + augmentative and alternative communication, supporting children with complex communication needs, and augmentative and alternative communication + preschool. Broad database searches led to more direct searches within specialized journals. Searches were refined to include sources published between the years of 2005 and 2017, resources in which the full text was accessible, and peer-reviewed research. The review of some recent publications led the
author to several older but pertinent sources that were also included in the review of the literature. The author used the ERIC at EBSCOhost database most frequently but also used psychology and instructional technology databases to ensure a thorough search. Databases used for this review of the literature included ERIC at EBSCOhost, Education Database at ProQuest, KSU Super Search, PsychINFO at EBSCOhost, Information Science and Technology Abstracts, and Google Scholar. After reading the abstracts, articles were selected for inclusion in the literature review based on their relevancy.

Teacher Perceptions Shape Practice

The literature has suggested that teachers’ perceptions are a predictor of the practices they employ in the classroom (Hendricks, 2011; Stoner, Parette, Watts, Wojcik, & Fogal, 2008; Thomas, Curtis, & Shippen, 2011). In the literature reviewed, the term perception is often used synonymously with thoughts, feelings, views, and attitudes (Finke, McNaughton, & Drager, 2009; Stoner et al., 2008). Several researchers found knowledge and experience to be influential on perception (Ruppar et al., 2016; Thomas et al., 2011). Additionally, perceptions about the efficacy of an intervention, such as AAC, also influence teachers’ level of confidence in classroom practices (Graczyk et al., 2005). The majority of the literature examined special education teachers’ perceptions regarding AAC in conjunction with other recommended instructional strategies (Hendricks, 2011; M. L. Jones, 2009; Ruppar et al., 2016; Stoner et al., 2008; Vaughn, Reiss, Rothlein, & Tejero Hughes, 1999). Ayres, Meyer, Erevelles, and Park-Lee (1994) found that teachers’ perceptions about their own knowledge and skills contribute to the chances of them implementing best practices for students with severe disabilities. Additional research has supported the findings that educational level, professional experience, and type of
teaching licensure held affect teachers’ perceptions of preparedness to use AAC to teach communication skills to students with disabilities (Ruppar et al., 2016).

Some of the studies reviewed sought to examine the use of AAC as a curricular intervention, such as using AAC to enhance emergent literacy skills (Stoner et al., 2008). Other studies highlighted teachers’ perceptions of preparedness to implement and use AAC technology (Hendricks, 2011; M. L. Jones, 2009; Ruppar et al., 2016; Vaughn et al., 1999). These studies often evaluated teachers’ perceptions of preparedness and knowledge of a variety of research-based practices, including AAC.

A review of the literature uncovered negative perceptions about the use of and preparedness to use AAC (Hendricks, 2011; Kent-Walsh & Light, 2003; Ruppar et al., 2016; Stoner et al., 2008). Kurth, Born, and Love’s (2016) study revealed that students with disabilities in self-contained classes are often passive observers of classroom instruction. Nonetheless, the typical requirements of special education teachers working in self-contained classrooms is that they have specialized skills to teach students with disabilities as well as knowledge about EBPs that increase student learning (Chen, 2017). Teachers primarily cite lack of familiarity, infrequent use, lack of training and knowledge, shortage of technology support, and poor understanding of students’ communication needs as reasons for negatively perceiving or being unprepared to use strategies such as AAC (Hendricks, 2011; Ruppar et al., 2016; Stoner et al., 2008; Vaughn et al., 1999). The aforementioned challenges are consist with previous research on AAC (Beukelman & Mirenda, 1998; Copley & Ziviani, 2004; Riemer-Reiss & Wacker, 2000).

The relationship between teachers’ beliefs and practices is primarily described in the literature as teachers’ perceived sense of self-efficacy. Teacher self-efficacy is often described
as the intersection between educational beliefs, teacher planning, thoughts, decision-making, and classroom practices (Aldridge & Clayton, 1987; Eisenhart, Shrum, Harding, & Cuthbert, 1988; Johnson, 1992). Bandura (1977) defined efficacy as a belief that actions will lead to desired outcomes and as a belief that one has the skills to bring about those outcomes. Bandura’s research suggested that self-efficacy beliefs are the strongest predictors of human behavior and motivation. Bandura (1986) further examined efficacy and argued that having the knowledge and skills does not guarantee the task will be performed but that personal judgment of one’s own ability to perform a task under varied and unpredictable circumstances mediate knowledge into action.

The literature has suggested that teacher knowledge and attitudes regarding EBPs influence application of the practice. Poor knowledge correlates with negative attitudes and limited use, whereas high levels of knowledge correlate with positive attitudes and increased utilization (Nakamura, Higa-McMillan, Okamura, & Shimabukuro, 2011; Paynter et al., 2017; Paytner & Keen, 2015).

The research abounds with studies suggesting that teachers’ beliefs regarding their own abilities impact their perceptions of their students’ abilities (Coleman, Jussim, & Isaac, 1991; Gersten, Walker, & Darch, 1988; Guskey, 1987; Raudenbush, Rowan, & Cheong, 1992). These studies suggested that teachers who believe in their abilities have better perceptions of their students’ abilities to learn (Raudenbush et al., 1992). Furthermore, the literature correlated teachers’ willingness to implement innovative instructional strategies with teachers’ beliefs, implying that the use of AAC in the classroom involves a teacher’s willingness to be innovative, perceive AAC as valuable, and believe in his or her ability to implement AAC and help students communicate (Guskey, 1988; Nespor, 1987). Guskey’s (1988) seminal work posited that
teachers with high self-efficacy are more committed to implementing innovative practices. Guskey’s research also linked teachers’ beliefs and sense of efficacy to their receptiveness toward the implementation of new instructional practices. Teachers with high self-efficacy are more open to new and innovative instructional approaches than those with lower self-efficacy.

Rosenfeld and Rosenfeld (2008) proposed that effective teacher beliefs about students positively impact instruction. They correlated effective teacher practices with interventionist beliefs and perceptions. Rosenfeld and Rosenfeld defined interventionist beliefs as attitudes consistent with high self-efficacy and the belief that one can help a learner with difficulties. By contrast, pathognomonic beliefs about students blame the learner for the difficulties the learner is experiencing. Teachers with pathognomonic beliefs often believe that someone else should be responsible for the instruction of students with disabilities due to poor self-efficacy (Jordan & Stanovich, 2003).

The research has suggested that the ways teachers perceive disability and students with disabilities may have a profound impact on their behavior and the instructional decisions they make (Thomas et al., 2011). Thomas et al. attributed this to the social construction of disability and normative standards that shape the way disability is viewed. Historically, sociocultural practices, institutions, and politics have contributed to negative perceptions of disability (Moore & Feist-Price, 1999). In contrast, Thomas et al. (2011) as well as Ruppar et al. (2016) claimed that factors such as increased contact with individuals with disabilities, specific educational experiences, and level of education have positive impacts on the perception of disability.

Current literature is plentiful with studies about educators’ perceptions of inclusion. However, there was limited research regarding teachers’ perspectives on the inclusion of students with disabilities who require the use of AAC. The two studies located indicated positive
perceptions regarding the inclusion of students who require AAC (Finke et al., 2009; Kent-Walsh & Light, 2003). However, both studies noted barriers and challenges to applying AAC in general education settings. Barriers and challenges to the effective use of AAC include needing significant support and training, time constraints, and programming and maintenance of AAC devices (Finke et al., 2009; Kent-Walsh & Light, 2003). The literature review did not reveal any studies concerned with special education teachers’ perspectives on the use of AAC in inclusive settings. Furthermore, Ruppar et al. (2016) discovered only a limited amount of research on special education teachers’ perspectives of preparedness to teach. Edyburn (2003) noted gaps in research about the use of AT among preschool-aged children.

**Early Childhood Education, Special Education, and AAC**

The passage of Public Law 99-457 (PL 99-457), an amendment to the Education of the Handicapped Act of 1986, changed the delivery of early language intervention services. The scope of children with disabilities being served for language impairments was expanded to include infants and toddlers (Kaiser & Roberts, 2011). This prompted an emphasis on strategies to teach functional communication to young children with disabilities. The literature base on communication interventions for young children with disabilities is divided into five main categories: (a) language and autism; (b) use of multiple modes of communication and AAC; (c) social, symbolic, and prelinguistics; (d) the impact of AAC on natural speech; and (e) the effectiveness of AAC interventions.

Literature on AAC instruction and interventions is often linked with autism research. The direct instruction of social communication skills is a recommendation for preschool-aged children with ASD; American Speech-Language-Hearing Association, 2002. Some authors have advocated the use of AAC as the primary tool to teach young children with ASD (Talkington et
al., 2013). Included in the wealth of literature on AAC and ASD are many studies examining the Picture Exchange Communication Systems (PECS). Preston and Carter (2009) posited the effectiveness of using PECS for increasing the social communicative exchanges of children with ASD. Ganz et al.’s (2012) meta-analysis of single case studies validated the effectiveness of AAC use to increase communication skills for students with ASD.

AAC research has indicated that children with communication impairments often use multiple modes of communication to get their needs met (Blackstone & Hunt Berg, 2003; Light & Drager, 2007). Light’s (1988) seminal research on AAC noted that the multiple communicative choices children make are related to skill level, communication partner, context, and intent. The multiple modes of communication used by young children often include speech; gesturing; signing; low-tech AAC; and high-tech, electronic AAC systems (Binger & Light, 2006; Light & Drager, 2007). The literature has provided a general consensus that multimodal approaches to AAC are most effective in meeting the needs of persons with complex communication needs (Hustad & Shapley, 2003; Mirenda, 2003). Weitz, Dexter, Moore, Glennen, and DeCoste (1997) concluded that reliance on a variety of AAC systems is typical for children with developmental disabilities.

Owing to the social nature of learning in early childhood classrooms, higher rates of language development are attributed to communicative interactions with peers versus teachers (Barker, Akaba, Brady, & Thiemann-Bourque, 2013; C. D. Jones & Schwartz, 2004; Trottier, Kamp, & Mirenda, 2011). Research has supported peer-mediated interventions to increase the social communication skills of preschoolers with disabilities (Stanton-Chapman & Brown, 2015).
This research project paid particular attention to communication interventions involving joint attention, prelinguistic intentional communication, play, and early symbolic communication. Landa, Holman, O’Niell, and Stuart (2011), Schertz and Odom (2007), and Wetherby and Woods (2006) have evaluated these communication interventions among young children with developmental disabilities using group and single-subject designs.

Romski and Sevcik’s (2005) study revealed that some parents and clinicians perceive AAC as a barrier to the attainment of verbal speech. However, a meta-analysis by Millar, Light, and Schlosser (2006) indicated that the majority of young children using AAC demonstrate gains in natural speech after receiving AAC intervention. Furthermore, research has validated the use of AAC systems to positively impact the attainment of spoken words (Dunst, Meter, & Hamby, 2011).

The literature surrounding young children and the use of AAC has been limited when compared to the breadth of research on communication and language (Branson & Demchak, 2009). There is research suggesting that AAC use has positive effects on the development of young children (Barker et al., 2013; Branson & Demchak, 2009; Kaiser & Roberts, 2011). Congruent with other literature, researchers found that early childhood teachers have difficulty using AAC efficiently and need more training and support to facilitate the communication of preschool-aged students (Barker et al., 2013). Additionally, themes in the literature identified a lack of research regarding the use AAC for young children in natural school settings (Barker et al., 2013). Many of the studies involving preschool-aged children took place in clinical settings with a trained interventionist. More research is needed surrounding the use of AAC in classrooms and homes (Barker et al., 2013; Kaiser & Roberts, 2011).
**AAC as a Mandate and Intervention**

Wilkinson and Hennig (2007) defined the role of AAC as (a) to enhance the expressive speech of persons who have some understanding of language but have challenges producing language, (b) to enable communication across a variety of settings, (c) to reduce unwanted behaviors, and (d) to aid in future linguistic development. AAC is generally used for one of the aforementioned reasons.

The Individuals With Disabilities Education Act of 2004 (IDEA) states that public agencies must consider whether a child requires AT devices and services. Public agencies must also ensure that AT devices and services are available. AAC tools are forms of AT that refer to the methods, systems, and technological devices used to supplement spoken language. The key themes revealed during a review of AAC literature included ease of use, family perceptions and support, staff training, communication partner responses, and the impact of AAC interventions on behavioral outcomes (Wilkinson & Hennig, 2007).

Bailey, Parette, Stoner, Angell, and Carroll (2006) interviewed relatives of high school AAC users who have multiple disabilities. The perceptions of participants informed how likely the AAC system was to be used outside of school. Likewise, Angelo (2000) surveyed parents about the perceived ease and difficulty of AAC device use. In the reviewed literature, perceptions regarding the use of AAC were mostly limited to families, speech and language therapists, AAC users, and general education teachers. McNaughton et al. (2008) concluded that parents are most involved in selecting AAC devices, that educators lack knowledge about AAC devices, and that access to AAC devices is limited.

Literature on staff training has suggested that AAC training is primarily provided to speech and language therapists and not to classroom teachers. When teachers are included in
studies focused on AAC, it is often general education teachers for the purpose of examining AAC usage in inclusive settings. Lund and Light (2007) interviewed adult users of AAC systems, family members, and therapists to determine what factors may be important outcomes for AAC users. Soto, Müller, Hunt, and Goetz (2001) held focus groups with general education teachers, teaching assistants, and parents to determine what barriers impact the successful implementation of AAC in general education settings.

The role of communicative partners is a noteworthy recurring theme within AAC research. Some studies described the role of communicative partners’ input and attitudes in AAC use. McNaughton et al. (2008) defended the importance of AAC users’ ability to have input and output communication exchanges and skills. The researchers also contended that communicative partners should be knowledgeable about ways to interact, both expressively and receptively, with AAC users. A number of researchers referred to communicative interactions when using an AAC device with varied terminology. These terms often include *aided language stimulation* (Goossens, Crain, & Elder, 1992), *augmented input* (Romski & Sevcik, 1996), *natural aided language* (Cafiero, 2001), *aided language modeling* (Drager et al., 2006), and *aided modeling* (Binger & Light, 2007). In all the reviewed studies, an active and knowledgeable communication partner is deemed critical to the effective use of AAC systems.

Ganz et al. (2012) conducted a meta-analysis examining the effects of aided AAC on targeted behavioral outcomes. Communication was the most targeted behavioral outcome in the studies Ganz et al. examined. Results indicate that AAC, specifically PECS, may be effective in improving communication (Charlop-Christy et al., 2002). Furthermore, several researchers examined the impact of AAC on other behavioral outcomes, such as academics, altering unwanted behaviors, and encouraging appropriate social behaviors, which are all positively
impacted by the use of AAC (Ganz et al., 2012). In general, literature on AAC has confirmed that it is beneficial for supporting the communicative experiences of children with language impairments and aids those who have developmental disabilities (Wilkinson & Hennig, 2007). However, the needs of students using AAC are very diverse in terms of cognitive and language abilities, physical and perceptual skills, and sensory capabilities (Higginbotham & Bedrosian, 1995).

In a review of single-subject experimental studies on AAC, Schlosser and Sigafoos (2006) found that few studies provided strong conclusive evidence. Schlosser and Sigafoos concluded that AAC use is effective, although other studies often provided suggestive rather than conclusive evidence. The study concluded that students with severe disabilities made little advancement in communication progress. However, students with intellectual disabilities demonstrated an increase in communication when using high- or low-tech AAC devices (Wilkinson & Hennig, 2007).

**Conceptual Framework**

This study was developed from a transformative worldview and ontological perspective recognizing that various versions of reality are based on social positioning. Thus educators’ beliefs and attitudes are based in their reality of what is both feasible and necessary for their students. In this view, educators are in a social position of power, and their classroom practices can either empower or further oppress their students (Banks & Banks, 2010; Villegas, 2007). Special educators are able to change the social conditions of children with disabilities through the use of AAC. Within this worldview, it matters greatly what teachers believe and what they do in their classrooms. Vygotsky’s ideology that learning is socially mediated corroborates the view that teachers’ beliefs are a critical component of their instructional and communicative
practices, given that knowledge is socially and historically situated. Gaining functional communication skills, as early as possible, increases the possibility for students with communication challenges to participate meaningfully in classrooms and society.

Special educators who work with preschoolers with disabilities understand their marginalization in unique ways and work daily to equalize educational opportunities (Puig & Recchia, 2012). Despite this, Brady et al. (2013) found that students with deficits in communication are spoken to less than other students both at home and school. This could be indicative of a greater value placed on communicating and interacting with students without disabilities, versus their peers with disabilities. This difference has the potential to negatively impact the cognitive and communicative development of young students with disabilities, due to the social nature of learning. The social constructivist theory (Berger & Luckman, 1966; Vygotsky, 1978) informs common early childhood instructional practices, such as placing a strong emphasis on social interactions and play. Social participation is integral to childhood development, and increasing participation through the use of AAC equalizes educational experiences for students with disabilities. Therefore sociocultural theory and social justice theory form the conceptual framework as conceived through social interaction.

**Sociocultural theory.** Vygotsky’s (1934/1963) sociocultural theory asserts that children develop consciousness and cognitive functioning through social interactions. Vygotsky viewed social interaction as being essential to human development. He formulated the term *general genetic law of cultural development*, describing cognition as being embedded in culture by appearing first socially and then being internalized (Vygotsky, 1978, p. 57). Vygotsky (1934/1963) explained the general genetic law by saying that “all higher mental functions make their appearance in the course of child development twice: first, in collective activity, social
activity, i.e. as interpsychic functions, second in individual activity, as internal properties of the child’s thinking, i.e. as intrapsychic functions” (p. 31).

Vygotsky (1978) suggested that the two planes of functioning are naturally ingrained and that interpsychological processes have a significant impact on intrapsychological processes. Vygotsky proposed that analyzing interpsychological precursors before attempting to understand intrapsychological planes is most appropriate in the examination of childhood development (Wertsch, 1985). Through a sociocultural theory lens, communication significance does not exist internally or individually until some form of external social interaction gives it meaning (Wertsch, 1985).

In a further examination of sociocultural theory, Wertsch’s (1991) *Voices of the Mind* examined the roles of culture, history, and institutionalism in mental functioning. Vygotsky (1978) classified language as mediated action, because it is a part of and mediates human action. Wertsch (1994) interpreted Vygotsky’s analysis of mediational means as “what might be termed the carriers of sociocultural patterns and knowledge” (p. 204). Drawing on the work of Vygotsky (1978) and Bakhtin, Holquist, and Emerson (1986), Wertsch (1994) analyzed how the voices of others are appropriated in sociocultural settings. Thus speaking and thinking involve mediated human actions that perpetually produce and reproduce sociocultural settings. Wertsch (1994) posited that meditational means, language in particular, socialize human beings and illustrate its powerful impact.

Vygotsky (1934/1963) also theorized the *zone of proximal development*, which he defined as the distance between a child’s actual developmental level and his or her level of learning potential as determined through adult guided problem solving or in collaboration with more capable peers. The zone of proximal development illustrates the relationship between
social interaction and human development (Mooney, 2013). Vygotsky (1934/1963) was particularly concerned with the zone of proximal development and the general genetic law of cultural development, because he recognized these two theories as the ideal place for children to transition from inter- to intrapsychological functioning.

Owing to the social nature of learning, the sociocultural characteristics of schools, teachers, and society must also be explored. A teacher’s culture and ideology influence his or her perception of all things, inclusive of constructions of ability and disability. Teachers’ perceptions of students influence their actions and behaviors in the classroom (Hardre, Davis, & Sullivan, 2008). Thus it is informative to gain an understanding of teachers’ culture and perspectives as they relate to disability and communication. One’s culture is reflective of a shared set of attitudes, values, beliefs, ideals, and behaviors. Culture is generationally shaped and passed down and informs perception (Battle, 2002). From a sociocultural vantage point, teachers’ perceptions and their construction of cultural identities are socially created. These perceived cultural identities are not solely created by individual interactions but relate to larger cultural narratives (Littlejohn & Foss, 2010). Cultural narratives are constructed and reinforced by repeated interactions in both historical and social contexts (Kang, 2009; Lalvani, 2015).

Dominant cultural narratives, also referred to as master narratives, are stories told from the perspective of the dominant culture and are often thought to be the normative experience of a culture (Lalvani, 2015). Lalvani posited that dominant cultural narratives are based in ableist perspectives and are culturally reproduced, upholding their legitimacy. With this in mind, the present study explored the interactional world and the ways teachers create reality within it.

**Social justice theory.** To better understand the importance of how educators perceive and utilize AAC, social justice theory was used to explore the schooling experiences of
preschoolers with disabilities. In this investigation, the theories of Bell (2007) and Apple (1990) provided a lens for understanding how AAC becomes an equalizer for preschoolers with communication challenges. Social justice theory was employed to investigate the utilization of AAC, educators’ beliefs, perceptions, and practices within social and historical contexts.

Apple (1990) posited that equal access to knowledge and the curriculum embeds democracy in education; however, unconstrained capitalism has eroded social justice and democracy in educational institutions. Likewise, Bell (2007) proposed that full and equitable participation of all people, regardless of social identity group, is the foundational underpinning of social justice. An equitable division of resources with members of all social groups being safe, recognized, and treated with respect is a further tenet of the social justice theory (Bell, 2007). Social actors must be willing to recognize the injustices created when difference is sorted into hierarchically constructed labels and grants power to certain social groups, thereby usurping the power of others (Adams, 2014).

Adams and Bell (2016) posited that the goal of social justice is full and equal participation of all groups in society. However, they contended that dominant cultures perpetuate inequality when schools apply practices based in ableism. Adams and Bell further explained the intent of social justice as one in which individuals are able to develop their full capacities and interact democratically with others. Social justice theory is generally concerned with practices of equality and oppression with regard to racism, sexism, and ableism. Mthethwa-Sommers (2012) proposed that social inequality is embedded in social institutions and within individual consciousness. Therefore equalizing communicative opportunities for students with disabilities requires changes in the values, knowledge, beliefs, and perceptions of special educators and other communicative partners.
This conceptual framework situates the importance of AAC use as an integrated whole-class system and the use of AAC for individualized communicative exchanges in special education preschool classrooms. It emphasizes the critical role of social interaction through the use of AAC and its intersection with a child’s cognitive development, ability to participate, autonomy, and equality. Furthermore, this framework conceptualizes how teachers’ sociocultural identities influence their perceptions, beliefs, and actions related to AAC.

**Theoretical Framework: Theory of Planned Behavior**

The theoretical underpinnings of this study were based in the theory of planned behavior. This section defines the theory of planned behavior and explores its implications for the study. Examining educators’ perceptions, thoughts, and beliefs related to AAC and preschool special education classroom communication is the cornerstone of this research.

A person’s beliefs influence intention and behavior (Ajzen, 1991). Ajzen’s theory of planned behavior suggests that human behavior is guided by three belief domains: (a) behavioral beliefs, (b) normative beliefs, and (c) control beliefs. Behavioral beliefs are concerned with the likely outcome of a behavior. The evaluation of these likely outcomes produces either positive or negative attitudes about the behavior. For instance, if a teacher feels that AAC will help a student communicate and learn, then the teacher will probably develop a positive attitude about the use of AAC. Second, normative beliefs are about the normative expectations to comply with the expectations of important others. The expectations of important others are perceived social pressures, also referred to as subjective norms. Finally, control beliefs are concerned with internal and external factors and the perceived power of those factors. Internal and external factors can help or hinder the outcome of the behavior, thus influencing self-efficacy or one’s belief in one’s ability to succeed. Internal and external factors could be inclusive of knowledge,
training, culture, personal ideologies, or values. All three of these belief domains inform behavior, although varying contexts can influence the relevance of each domain (Ajzen, 1991). Nevertheless, there is a consensus that positive attitude, favorable subject norm, and increased perceived control yield greater chances that one will perform a behavior, and vice versa (MacFarlane & Woolfson, 2013). Beliefs are a significant factor in behavioral decisions (Ajzen, 1991). Teachers’ beliefs were operationalized as perceptions for the purposes of this study.

Clark and Peterson’s (1986) work on the relationships between teacher thoughts and actions illustrated the theory of planned behavior. Beliefs are an integral component of teacher knowledge. Beliefs are a set of conceptual representations that create a reality for the holder, thus guiding personal thought and action (Harvey, 1986). Clark and Peterson (1986) suggested that teacher beliefs are a predictor for perception, process, and action related to classroom practices. Teacher beliefs represent their knowledge of objects, people, concepts, events, and the interactions among them that influence thoughts and classroom practice (Nisbett & Ross, 1980). Furthermore, a teacher’s beliefs are shaped by many internal and external factors, including discipline subculture and preservice educational training (Bean & Zulich, 1991; Brousseau, Book, & Byers, 1988). Educator beliefs act as a filter for instructional decision-making (Nisbett & Ross, 1980). Deford (1985) stated that “knowledge . . . forms a system of beliefs and attitudes which direct perceptions and behaviors” (pp. 352–353). Clark and Peterson (1986) and Brophy and Good (1974) proposed that understanding teacher thoughts and actions gives insight into how they intersect to increase or inhibit learning outcomes.

**Methodological Framework**

Qualitative research is concerned with gaining an understanding of how and why things work, while also relying on human perception and understanding to provide interpretations
(Stake, 2010). Strauss and Corbin (1998) stated that qualitative research can refer to research about persons’ lives, lived experiences, behaviors, emotions, and feelings, in addition to organizational functioning. Qualitative inquiry works well in the field of education because it often seeks to explain and improve conditions by using the stakeholders’ various forms of knowledge (Stake, 2010). In a qualitative methodology, case study research approaches are used to investigate phenomena bounded to integrated systems (Stake, 1995). Case studies require detailed examination and seek to analyze context and process (Hartley, 2004). Additionally, case studies aim to highlight the theoretical underpinnings being investigated (Hartley, 2004).

A case study design allowed the researcher to develop a detailed understanding about the thoughts, beliefs, and experiences guiding the application of AAC. Stake (2010) recognized three types of case studies: intrinsic, instrumental, and collective. For this study, the researcher used an instrumental case study. A collective case study is best suited to developing an understanding of specific issues, such as perceptions and classroom practice, while exploring multiple cases (Stake, 2010). A case study approach is ideal for gaining detailed understandings of teachers’ perceptions while also investigating how their knowledge and experiences influence decisions regarding the use of AAC. The personalistic nature of qualitative inquiry is most appropriate for understanding the individual perceptions of teachers.

Summary

The literature has suggested that teachers’ perceptions and attitudes toward AAC are an important factor in the way AAC is utilized within special education preschool classrooms. Although the use of AT, including AAC, must be legally considered when developing IEPs for students with disabilities, teachers report being underprepared to efficiently facilitate communication through the use of AAC. There is a limited amount of research on special
education teachers’ perceptions of AAC use and perceptions of preparedness to teach (Ruppar et al., 2016). Likewise, research about the use of AAC among preschool-aged students is sparse. There is an abundance of literature about the use of AAC in inclusive settings, while there is limited information about the use of AAC in self-contained classroom settings. The literature surrounding AAC was generally conducted in clinical settings, inclusive classroom settings, or home environments.

The theory of planned behavior provided the theoretical underpinning for this study. Ajzen’s (1991) theory of planned behavior has already been used to predict how beliefs come to pass, create reality, and influence behavior. Similarly, Vygotsky (1978) theorized how language mediates behavior and human action. A social justice and sociocultural conceptual framework provided additional understandings about how teachers may perceive their roles as advocate, teacher, facilitator of communication, and equalizer. Teachers’ perceptions of AAC may be influenced by ideologies such as communication and participation being a basic human right. On the other hand, teachers may hold perceptions regarding AAC and communication that perpetuate inequity (Bell, 2007). It is for this reason that, in this study, sociocultural and social justice theories provided a framework for understanding how teachers’ socially constructed cultural identities and ideologies influence their perceptions and classroom behaviors.

Communication is essential to every aspect of education (Calculator, 2009). All students need the chance to communicate to their full potential. Applying AAC in the classroom helps in reaching this goal. One obstacle to using AAC in the classroom is that educators find it difficult to implement. Special education teachers report the use of AAC as being complex and overwhelming (Foley, 2002). Understanding the perceptions of special educators toward the use of AAC to facilitate communication can lead to improved resources, training, and practices for
schools and districts. The efficient use of AAC devices and interventions can be a means of emancipation for young children with limited or no verbal ability.
Chapter 3: Methodology

The qualitative design used for this investigation was the collective case study methodology. According to Creswell (2012), a collective case study examines multiple cases to illustrate an issue from varied perspectives. Each case was first analyzed using a within-case study approach. Then cases were compared and contrasted, using a cross-case analysis approach to discover patterns. A within-case and cross-case analysis approach was used to examine the following research question and subquestion:

RQ1: How do early childhood special educators perceive utilization of AAC systems in facilitating communication among preschool-aged students?

SQ1: How do early childhood special educators’ perceptions of AAC systems influence how they utilize AAC techniques among preschool-aged students?

Qualitative research is concerned with gaining an understanding of how things work, while also relying on human perception and understanding to provide interpretations (Stake, 2010). The experiences of the researcher and participants are an integral part of data collection and interpretation when using a qualitative case study research approach (Hartley, 2004; Stake, 2010). Therefore the author was conscious of personal assumptions and beliefs when interviewing, observing, and investigating participants.

Qualitative case study research approaches allowed the researcher to understand the actual experiences of the participants involved with the phenomenon (Creswell, 2012). A case study design allowed the researcher to develop detailed understandings about the beliefs, thoughts, perceptions, and experiences guiding the classroom practices of educators utilizing AAC to facilitate communication among students with disabilities.
Creswell (2009) defined a case study as a problem to be studied that will reveal an in-depth understanding of a case or bounded system involving understanding an event, activity, or process of one or more individuals. The current case study required a detailed examination of teachers’ perceptions toward AAC utilization and sought to analyze attitudes and environments (Hartley, 2004). A case study approach was particularly suited for this investigation because the research required detailed insight into social processes, in this case, the social processes of perceiving, communicating, teaching, and learning. Hartley emphasized the use of a case study approach when attempting to understand social or organizational processes because of the rich data obtained in a natural context.

**Participant Selection and Access**

This study was conducted over 8 weeks. Access to self-contained preschool classrooms was granted to the researcher through local school principals, district-level coordinators, and teachers who agreed to participate in the study. The researcher first obtained permission from the university’s institutional review board to conduct the study and was also granted permission from the school district where the study took place. A list of names and emails of potential teachers who qualified to participate in the study was generated. Initially, the researcher gained access to participants and the school by first obtaining permission from the school’s principal. After permission was granted, the author spoke directly to all approved teachers, informing them of the study’s purpose and to determine their willingness to participate in the study. The first five participants who agreed to participate in the study were selected using purposeful sampling. The selected participants were contacted by phone and provided in-depth information on the study, were apprised of their obligations and rights as participants, and were then delivered an informed consent form to sign and return (see Appendix A).
Patton (2005) asserted that purposeful sampling is used in qualitative research to gain the richest information from limited resources. Participants were selected through purposeful sampling based on their teaching licensure and positions as special educators in self-contained classrooms within the targeted district, in addition to their willingness to participate. Educators’ perceptions toward the utilization of AAC to facilitate communication were the focal point of this study because the ability to communicate is vital in the development of young persons. The participants in this study consisted of three preschool special education teachers, two special education paraprofessionals, and one district-level AT specialist. The educators all work in a large urban school district in the southeastern part of the United States. The educators all hold certification licensure specific to their position. The participants’ education levels range from associate’s degree to a specialist degree in the individual’s field of study. The years of teaching experience for the participants range from 10 to 34 years working in special education. The criteria for selecting the participants for the study were as follows: (a) All participants must work directly with preschool students with disabilities, (b) all participants must have a minimum of 1 year experience working with preschool students with special needs, and (c) all participants must be employed by the targeted school district. Table 1 displays the demographic profile of each participant.

**Setting**

The study took place at two school sites. A total of three special education preschool classrooms, located at two elementary schools, were selected for participation in this study. IEP teams had previously determined student placement in the participating classes based on students’ needs and least restrictive environment guidelines.
Table 1

*Participant Demographics*

<table>
<thead>
<tr>
<th>Participant</th>
<th>Years as preschool teacher</th>
<th>Highest degree</th>
<th>Years of teaching experience</th>
<th>Years working with students with disabilities</th>
<th>Sex</th>
<th>Race</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathy</td>
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<td>education specialist</td>
<td>14</td>
<td>14</td>
<td>female</td>
<td>Black</td>
</tr>
<tr>
<td>Gerri</td>
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<td>juris doctorate</td>
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<td>28</td>
<td>female</td>
<td>Black</td>
</tr>
<tr>
<td>Samantha</td>
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<td>education specialist</td>
<td>34</td>
<td>34</td>
<td>female</td>
<td>Black</td>
</tr>
<tr>
<td>Henry</td>
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<td>master’s</td>
<td>13</td>
<td>18</td>
<td>male</td>
<td>Black</td>
</tr>
<tr>
<td>Erica</td>
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<td>bachelor’s</td>
<td>20</td>
<td>10</td>
<td>female</td>
<td>Black</td>
</tr>
<tr>
<td>Rita</td>
<td>7</td>
<td>associate’s</td>
<td>21</td>
<td>10</td>
<td>female</td>
<td>Black</td>
</tr>
</tbody>
</table>

**School A.** School A, one of the sites for this study, is located in a diverse urban community. The school enrolls approximately 332 students, and 11% of the student population consists of students with disabilities. The neighborhood has seen a recent shift in demographics as middle-income families have moved into the area to live within the perimeter of the city. Once thought of as an undesirable school, School A is now one of the sought-after elementary schools in the district. As a result, home prices within the school zone have risen as a reflection of the school’s better test scores and more diverse population. The majority of students who attend School A are African American, approximately 70% of the school’s total school population. The remaining students are Caucasian (20%) and or of other races and ethnicities (10%).
School B. School B was the second site for this study. School B is a Title 1 school where a high percentage of students receive free and reduced-price lunch. The impact of the 2008 financial crisis and housing market crash is still visible in this community, as many foreclosed homes remain boarded up. In contrast, the school was renovated in 2013, making the school an inviting structure with large windows, wonderful natural light, and colorful displays of student work throughout the hallways. School B enrolls 554 students. The majority of the school’s students are African American (98%). Students with disabilities make up 9% of the enrollment.

Context

School A’s self-contained classrooms. Two self-contained preschool classrooms at School A were used for this study. The first of the two classrooms was beautifully decorated with picture charts indicating learning centers, classroom rules, routines, and visual schedules. There was a glass door leading out to a courtyard area where children had recess. The classroom had a private restroom and changing station. AAC devices, PEC card systems, and iPads were located throughout the room to aid students with their ability to communicate. The classroom was located on the east side of the building in a hall with kindergarten classes. All of the students enrolled in the class had a disability, although these varied in nature and severity. The students in this classroom were eligible for special education under the category of significant developmental delay (SDD). SDD refers to a delay in a child’s development in adaptive behavior, cognition, communication, motor development, or emotional development to the extent that, if not provided with special intervention, the delay may adversely affect the child’s educational performance in age-appropriate activities (34 CFR § 300.8(b)). There were eight
students in the class. Two of the students were completely nonverbal, four students had limited speech, and two of the students had typical speech abilities for a preschool-aged student.

The second participating classroom at School A was very similar to the first in physical layout, although it was organized much differently. The two preschool self-contained classes were located next to each other in the kindergarten hallway. In the second preschool classroom at School A, the room was dimly lit and the shades were drawn. Two large projection Smart Boards provided most of the room’s lighting. Paperwork and various instructional items were scattered on tables throughout the room. The walls were mostly bare, with the exception of a poster with picture cards on apples for students to manipulate and indicate their presence at school. A private bathroom and changing station was located on the right side of the classroom, in addition to an adjoining therapy room full of balls and swings. The students placed in this classroom were eligible for special education services under the category of ASD. There were five preschool students enrolled in this class, all with some variance of speech delay. One student also had physical impairments due to an accompanying diagnosis of cerebral palsy.

**School B’s self-contained classroom.** The self-contained classroom located at School B was thoughtfully designed. The classroom was located near the front entrance of the school building. Many classroom items were labeled with picture cards. Students had assigned seats at a lowered kidney-shaped table. At the table, each student was identified with a name card that included the student’s picture. The walls were bright and colorful, with student work and decorative numbers, letters, and colors posters. An AAC device or a picture card ring was placed at almost every desk. Large, uniform picture posters identified creative play and work centers. Each center also had a choice board for students to communicate their choices for materials. The students in this class were eligible for special education services under the
category of SDD. There were six students enrolled in this class, with varying levels of cognitive functioning and communicative challenges.

**Data Sources**

The data sources for this qualitative study included semistructured, open-ended interviews (see Appendix B), observations (see Appendix C), and document review (see Appendix D); Creswell, 2009; Locke, Silverman, & Spirduso, 2009. The data for this case study were collected during the 2017–2018 school year. These data sources were used to investigate the following research question and subquestion:

**RQ1:** How do early childhood special educators perceive utilization of AAC systems in facilitating communication among preschool-aged students?

**SQ1:** How do early childhood special educators’ perceptions of AAC systems influence how they utilize AAC techniques among preschool-aged students?

A semistructured interview was conducted with each participant to understand the educator’s perceptions and attitudes toward the utilization of AAC in his or her classroom. Next, classroom observations were conducted within the participant’s natural environment to provide context for the other collected data. Observations often provide additional clues into the layers of reality that are not revealed during participant interviews (Silverman, 2008). The researcher also requested documents for review that were related to AAC knowledge and utilization. The documents provided by participants were used to gain additional understandings about AAC knowledge, training, and classroom integration.

**Semistructured, open-ended individual interviews.** The researcher scheduled semistructured, open-ended interviews with each participant to gain demographic data and information about his or her perceptions of AAC utilization. Semistructured, open-ended
interviews took place at the participants’ schools and office. Participants were asked open-ended questions from the interview protocol included as Appendix B. Semistructured, open-ended interviews were recorded using an electronic recording device. A professional transcription company transcribed the interviews. At the summation of data collection, each participant was provided a copy of his or her transcribed interview for review during member checking. At that time, the researcher requested feedback from participants for the purpose of making corrections.

The semistructured, open-ended interviews were the primary method of data collection for this research study. Interviewing was an ideal data collection tool for this case study because it enabled the participants to use their own voices to express thoughts and feelings (Berg, 2007). Furthermore, Creswell (2012) noted that semistructured interviews are beneficial because they afford the researcher some flexibility in the manner and order that questions are asked, although all interviewees are asked the same questions. Semistructured, open-ended interviews allowed the researcher to ask specific follow-up questions, as needed, for clarification of the participants’ answers. For example, Cathy was asked, “Take a few minutes and describe any preservice or in-service professional development you’ve received on the use of augmentative and alternative communication systems to facilitate communication.” Cathy described her extensive professional development experiences. The researcher then asked, “Cathy, where did you receive this training?” Cathy responded that her extensive training had taken place in the school district where she was previously employed. Where Cathy received her training was significant to understanding her professional experiences and knowledge acquisition in regard to AAC utilization.

Interviews also allowed participants the ability to control their social space, thus controlling the level of conversation privacy and reducing interruptions (Holt, 2010).
Additionally, the use of in-person, semistructured, open-ended interviews was beneficial because it placed less time demands on the participants, while also providing more flexibility in interview scheduling. The researcher used the semistructured, open-ended interview questions to answer the major research question: How do educators perceive the utilization of AAC systems in facilitating communication among preschool students in preschool special education classrooms?

**Classroom observations.** Classroom observations were conducted in three self-contained preschool special education classrooms. The purpose of the observations was to observe the preschool educators in their natural work environments utilizing AAC. The observations were conducted during the school day. The classroom observations lasted for approximately 30-45 minutes, depending on the activities that the educators and students were performing. The researcher completed systematic checklists during observations and wrote field notes following observations. The checklists were compiled based on the best practices in the provision of AAC services developed by Calculator and Black (2009). The researcher strove to be unobtrusive; however, she was participatory when the classroom teachers and paraprofessionals made recommendations.

Shorthand field notes were used to collect data during classroom observations. Field notes are intended to produce a deeper understanding of the phenomenon being studied. The researcher separately recorded descriptive and reflective anecdotal notes while conducting observations. Each note began with descriptive data, including date, time, physical setting, actions, and behaviors observed. Following the collection of descriptive information, the researcher documented reflective notes, including the thoughts, ideas, and questions generated from the observation.
To aid in the consistency of data collection, a systematic checklist was used to record data about the physical environment and communicative exchanges happening in the classroom between peers, among adults, and between children and adults. Directly following each observation, shorthand notes and checklists were expanded into more rich and detailed field notes. Field notes provided an in-depth and detailed description of the environment and behaviors of educators. During the translation from shorthand, anecdotal notes to detailed field notes, the researcher reflected on the observation to create meaning and answer the research question. Merriam (2009) proposed that observations are a major tool in collecting data in qualitative research studies. Observations provide a firsthand account of the situation under study, and when combined with interviewing and document analysis, they allow for an all-inclusive interpretation of the phenomenon being investigated.

**Document review.** Documents such as lesson plans, professional development–related material, and take-home notes were used by the researcher to gain an understanding of how AAC is integrated into the curricula of the classrooms studied. Creswell (2012) stated that the advantage of using documents is that it enables researchers to obtain the language and words of the participants. Furthermore, it represented the commitment of participants who were willing to compile the documents for review. The participants provided pertinent documents for the researcher to review. A review of lesson plans allowed the researcher to determine the level of AAC integration embedded into instructional activities. A review of home notes indicated AAC integration and also provided insight into the role of educator as facilitator of communication between parent and child. The researcher also reviewed documents related to AAC professional development. Professional development documents allowed the researcher to understand the learning objectives of the AT department’s trainings. Professional development documents also
aided the researcher in determining if the school district trainings align with the AAC knowledge and practices observed in the classroom and, furthermore, if that knowledge influences educators’ perceptions.

**Procedures**

Data collection began by contacting participants and scheduling the semistructured, open-ended interviews and classroom observations. Participants delivered documents for review to the researcher during interviews. Documents were reviewed to gain insights into educators’ AAC knowledge, training, and classroom integration. Semistructured, open-ended interviews were conducted, using the interview protocol, to gain an understanding of the educators’ perceptions and attitudes toward the utilization of AAC in their classrooms. The researcher asked follow-up questions as needed for clarity. The semistructured, open-ended interviews were recorded on an electronic recording device. Following the semistructured, open-ended interviews, the recordings were uploaded for transcription. Next, observations took place in participants’ classrooms to better understand each educator’s communicative and instructional practices. The researcher collected observational data using a systematic checklist. To compile observational data, the researcher placed a checkmark next to the observed or not observed best practice and provided an explanation when deemed appropriate. Descriptive and reflective field notes were immediately expanded following observations.

**Data Analysis**

It is the researcher’s role to interpret the meaning of the data. In qualitative research, the researcher must analyze collected information by finding patterns and themes within the data (Creswell, 2012). First, the researcher analyzed semistructured, open-ended interviews, the primary data source. The data analysis procedures began by transcribing the taped
semistructured, open-ended interviews. The transcribed interview data were then read thoroughly and entered into NVivo 10 software to identify frequent code words. A code is often a word or phrase that assigns an attribute to a portion of language. Saldana (2015) emphasizes the critical connection between coding and data interpretation. In data analysis, the researcher generates codes to develop meanings, detect patterns, build theory, make assertions, and analyze. In this study, in vivo codes were generated from the verbatim or closely associated words of participants.

Descriptive codes were then used to analyze and sort data from systematic observation checklists and field notes. Repeated cycles of coding and analytics were used to compare data using the constant comparative method. Cohen, Manion, and Morrison (2002) defined the constant comparative technique often used in grounded theory as comparisons between (a) similarities and differences between coded fragments; (b) coherence and incoherence within categories; (c) relative importance of categories; (d) concept indicators and, first, each other and, then, existing categories; and (e) existing categories and, first, each other and, then, alternative conceivable categories.

The researcher revisited and revised results while using the constant comparative analysis method, which aided in uncovering multiple layers of meaning. The researcher reevaluated the transcribed interviews using the code words and developed reoccurring topics. Next, the researcher reviewed documents provided by educators. Reviewed documents; systematic observation checklists and field notes; and semistructured, open-ended interview data were compared to the reoccurring topics to determine relationships between the data sources and cases. Patterns began to emerge from the analysis of data.
Saldaña (2015) described a pattern as a repetitive consistent occurrence of data that appears more than twice. Qualitative researchers seek patterns as indicators of human ways of living and working to render a more comprehensible and predictable world, thus providing trustworthy evidence because patterns represent habits, salience, and importance in people’s lives (Saldaña, 2015). Patterns revealed divergent and similar thinking among participants and also exposed functional relationships among the cases. Data patterns uncovered within-case and cross-case aided in further understanding the collected information and established the results of the current study. Finally, the researcher linked the results of the current study to the theoretical framework and current literature.

**Triangulation**

Creswell (2012) explained triangulation as a process of validating data by corroborating evidence from varied participants, multiple types of data sources, and the use of numerous data collection methods. A variation of data validates the current study by corroborating information obtained from multiple data collection sources; systematic observations, semistructured, open-ended interviews; and document reviews. To further validate this study, various types of respondents participated. Special educators, inclusive of teachers and paraprofessionals, and a district-level AT specialist participated in the current study. The researcher triangulated data from a variety of data collection sources and participants to enhance the accuracy of the study (Creswell, 2012). Additional triangulation procedures used for this study included member checking and the use of empirical studies from a review of literature that supports, and in some cases refutes, the findings of this study.

Lincoln and Guba (1985) contended that member checking is the most efficient technique for establishing credibility. The researcher conducted member checking with the participants by
confirming the accuracy of their transcribed interviews. According to Creswell (2009), feedback from participants validates a study. The participants’ role in member checking was important to ensure the transcripts obtained from the semistructured, open-ended interviews were complete and that their thoughts and feelings were interpreted accurately. Additionally, member checking helped in the reduction of errors; protected human subjects; and improved the credibility, accuracy, and validity of the study (Creswell, 1994; Stake, 2010).

Empirical studies from the review of literature were used to gain understandings about the utilization of AAC to facilitate communication for preschool students. The results of this study were supported by the literature previously reviewed. This triangulation method enhanced the validity of the findings through the discussion of related findings and varied standpoints. Altrichter et al. (2002) posited that triangulation gives a more detailed and balanced picture of the phenomenon being studied.

**Trustworthiness**

Maintaining high credibility and objectivity while conducting research can increase trustworthiness in a qualitative study. Trustworthiness is used to ensure that the results reported are sound and strong (Creswell, 2012). To ensure that this research study’s quality and outcomes were valid and reliable, the researcher included the four aspects of research trustworthiness, credibility, transferability, dependability, and conformability, as recommended by Lincoln and Guba (1985).

**Credibility.** According to Creswell (2012), *credibility* is one of the strengths of qualitative research and is based on determining whether the findings of an account are accurate from the standpoint of the researcher, the participant, or the readers. To ensure validity and
reliability, the research must be conducted in an ethical manner. Credibility also involves intellectual rigor, professional integrity, and methodological competence (Merriam, 2009).

**Transferability.** Transferability is defined as the degree to which the results of qualitative research can be generalized or transferred to other contexts or settings (Guba & Lincoln, 1994). The researcher of the current study described information in great detail to ensure the results can be transferred to other classrooms and school districts. Sufficient descriptive data were developed to enhance the possibility of transferability to another setting. Merriam (2009) stated that rich, thick description is a strategy to enable transferability. It refers to a description of the setting and participants of the study as well as a detailed description of the findings with adequate evidence presented in the form of quotes from participant semistructured, open-ended interviews; observational data; and a review of documents.

**Dependability.** Dependability refers to the ability to replicate a study with the same or similar respondents in the same context, so that its findings can be repeated (Yin, 2009). To achieve dependability, the researcher provided a detailed description of the process and procedures followed during the research study. The methodology of this study was reported in detail to allow another researcher to replicate the study in the future.

**My Positionality as Researcher**

The utilization of AAC to facilitate communication piqued my interest when I began working in a preschool special education classroom. During the first school year working with preschool students with complex communication needs, I only used visual schedules. Although my students had diverse communication needs, my knowledge of AAC was limited. I entered this new role as a novice with a limited understanding about the intersections of disability and communication. My perception of disability as well as my role of communication facilitator
evolved over time. I did not gain the knowledge and skills to implement AAC during my teacher preparation program. I learned how to implement AAC systems from a desire to increase student participation and alter unwanted behaviors. It was through teacher collaboration and knowledge gained through academic and professional experiences that I began to value the role of AAC.

I initially worked in a preschool inclusion class and then transferred to work in a special education self-contained preschool classroom. As a result, a whole-class AAC system became a critical component of my classroom practice. It became clear that many of these students could not communicate, participate, or learn without a means to share and receive information. My determination to facilitate communication for my students and their families became unwavering, as I viewed their ability to communicate as a human right.

During this period, I also began my graduate program and doctoral work. Perceptions about the students I was teaching and their communicative needs continued to evolve as I gained more knowledge. The experiences I was having in my classroom converged with the theoretical knowledge I was developing in graduate school. In turn, I had an intense need to secure AAC devices for my students. I created AAC tools, such as picture cards and social stories. Additionally, I requested evaluations and speech-generating devices from the AT department. It is my belief that teacher perceptions, thoughts, beliefs, and feelings are constructed through social experiences. The social interactions persons have in academia, within the culture of schools, through collaboration with colleagues, and with the members of the subcultures to which they belong, shape how they view the world. Vygotsky’s (1934/1963) sociocultural theory highlights the role of social interactions and cultural historical contexts in the construction of knowledge. While it is my belief that teachers want to do what is just for students, teachers
may or may not have the knowledge to implement the best practices for students, such as using AAC to facilitate communication.

As a woman of color, I recognize the parallels between the historic oppression of women, people of color, and persons with disabilities (Cochran-Smith, 2008; Ladson-Billings & Tate, 1995). My connection to marginalization makes it personally important that preschool students with disabilities be given equitable educational opportunities.

Assumptions

Throughout my career and studies in special education, I’ve developed the following assumptions. The primary assumption guiding this study is that learning is a social process. According to Bandura (1977) and Vygotsky (1934/1963), socialization is a critical component of human and cognitive development. Traditionally, early childhood learning has been linked to child development and developmental psychology. The researcher also acknowledges that early childhood special education teachers understand the importance of early interventions for students with disabilities. Guralnick (2011) asserted that early intervention services have long-term benefits for children with disabilities. Access to effective early intervention services within the first 5 years of life profoundly influences a child’s development (Guralnick, 2011).

Summary

This investigation employed a qualitative, within-case and cross-case, constant comparative analysis. Sociocultural and social justice theories composed the conceptual framework. Ajzen’s (1991) theory of planned behavior provided the framework for understanding the relationships between teacher beliefs, attitudes, and classroom practice with the aim of deepening understandings about teachers’ perspectives of AAC usage in preschool special education classrooms. Chapter 4 presents the results of the data collection.
Chapter 4: Within-Case Analysis

The purpose of this research study was to deepen the understanding of perspectives surrounding AAC used in special education preschool classrooms. Developing an understanding of teachers’ perspectives and how they influence AAC use can assist in providing professional development for preschool special education teachers. AAC is utilized to maximize the communication and instructional experiences of students with complex communication needs. A qualitative within-case and cross-case, constant comparative analysis was used to analyze the data. The researcher wanted to develop an understanding of the participants’ perspectives on AAC technology utilization in preschool special education classrooms. Chapter 4 presents descriptions of each participant and the results of data collected during the investigation of participants’ individual cases. Verbatim texts from the semistructured, open-ended interviews; reflections from field notes written after systematic observations; and information from documents reviewed are also presented in this chapter.

The investigation was conducted to address the following overarching research question:

RQ1: How do early childhood special educators perceive utilization of AAC systems in facilitating communication among preschool-aged students?

The subquestion in this study is as follows.

SQ1: How do early childhood special educators’ perceptions of AAC systems influence how they utilize AAC techniques among preschool-aged students?

Participant Descriptions

The participants in this study came from different backgrounds but shared a common goal: a focus on providing the most they can for the success of their students. Most of the participants had careers and aspirations outside of the field of education. However, many felt a
desire and need to teach. One teacher stated that she always knew teaching was her calling. Participant responses reveal an unwavering commitment for creating equitable opportunities for children with disabilities and communication challenges. What follows are richer descriptions of each participant and his or her responses, perceptions, and perspectives based on the semistructured, open-ended interviews; classroom observations; and document review.

Cathy: Exactly where I was meant to be. Cathy, a preschool special education teacher, had an animated and cheerful disposition. Cathy worked as a special education paraprofessional for 9 years prior to becoming a classroom teacher. She had been working as a preschool special education teacher for 5 years. Cathy expressed a love for technology and working with preschool students with disabilities. Her passion for her work was apparent in her enthusiasm during the interview. Cathy stated, “I’m using this because I love technology and I’ve used it for so long, I feel like it’s an innate part of what I do.” Her technology and special education training was developed while working as a special education paraprofessional in another local school district. Cathy was raised locally to her current workplace and claimed that her love to talk is a trait she inherited from her father, who was an attorney. Cathy inferred that the district could provide better AAC training. She also mentioned that her fellow colleagues do not utilize AAC as often as she does. Cathy stated,

And in the current district, most of the AT trainings we’ve had, or professional development days—I know the last one we had, our coordinator put that together because she felt that the team in general just needed a refresher on AT because a lot of teachers I hear, do not use them. A lot of teachers are really not familiar with those devices. And in my opinion, a lot of teachers are older, so they don’t really know a lot about the
technology we use, a lot of us are younger, we’re just into it a little more, just my opinion.

Cathy further expressed a desire for comprehensive AAC training since she is proficient in basic utilization. She also stated that the current trainings are redundant. She mentioned that she would be willing to volunteer her time to train other teachers on AAC utilization. She stated, I see some pros and cons. I would say the pros are definitely just learning about new ways to program activities and lessons. That’s always a plus. The cons are repeating the same things over and over. I feel like new courses should be added, maybe new devices, something different to use because we’ve used the same stuff forever. So, maybe—I’ve used Intellikeys, I mean, there are so many devices, but maybe kind of broaden what we do a bit and then maybe target the teachers that don’t use it at all. Or ask the teachers who they know use it faithfully to come and provide in-services.

Cathy’s comments suggest that she has positive feelings regarding AAC based largely on her personal interest in technology. She finds incorporating AAC into her classroom practice seamless. She also recognizes the value of AAC for her students with communication challenges. Cathy knew, after years of working as a paraprofessional, that she wanted to be a special education teacher one day. It is possible Cathy has found her niche using AAC and working with preschool students with special needs. Research has supported the effectiveness of using technology to improve learning, communication, and interaction for students with disabilities (Alper & Raharinirina, 2006; Edyburn, 2003).

**Gerri: Teaching as a calling.** Gerri had a career outside of education and aspired to be an attorney. She earned her juris doctor (JD) degree and worked in corporate America for a few years early in her career. Her ambitions in law were sidelined when she was in a car accident
that left her unable to talk and walk. During her rehabilitation, she felt a calling to work with persons with disabilities. She changed her career path and began working in the field of education. Gerri had worked in education for 28 years in various facets of special education, including as a classroom teacher, special education administrator, and autism coordinator at the district level. At the time of this study, Gerri was back in the classroom because she really loves working directly with students. She was planning to retire at the end of the school year.

Her passion about teaching and facilitating communication through the use of AAC was noticeable in her responses. Gerri was adamant about the importance of AAC utilization in her preschool classroom. She conveyed her thoughts about the importance of communication, socialization, and instruction:

Like I said, I push, [inaudible] in an autism classroom, that’s basically what you can do. Because a lot of the social skills and behavior is just because there’s lack of communication. . . . No, but no more than what I said before. I don’t care what you teach, what you’re doing. It’s communication. If you can’t communicate with your kids and your kids can’t communicate with each other, it’s very hard. That’s why you have such low achievers. A lot of our kids get into special education classes because of communication.

She continued to share her thoughts about how AAC fosters a more inclusive environment. Gerri’s responses suggest that she had positive perceptions of the use of AAC in the classroom. She believed her students benefit from the use of AAC:

If we’re doing a lesson and I’ve got somebody that’s not going to be talking to me, yes, no, or I have that they can press, that can be included. It’s a good thing. It’s a good thing they came up with that type of stuff because some [inaudible] communicating.
Especially [inaudible] just totally nonverbal. That gives someone an opportunity to be a part of and communicate in their own way.

Weikle and Hadadian (2003) presented evidence that the use of AAC devices can facilitate communication and learning, in addition to promoting social outcomes. AAC can be used to teach cognitive skills, such as sequencing, and language skills, such as articulating, and can provide a means for interactive communication (Weikle & Hadadian, 2003).

**Samantha: A personal connection to disability.** Samantha, a preschool special education teacher in her early 60s, had a little sister with Down syndrome who passed away at age 7. Samantha always knew she would work with young students with disabilities. She was the only participant who had an undergraduate degree in special education. Samantha revealed that the joy her little sister bought to her and their family was short-lived. She also distinctly remembered the wonderful teachers who helped her sister. Samantha suggested that the commitment those educators and caretakers had for her sister inspired her to help others. She expressed her commitment to her students by stating,

I have been lucky. I have made myself acquainted with a lot of the assisted technology teachers who work in the system. They’ll come to me one-on-one because when they see that you have a desire to use AT, they’ll give you what you need. So, they’ll come to me one-on-one and help me, but I’ve had training through the district. And a lot of the things I do is self-taught. I look through the Internet, and I find resources that’s needed for my class. I make what they need. And then not only do we use it in class, I give them things for them to use at home, and teach the parents how to use what we need.

Her first job was working at an elementary school in a resource classroom with students with severe intellectual disabilities. Samantha will soon be retiring from teaching. At the time
of the study, she was attending seminary and wanted to do evangelical work after retirement. Samantha seemed to understand the significance of students using AAC across settings and shared that knowledge with parents. She was one of the first preschool special education teachers hired when the district developed its early childhood special education program. Samantha often spoke about her moral imperative to help facilitate communication opportunities for her students. She stated,

Okay, I would say I’m a teacher, but I would say I’m also the facilitator. We work together. What I do is I look at what the kids needs are after an assessment. Classroom whole assessment, and then individual assessment. I work along with the assistant of technology teacher. That’s gonna help me best meet the needs of my kids. And once we determine the ability of communication, that’s how we come up with devices. It has always been my desire for children to talk.

Samantha spoke about the students in her class in a familial manner. Her connection to a family member with a disability impacted the relationships she had with her students. Samantha was an advocate for students and families. Gorski and Pothini (2013) reminded us that social justice advocacy is encouraging special educators to practice equity literacy, meaning they can uncover and combat inequitable practices any place they are discovered.

**Henry: Two sides of a coin.** Henry was one of four AT specialists in the district. He was in his 40s and had been working with students with disabilities for 18 years. He had always lived in the southeastern region of the United States, where he was born. Henry’s father was an educator. When Henry was growing up, he rebelled against the idea of becoming a teacher. He majored in mass communications at a local state college and married his college sweetheart shortly after graduating. Henry found it difficult to find career opportunities in journalism, so he
took a chance and explored a career in education. He was initially employed as a special education teacher on a provisional certificate. He worked as a special education teacher at a middle school and enrolled in a master’s program that allowed him to earn his teaching certificate simultaneously. Henry cotaught the seventh grade and worked with several general education teachers during his tenure at the middle school. Henry expressed how difficult his first year was. He was unprepared for the challenges of coteaching in addition to the challenges of providing instructional strategies to his large caseload of students. He was also struggling to understand the processes of writing and implementing IEPs. He reflected on the end of his first school year and having to make a decision about his career path. He ultimately decided he liked working in the field of education but needed to find a different position. Eventually, he began working in the instructional technology department, and then in the AT department. Henry, a former special educator, uniquely understood the challenges of teaching students with disabilities. He became frustrated when teachers did not implement AAC devices or teach students how to utilize their equipment. Henry stated,

Some of the challenges kind of deal with mostly the protocol piece of it, and that is the teachers taking a device and, basically, kind of training the kids on the device or giving them to use the device. You know sometimes they can be a task getting teachers to follow through with that piece, because a lot of kids not going to know, hey, I’m using this device to communicate a need or a want.

That’s another reason why we put a picture, that we might put a picture of a restroom, or we might put the word on there, but you got to also make sure the kid understands that’s what that is, so they know to match that when they have to use the restroom, so sometimes the follow-up or the reinforcement sometimes can be a challenge,
or I might come in the classroom just coming to do a follow-up or just visiting a class and it might be a class where I know five different kids have devices, but I don’t see the device. The device should be near the kid at all times, even when they go throughout the building.

It can be assumed from the data collected that special educators have a desire to provide students with the tools they need to communicate. Nonetheless, Soto (1997) asserted that a teacher’s willingness to implement AAC is linked to his or her sense of self-efficacy. As indicated by the data, special educators are lacking the AAC knowledge to feel confident about their decision-making and implementation. Low self-efficacy may account for the gaps in AAC implementation that Henry is referenced in the preceding quotation.

**Erica: Part of a dream team.** Erica was 39 years old and had worked in early childhood education for nearly 20 years. She had worked with preschool-aged students with disabilities for the past 4 years. Erica lived in the northeastern part of the United States for most of her childhood and moved south as an adolescent. Her family moved to the southeastern part of the United States when her mother’s company relocated. Erica began her career in education when a family friend opened a daycare center and offered her a job right after high school. She immediately enjoyed working with young children. Four years previous to this study, Erica was looking for work where she would receive better compensation and benefits. This led Erica to join the public school system working as a special education paraprofessional. She worked with Cathy and had learned much about disability, communication, and AAC, with Cathy’s guidance. Erica stated,
I haven’t had any from professional development. I have an awesome classroom partner in crime and she has a lot of experience with them, so she kind of knows what to do and she’ll give me a free training and we’ll pick it up and take off with it.

Erica also beamed as she talked about the progress her students make when utilizing AAC:

I mean, just overall, allowing them to be more accessible to the world around them. I love how we have some that come in absolutely nonverbal and just pressing that button that speaks for them is exciting to them and they start to just make sounds. It may not be a word but to me that’s progress. You come in saying nothing but you’re trying to get out something. That’s beautiful. So, it makes it worthwhile. I can see benefits. If it’s consistent I can definitely see the benefits for a lot of our kids and we have to start them young.

Based on Erica’s statements, it is possible that Cathy and Erica had a supportive working relationship. Erica made reference to the coaching she received from Cathy as her primary means of learning about AAC. Supervision and mentoring of special education paraprofessionals often becomes the responsibility of the classroom teacher (Wallace, Shin, Bartholomay, & Stahl, 2001). As illustrated by Erica’s experience, her social interaction with a more capable peer advanced her knowledge, also known as the zone of proximal development (Vygotsky, 1934/1963).

**Rita: The most important role.** Rita was a 55-year-old preschool special education paraprofessional. She had been an educator for 21 years and had worked with preschool students with disabilities for 7 years. Rita grew up on an island where, as a young girl, she always worked with children in some capacity. She had experience working as a nanny and a tutor. When she moved to the United States at the age of 30, she began working for the public school
system as a paraprofessional. She had worked at the same school for 21 years. Rita had worked with general and special education students from Grades K to 5. She would help in the preschool special education class when the paraprofessional was out on maternity leave. She expressed her interest in working in the class, and when the chance became available, the principal allowed her to make a permanent move to the preschool special education class. She has happily worked with preschoolers with special needs alongside Samantha for the past 7 years. Rita’s explanation of her role showed how seriously she took her role as an educator:

Yeah. It’s challenging, because they are nonverbal, so you really don’t know how it would match with them and such, because I know that they’re trying to reach their potential. But it’s hard because of the nonverbal-ness in them. And when I show them how to use or how to pick on the different pictures to put on the display board to communicate with them, I find it’s challenging because I want them to be at their best, and if they’re not getting it, I’m not success.

This excerpt may reflect Rita’s lack of self-efficacy regarding AAC utilization. It appeared that she wanted her students to be successful but may lack the knowledge and skills necessary to determine student success and thus determine her own success. Suter and Giangreco (2009) described preservice preparation for special education paraprofessionals as rare and in-service training as thin. Table two displays the results of semistructured, open-ended interviews conducted with the aforementioned participants.
### Table 2

**Semistructured, Open-Ended Interview Results**

<table>
<thead>
<tr>
<th>Describe your role and responsibility in preparing students to use AAC.</th>
<th>Cathy (teacher)</th>
<th>Gerri (teacher)</th>
<th>Samantha (teacher)</th>
<th>Henry (AT)</th>
<th>Erica (paraprofessional)</th>
<th>Rita (paraprofessional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get students communicating using AAC. Assessing communication skills and the type of AAC needed. Communicative partner. Integrate AAC into instruction.</td>
<td>Encouraging my kids to verbalize and talk. Depending on the child, using PECS and Big Switches with them.</td>
<td>Teacher first but also facilitator. I look at the students’ needs. Conduct classroom whole assessment and individual assessment. Determine ability and appropriate device.</td>
<td>Determine the reason for needing AAC; is the reason medical. Determine if the student needs high- or low-tech AAC. Give teachers strategies for associating AAC with desired task.</td>
<td>Setting up the class before the kids arrive, label items in the room, keep recordings updated. I play the background kind of role.</td>
<td>Introduce the equipment and every little key. Model the use of AAC equipment. Let the student explore the equipment and then go into the lesson.</td>
<td></td>
</tr>
<tr>
<td>Describe AAC tools you use and share success stories.</td>
<td>Big Talk, Big Mack, Recorder GoTalk, Switch Clicks, Step-by-Step, tech talk, Smart Board, Velcro picture board, picture books. Nonverbal student using a GoTalk 4 to request juice, milk, food was a success.</td>
<td>iPads, computers, gestures, pictures, signing. Having a nonverbal student begin to talk by constantly exposing him to language was a success.</td>
<td>Smart Board, touch screens, iPads, touch talk.</td>
<td>GoTalk 1–9, pictures, Big Mack, tech talk. When a teacher has a whole-class AAC system work efficiently, that is success.</td>
<td>GoTalk, Smart Board, visual aids. When nonverbal kids quickly recognize and are excited to use AAC. When they begin to make sounds, which is progress.</td>
<td>GoTalk, tech talk, PECS, diction tools on the computer, picture games</td>
</tr>
<tr>
<td></td>
<td>Cathy (teacher)</td>
<td>Gerri (teacher)</td>
<td>Samantha (teacher)</td>
<td>Henry (AT)</td>
<td>Erica (paraprofessional)</td>
<td>Rita (paraprofessional)</td>
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<td>-------------------------</td>
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</tr>
<tr>
<td>Describe any challenges regarding the facilitation of communication for students with limited or no verbal abilities.</td>
<td>Making the connection between what they want and the use of AAC to get it. Changing out pictures due to limited AAC devices is tedious and time consuming. Planning.</td>
<td>Meltdowns when students can’t operate AAC devices. Sensory stuff that frustrates students.</td>
<td>Only challenge is myself. Supplies are limited. You don’t let it be an obstacle for making sure a child gets what he or she needs.</td>
<td>Getting teachers to follow through with training the kids on the device. Teachers reinforcing the communication skill. Not seeing the devices accessible during visits.</td>
<td>Getting the child to recognize that this is what will help him or her communicate, helping the child make the connection.</td>
<td>When students are nonverbal, often it is hard for them to understand the concept of picking and choosing picture cards, and I want them to reach their potential.</td>
</tr>
<tr>
<td>Describe any AAC training or professional development you’ve received.</td>
<td>Previous district offered mandatory AAC courses that merged basic communication, AT, and special education; 2–3 times a year. Learned story modification, device training, and computer games. Current district offers AAC refreshers on the same content annually; nothing in depth or new.</td>
<td>I have an AT specialist. I had a professional development workshop on setting up and picking different types of AAC, picture cards, and Velcro.</td>
<td>I make myself acquainted with the AT teachers. They work with me one-on-one. I’ve also had district training. A lot of the things I do are self-taught from the Internet.</td>
<td>I have provided training for teachers, exposure on how to use and the purpose of the device. Training on implementing pictures and creating templates for devices.</td>
<td>The district training was basically broad. Covered mostly the process of requesting AT support. I haven’t had a lot of professional development, but my classroom partner has a lot of experience and gives me free training.</td>
<td>Only training has been the AT person coming into the class to show me how to use the device.</td>
</tr>
<tr>
<td>Cathy (teacher)</td>
<td>Gerri (teacher)</td>
<td>Samantha (teacher)</td>
<td>Henry (AT)</td>
<td>Erica (paraprofessional)</td>
<td>Rita (paraprofessional)</td>
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<tr>
<td><strong>Describe how you’ve benefited from AAC training or professional development.</strong></td>
<td>In previous district trainings, learned how to program devices and embed AAC into instruction.</td>
<td>Exposure to what was out there because I had not thought about it. Communication is the key.</td>
<td>The AT specialist provides early interventions for my preschool students and already knows their needs as they move to the next setting.</td>
<td>Some teachers are already aware, others develop a bigger understanding of AAC’s purpose.</td>
<td>Knowing the process of requesting AT support was beneficial. The AT liaison is excellent.</td>
<td></td>
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<tr>
<td><strong>Share your thoughts about using AAC to facilitate communication among preschool students with disabilities.</strong></td>
<td>I pair verbal students with students using AAC to communicate. Important to get all students interacting and participating.</td>
<td>The iPad, they like to do that. I press one name and said go find that person for me and he can do it.</td>
<td>Round robin activities; we sit around the table and pass the AAC device around. PECS can be abstract, so sometimes I use real photos.</td>
<td>It advances reciprocal communication when devices are used in group settings, with peer helpers or peer tutors.</td>
<td>We mostly use AAC during large group. The majority of peer-on-peer engagement happens during center time. I haven’t seen much AT used in centers.</td>
<td></td>
</tr>
<tr>
<td><strong>Highlight some challenges you’ve encountered using AAC to facilitate communication among students.</strong></td>
<td>Phasing out communication prompts or facilitation when students communicate and play with each other.</td>
<td>Getting the children to stay calm when they make a mistake and focus. It’s a lot of back-and-forth and patience.</td>
<td>You have to have everybody on board. Getting all of the people involved on board with using AAC can be a problem.</td>
<td>Teachers don’t ask questions in training, but when you visit, you realize they don’t know how to implement or need follow-up training.</td>
<td>AAC is not always accessible to students because it has to be prompted by the teacher. Students don’t use it to communicate spontaneously.</td>
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<td></td>
<td><strong>It was useful, but I would like a little more in-depth training. I’d like to learn more about how to reach the kids.</strong></td>
</tr>
<tr>
<td>Share your thoughts on the benefits of using AAC to facilitate communication.</td>
<td>Cathy (teacher)</td>
<td>Gerri (teacher)</td>
<td>Samantha (teacher)</td>
<td>Henry (AT)</td>
<td>Erica (paraprofessional)</td>
<td>Rita (paraprofessional)</td>
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<tr>
<td>It enables inclusiveness, interaction, and participation and validates the contributions of all students.</td>
<td>I don’t care what you teach, what you are doing. If you can’t communicate with your kids and your kids can’t communicate with each other, it’s very hard.</td>
<td>Students communicating and talking so they don’t become frustrated and increase unwanted behaviors.</td>
<td>For preschool students, early intervention and communication skill development.</td>
<td>It allows students to access the world around them. If AAC use is consistent, our kids benefit because they start young.</td>
<td>It allows the verbal and nonverbal students to communicate and participate.</td>
<td></td>
</tr>
<tr>
<td>Share your thoughts about the barriers of using AAC to facilitate communication.</td>
<td>Using AAC for students with low cognitive abilities and speech deficits; hard to determine how much they comprehend and connect. Lack of devices.</td>
<td>A lot of the social skills and behavior is just because there’s a lack of communication. Once you get them communicating, they’ve accepted and they start to verbalize.</td>
<td>Finances to purchase materials, each class being set up the same, being afforded the same materials throughout the district.</td>
<td>Sometimes kids in low-incidence classes are issued a GoTalk but can’t connect meaning to the picture.</td>
<td>No response provided.</td>
<td></td>
</tr>
<tr>
<td>What skills regarding AAC would you like to further develop through professional development?</td>
<td>Introduction of new technologies, new courses offered, broaden the scope of trainings, or offer tiered trainings for more skilled teachers.</td>
<td>The most recent things out there. Something brand-new other than what we are using.</td>
<td>Having the opportunity to go to workshops and trainings outside of what the district offers.</td>
<td>Our department has implementation down packed. New technology, apps for iPad, and devices for kids that can’t manipulate devices.</td>
<td>Learning more variations of technology that helps our kids communicate and function in the world. More experience and knowledge.</td>
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<td></td>
<td>Want more in-depth training to make sure I understand use of the devices. Want to learn more about the other devices that are out there.</td>
<td></td>
</tr>
</tbody>
</table>

*Note. AAC = augmentative and alternative communication. AT = assistive technology. PECS = Picture Exchange Communication Systems.*
Two of three preschool special education teachers and the AT specialist responded that they perceived their roles and responsibilities as assessors of communicative needs, communication partner, and facilitators of communication. Two out of two preschool special education paraprofessionals responded that they perceived their roles and responsibilities in relation to AAC tools, setup, maintenance, and modeling use. Three of three preschool special education teachers responded that they encouraged the use of verbal speech in their classrooms.

Observations

When the researcher observed Cathy and Erica’s class at School B, it appeared that the utilization of AAC was an everyday part of the classroom routine. All of the students were greeted upon entering the classroom. Students who were verbal said “hello” or “good morning,” some students used waving gestures, and others used a Big Talk device that was programmed to say “good morning” for them. Erica, the paraprofessional, was observed placing picture cards on two students’ desks for requesting more food and juice prior to the students transitioning to breakfast. During breakfast, a student was observed using a picture card to request additional food. Cathy, the preschool special education teacher, quickly responded to the request and acknowledged all appropriate communicative attempts made by students. When behaviors or communication attempts were inappropriate, Erica referred students to review the classroom’s essential agreement, which was a picture card rule chart. All of the students were provided with AAC tools to facilitate communication and were included in the circle time instructional lesson. Big Talk devices were used for nonverbal students to say the date, name the days of the week, and discuss the weather. Multiple students used the interactive whiteboard to make choices during circle time instruction. Cathy and Erica handled all AAC with a level of familiarity that implied they were comfortable using it. Cathy’s extensive AAC training, received while
working in another district, was reflected in the data collected from each source. It is possible that Cathy was able to elevate Erica’s AAC knowledge, skill, and practice through what Vygotsky (1934/1963) referred to as the zone of proximal development. The zone of proximal development is the difference between what a person can do and what the person is capable of doing with the help of a more capable peer (Vygotsky, 1934/1963).

When the researcher observed Gerri’s class, at School A, the students were initially engaged in an instructional lesson using the Smart Board. Students were prompted to identify their name cards from a board with three options, recite the letters of the alphabet, and review their colors. The researcher did not observe many opportunities for students to use AAC for communication. Most of the low-tech AAC was used for labeling and directing. Students were observed transitioning from an instructional activity to a play-based center activity. Students chose centers such as dramatic play, art, and blocks to work and play. No AAC was accessible to students during center time, although a great deal of peer interaction and communication happens during structured play. There were AAC materials located in the classroom that included picture cards and visual schedules. However, the researcher did not have an opportunity to see the students using these AAC resources. The limited utilization of AAC in classroom practice may diminish opportunities for cognitive development through socialization, as theorized by Vygotsky (1934/1963). Vygotsky’s sociocultural theory describes cognition as being embedded in culture by first appearing socially and then being internalized.

Also located at School A were Rita and Samantha. The preschool special education paraprofessional and teacher, respectively, were observed using multiple AAC devices when the researcher observed their classroom. They used varied devices and integrated device utilization into instruction. Rita was observed modeling how to use a Tech Speak device before allowing
the student to use it for a phonological awareness activity. Some students used the Tech Speak device to choose a letter, say the letter name, and make the accompanying phonetic sound. Other students verbalized the letter name and sound. Samantha, the preschool special education teacher, was observed using a choice board and picture cards to discuss emotions and to have a discussion on the importance of expressing feelings. Samantha was constantly prompting students to express themselves and display their knowledge with the use of AAC devices and resources. Students were observed using AAC to get their basic needs and wants met. A student was observed using a picture card to request a toy.

During classroom observations, two out of three preschool special education teachers and two out of two preschool special education paraprofessionals appeared to be lacking in knowledge regarding AAC utilization to facilitate communication, although AAC use was observed in all classrooms.

Document Review

Participants provided documents for the researcher to review. Cathy provided lesson plans, Samantha submitted picture card home notes, and Henry shared professional development documents used for training preschool special education teachers.

Lesson plans. Cathy, a preschool special education teacher, provided lesson plans for the researcher to review. Her weekly lesson plan provided an outline for what educational standards the students were expected to master and how AAC would be used to facilitate the lesson. Nonverbal cues, such as gesturing and cue cards, were reviewed for the students to develop an understanding of classroom rules and routines. Cathy described specifically which AAC devices were to be used during calendar time. For example, she indicated that a Step-by-Step device would be programmed with the days of the week and the date. Similarly, after she...
read a story to the students, her lesson plans specified that a GoTalk 4x4 would be preprogrammed with pictures from the story. As outlined in the lesson plan, students were to use the GoTalk 4x4 to discuss the story and display comprehension.

**Picture card home notes.** Samantha, a preschool teacher, provided picture card home notes for the researcher to review. One of the home notes encouraged students to use picture cards to share information about their school day with their families. Samantha used picture card home notes for students to communicate what they ate, what activities they enjoyed, and if they had a successful day. The second home note provided updates on communication goals. The communication goals included the ability to share information about their day, request items, maintain eye contact, and answer questions. Samantha’s home notes confirmed her instructional focus on communication skill attainment.

**Professional development PowerPoint.** Henry, an AT specialist, provided a PowerPoint presentation that is used to train preschool special education teachers in the targeted district. Each slide of the PowerPoint detailed the AAC training preschool special education teachers have received. The professional development PowerPoint outlined the topics covered during training. The topics covered included the importance of access, the definition of AT, when and how to refer a student for AT services, and an overview of AT tools and resources. The professional development PowerPoint uncovered a focus on AAC tools and the referral process. However, the training failed to prepare teachers to become strong communication partners through the use of AAC. Infusing AAC into communication and instruction is also not addressed in the PowerPoint document.

Cathy’s lesson plans suggested embedded AAC utilization in her classroom practices and meaningful planning. Data collected from a review of her lesson plans were congruent with
observational data collected in her classroom: She values AAC and uses it with fidelity. Samantha’s picture card home notes were indicative of her understanding of the importance of AAC utilization across settings and underscored her commitment to the families of students with disabilities. Finally, a review of professional development documents highlighted the need for a more comprehensive in-service training for special educators, steeped in the fundamentals of communication. A review of the PowerPoint revealed no focus on the vital role of the communication partner.

A review of the documents supported the notion that special educators value AAC and utilize it. However, special educators need more training and professional development on how to optimize AAC to facilitate communication. In Chapter 5, the researcher analyzes the data using within-case and cross-case data analysis. Three major topics are presented: differences in the perceived roles of teachers and paraprofessionals, challenges and barriers to using AAC, and a lack of professional development and resources.
Chapter 5: Analysis of Findings

To analyze the data, the researcher combined within-case and cross-case data analysis. Ayres, Kavanaugh, and Knafl (2003) asserted that a combination of within-case and cross-case approaches enables the researcher to interpret the individual experiences of participants in a generalizable way. The researcher utilized the computer software NVivo 10 to assist in coding participant interview data. The reoccurring codes were used to establish relevant categories. Observational and document review data were then sorted into the established categories and further analyzed to support and develop topics and subtopics. The topics assisted the researcher in the within-case and cross-case analysis of data. In an effort to preserve the intended context of the data, the following analysis is presented within-case and cross-case as needed to highlight critical topics. Three major topics are presented: differences in the perceived roles of teachers and paraprofessionals, challenges and barriers to using AAC, and a lack of professional development and resources. Major topics and subtopics are presented in this chapter, data are analyzed within-case and cross-case in relation to the three data sources, and supportive citations from the literature are embedded.

Differences in Perceived Roles of Teachers and Paraprofessionals

The first topic that emerged from the study was the differing ways teachers and paraprofessionals view their roles in the facilitation of communication through the use of AAC. Six out of six participants in the study expressed awareness surrounding the importance of AAC utilization. However, teachers and paraprofessionals spoke of their roles related to AAC use differently. Special education paraprofessionals are supervised by the classroom teacher and may be required to fulfill a wide range of duties. Some of those responsibilities are directly related to student instruction and many others are not, such as photocopying or sanitizing
workstations. The role of the paraprofessional is not clearly defined and often must be communicated by the supervising teacher (U.S. Department of Education, 2014). The preschool classes examined in this study use paraprofessionals as vital support staff. Semistructured, open-ended interviews; classroom observations; and reviewed documents revealed differences in the ways preschool special education teachers and paraprofessionals perceived their roles when utilizing AAC. Overall, the participants interviewed spoke positively about their perceptions of AAC use to facilitate communication. Nonetheless, differences in perceived roles and responsibilities concerning AAC utilization in the classroom based on the educators’ position reoccurred often throughout the study.

Roles related to AAC. Teachers defined their roles as facilitators of communication in terms of assessing the need for AAC and instructional strategies related to AAC utilization. Two out of three teachers discussed the process of determining the communicative competence of students, and they shared specific strategies utilized to increase students’ communication skills through the use of AAC. The role of communicative partners is vital to establishing meaningful communication through the use of AAC. McNaughton et al. (2008) highlighted the importance of AAC users’ ability to have both input and output communication exchanges and skills. Communication reciprocity can only be established if special educators understand how to utilize AAC and also understand the communication needs of their students. Communicative partners should be knowledgeable about ways to interact, expressively and receptively, with AAC users.

Conversely, two out of two preschool special education paraprofessionals who participated in the study did not discuss their direct communications with students as much as teachers did. Pickens and Dymond (2014) posited that paraprofessionals are sometimes inexperienced in the responsibilities they are expected to fulfill. Giangreco and Broer (2007)
cited tension in the role of paraprofessional, whose roles are often vaguely defined, and whose compensation may not reflect the level of responsibility placed upon him or her. This may be one reason why teachers and paraprofessionals differ in their perceptions of roles and responsibilities. Responses provided by paraprofessionals did not imply that they are not strong communicative partners but rather that they perceive their role as different from the role of the classroom teacher. Table three displays data on perceived differences in roles and responsibilities among preschool special education teachers, paraprofessionals, and the AT specialist.

Table 3

*Differences in Perceived Roles and Responsibilities*

<table>
<thead>
<tr>
<th>Role related to AAC</th>
<th>Responsibilities related to AAC</th>
<th>Encouraging the use of verbal speech</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathy (teacher)</td>
<td>Facilitator of communication; communicative partner</td>
<td>Assess communication needs; switch pictures on AAC devices</td>
</tr>
<tr>
<td>Gerri (teacher)</td>
<td>Utilizes AAC as a tool for minimizing unwanted behaviors and encourage verbal speech</td>
<td>Make sure devices are accessible during instructional activities</td>
</tr>
<tr>
<td>Samantha (teacher)</td>
<td>Facilitator of communication; communicative partner</td>
<td>Assess communication needs; choose AAC devices and tools; get all stakeholders to use AAC</td>
</tr>
<tr>
<td>Henry (AT specialist)</td>
<td>Training teachers on AAC implementation; providing support to ensure AAC is accessible and in use</td>
<td>Choose AAC devices and tools</td>
</tr>
<tr>
<td>Erica (paraprofessional)</td>
<td>AAC maintenance; background role</td>
<td>Classroom setup; labeling; updating AAC device recordings</td>
</tr>
<tr>
<td>Rita (paraprofessional)</td>
<td>Models the use of AAC for students; teaches students how to use AAC tools</td>
<td>Models the use of AAC equipment; teaches students how to make choices using picture cards</td>
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</tbody>
</table>

Note. AAC = augmentative and alternative communication. AT = assistive technology.

Cathy, a preschool special education teacher, noted that her role as facilitator of communication is extremely important when teaching students with disabilities. She shared her perceptions regarding her role in this way:

So, I also use the devices as an incentive. So, say a student—it’s been two weeks or so and the student, who is verbal but is having those issues speaking because the student may be new, the student is just a little afraid having to get acclimated to the environment. I go through each student and see who’s verbal, who’s nonverbal, who’s speaking to me, who’s not, who still needs the devices, who doesn’t and even if the child is speaking, for those first few maybe couple of weeks, I still let the child hit the device—incentive.

So, I try to keep in constant communication with the students even though the levels are a little lower but I feel like—I guess the way that I speak to the children they kind of understand it, but I’m very repetitive.

Samantha, a preschool special education teacher, stated,

Okay, I would say I’m a teacher, but I would say I’m also the facilitator. We work together. What I do is I look at what the kids needs are after an assessment. Classroom whole assessment, and then individual assessment. I work along with the Assistant of Technology teacher that’s gonna help me best meet the needs of my kids. And once we determine the ability of communication, that’s how we come up with devices.

Erica, a preschool special education paraprofessional, stated the following on her roles in utilizing AAC:
Well, actually, just making sure everything is set up in the classroom before the kids get in as many labels to identify the various things in our classroom when it comes to technology that we use to kind of help kids communicate and just make sure everything is up to date. For example, our calendar time when we talk about the day’s date. We prerecord, you know, the day’s date so that when the kids press it, it is already set up to go. So, that’s kind of like my—I play the background kind of role.

**Responsibilities related to AAC.** Two out of two paraprofessionals discussed their responsibilities in terms of AAC device maintenance and classroom preparation, such as placing AAC materials in accessible areas. Rita, a paraprofessional, was observed modeling use of an AAC device during the classroom observation. She spoke about her AAC responsibility of modeling the device:

> My responsibility is to use the equipment when they need To GoTalk or whatever device they’re using, I demonstrate the use of it. I introduce every little key. And give the introduction to the child for the equipment first, and then I go into the lesson with the child, with the student.

Samantha, a preschool special education teacher, discussed her responsibility of getting all stakeholders to use a whole-class AAC communication system:

> It’s not easy. It can be hard because of consistency. You have to have everybody on board within the class. It’s like you have to advertise and sell you product. My product is for us to use this AAC device, and my consumer is the student. And then I have to get all of the people involved to be on board with the objective we want to put in place.

Samantha’s commitment to include all stakeholders was further affirmed during the analysis of the documents she provided. Her home notes provided instructions for parents to use AAC to
facilitate communication with their children and share experiences for the school day. During
the period of emerging AAC skill acquisition, children require the support of communication
partners, such as family members and instructional staff (Binger, Kent-Walsh, Ewing, & Taylor,
2010).

**Encouraging students to use verbal speech.** Four out of six participants in the current
study used AAC to encourage verbal speech and placed high value on students attaining verbal
speech. Romski and Sevcik’s (2005) study revealed that some parents and clinicians perceive
AAC as a barrier to the attainment of verbal speech. However, a meta-analysis by Millar et al.
(2006) indicated that the majority of young children using AAC demonstrates large gains in
natural speech after receiving AAC interventions.

Cathy, a preschool special education teacher, stated,

Okay, well, with our students in here, I start off, even if a child is verbal, I use the AAC
or AT devices to get them to prompt them to speak. Because a lot of students come in
that are either timid or—even if they are verbal, they just don’t have—I guess they need
to be encouraged to speak. So, the AAC and the AT devices help them to be encouraged.
Cathy went on to say,

So, the AAC and the AT devices help them to be encouraged. And so, even if we get one
word, two words, that’s all I need for them to be able to hit the device so they can
communicate with us with whatever it is we need them to do at that moment.

Samantha, a preschool special education teacher, shared, “It has always been my desire
for children to talk.” Gerri, a preschool special education teacher, shared her perspectives on the
importance of encouraging verbal communication:
I’m good with the high-tech devices, but I prefer the low-tech because the low-tech is gonna provide them with the opportunity to use more language. My classroom is strictly language based. Now, that’s my choice. Yes, we do implement the fine motor IEP goals and objectives. Yes, we do implement the different fine motor skills that’s expected of preschoolers, 3 to 5 years of age, but I prefer communication because if a child can’t talk, that’s when they become frustrated, and that’s when behaviors increase.

Henry, the AT specialist, stated,

Well, first, it all depends on the individual student. In reference to a preschool student, depending on their situation and if they’re not being able to speak that’s associated with anything medical. If we know it’s something where we know that their speaking ability is related to a medical, then, we probably would approach it from a device standpoint, because we know there’s really no room for improvement, but if it’s a student where it’s just a simple delay in language, then, we’ll do low-tech, which means that, depending on the teacher and the structure of the class, we’ll implement pictures to use as communication and associate those pictures with whatever task you want the student to do, but in hope, at the same time, to encourage the student to use words, and as they start using their words, create a list of the words that they’re using and try to implement some strategies and methods, as far as encouraging them to continue to use words, or expose them to more language.

Special educators and the AT specialist approached the topic of encouraging students to use verbal speech dissimilarly. Special educators inferred that they use AAC to encourage verbal speech and place a high value on the use of verbal speech. However, the AT specialist views a student’s ability to verbalize from a medical perspective. Preschool special education
teachers provided much more data on encouraging speech and language through the use of AAC than preschool special education paraprofessionals. Differences in the amount of data collected on the attainment of verbal speech may be further evidence of contrasting perceptions of AAC roles and responsibilities in special education preschool classrooms.

**Challenges and Barriers to Using AAC**

The second major topic developed from an analysis of the data was concerned with the challenges and barriers educators encounter when utilizing AAC. According to Beukelman and Mirenda (1998), communication is fundamental to the process of education. Thus it is paramount that we examine the issues educators deem as barriers to successful AAC utilization. The challenges and barriers that presented most often during an analysis of data were understanding and appropriately accommodating the complex communication needs of students with disabilities and communicating with nonverbal students. One of the three teachers, two of the two paraprofessionals, and the AT specialist stated that using AAC with students with no verbal abilities was a challenge. Light and McNaughton (2012) indicated that understanding the communicative needs of students and the provision of the appropriate AAC tools is critical to facilitating communication. Additionally, it may be more challenging to select AAC devices for nonverbal communicators and students with accompanying low cognition skills (Brooks & Meltzoff, 2005). Lack of AAC resources for special educators also surfaced as a subtopic. Data on lacking resources converged during the analysis of semistructured, open-ended interviews and observations. Two out of three preschool special education teachers stated that AAC resources are limited. One out of two teacher and paraprofessional teams were observed using the same AAC device for several students, supporting semistructured, open-ended interview data that
AAC resources are limited. Table four displays data regarding the challenges and barriers to AAC utilization emphasized by participants.
**Table 4**

**Challenges and Barriers to Using AAC**

<table>
<thead>
<tr>
<th></th>
<th>Understanding/accommodating students’ needs</th>
<th>Communicating with nonverbal students</th>
<th>Lack of resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathy (teacher)</td>
<td>It is difficult to determine if a student understands the purpose of the AAC device. Offer a few AAC picture cards/choices so students are not overwhelmed.</td>
<td>It is difficult to determine what connections nonverbal students are making.</td>
<td>It is tedious to switch the pictures in AAC devices, making individualization and activity transitions challenging.</td>
</tr>
<tr>
<td>gerri (teacher)</td>
<td>Uses touch screens to facilitate communication.</td>
<td>Uses AAC devices such as picture cards, signing, and gesturing with nonverbal students.</td>
<td>A variety of AAC devices were not accessible or observed in her classroom.</td>
</tr>
<tr>
<td>Samantha (teacher)</td>
<td>PECS are abstract, so she sometimes uses real pictures to accommodate students’ needs.</td>
<td>Uses a variety of AAC tools to support nonverbal students across settings, home/school.</td>
<td>Finds AAC resources on the Internet, finds the resources she needs, and makes the AAC resources that she needs. AAC resource distribution is not equitable; there is a lack of funding to purchase AAC materials.</td>
</tr>
<tr>
<td>Henry (AT specialist)</td>
<td>The type of device assigned is based on cognitive level and physical ability to manipulate device. Scaffold AAC use as student masters communication skills and AAC use.</td>
<td>Provides devices for nonverbal students based on communicative competence assessments.</td>
<td>Believes that the district has a sufficient amount of AAC resources for preschool teachers.</td>
</tr>
<tr>
<td>Erica (paraprofessional)</td>
<td>May have to physically assist students with using AAC technology and being unsure if students grasp the concept of communication.</td>
<td>AAC speech-generating devices are programmed to reciprocate morning greetings for nonverbal students.</td>
<td>Maximizes the use of AAC devices to ensure that all students get an opportunity to use them. Not enough devices to meet all the needs.</td>
</tr>
<tr>
<td>Rita (paraprofessional)</td>
<td>It is challenging to understand the needs of nonverbal students and measuring their communicative progress/success.</td>
<td>Finds it difficult to communicate with nonverbal students using picture cards.</td>
<td>Sometimes equipment does not work properly.</td>
</tr>
</tbody>
</table>

*Note. AAC = augmentative and alternative communication. AT = assistive technology. PECS = Picture Exchange Communication Systems.*
Understanding and accommodating students’ needs. Understanding the communicative needs of students was deemed by the researcher as an important part of using AAC devices and establishing a whole-class AAC system for communication. Ayres et al. (1994) asserted that adequately assessing the communication needs of students positively impacts longer use. Cathy, a preschool special education teacher, provided a narrative about the challenges she encounters when attempting to understand the communicative needs of students in her classroom:

Absolutely. I think again, with that student and many students like her, it is hard to get them to make the connection of what it is they are asking for. So, even though we’re using the pictures, we’re going back and forth, we’re being repetitive about—you want this, you need to press this button, you never know if they’re really understanding what it is. They understand the movement—the gestures but do they really know this is milk? We will never know really, because she is still nonverbal. So, we’re hoping that is the connection she made but we just don’t know.

Cathy further elaborated on accommodations:

So, with those devices I just try to keep it basic and light because I don’t want to overwhelm them with too many devices, too many pictures, different things like that, so forth. . . . Another example I have—we do social and emotional learning. So, I have the pictures that I drew of all of the feelings that we’ve discussed, or that we’re going to discuss, so say we’re working on one or two feelings. I cover up the other feelings so as not to confuse them, so they know just to point to one of these two feelings. So again, not to overwhelm them. I try to gradually add other pictures and devices as we move
throughout the year so that they again, won’t be overwhelmed. We use a graph a day but I pick and choose the most appropriate so the children won’t be overwhelmed.

Henry, an AT specialist, accommodates students’ needs in a similar way:

What I tell them, say for instance—say we have a GoTalk 9. I always tell the teacher the same thing. Let us focus on two, first, and once we see that the kid can manipulate and understand, then, you move to the next, and once they have mastered that, then, we can—or let me backup. Each GoTalk has five stations. We typically use one, but if we see a kid can master that first station, then, we’ll move to another station, if we know the kid has the language to understand it, so once they master that first template, we can create another template that may be more directed towards instruction. The parent may request different requests for the GoTalk and I create one for home and they use that one on station two at home.

Erica, a preschool special education paraprofessional, stated the following concerning accommodating students in the classroom and how nonverbal students are able to participate in daily classroom exercises:

Okay, like I said before, we have one for the day of the week, so basically, it will say the month, the day, and the year. We also use one to count to help identify what the date is. Therefore, it has already set from one to 31, so the kids just press it in. We stop at the correct date. We have one to say good morning for those nonverbal students. We say good morning to them and if they cannot, then they press the button and it says good morning. For them, I think right now those are the three main ones that we use regularly just pretty much every day in the classroom.
**Communicating with nonverbal students.** Baxter et al. (2012) suggested that lack of confidence as a communication partner and inappropriate communication responses are potential barriers to effective AAC communication. Rita, a preschool special education paraprofessional, shared the challenges she encounters when using AAC to communicate with students who are nonverbal:

Yeah. It’s challenging, because they are nonverbal, so you really don’t know how it would match with them and such, because I know that they’re trying to reach their potential. But it’s hard because of the nonverbal-ness in them. And when I show them how to use or how to pick on the different pictures to put on the display board to communicate with them, I find it’s challenging because I want them to be at their best, and if they’re not getting it, I’m not successful.

Rita, a preschool special education paraprofessional, further explained how AAC visual aids can be beneficial when facilitating communication. She explained how visual aids encourage students who are not verbal to participate:

Yes. We use the GoTalk device. Also, we use PECS. Excuse me. We used To GoTalk and PECS. We use the computer. They have diction tools there on the computer that will help them. We also use picture cards. You use a picture card because a lot of our kids are nonverbal, so the picture cards really help with the pictures, making choices and we also use the games too.

Gerri, a preschool special education teacher, had this to say about the challenges of working with nonverbal learners:

Like I said I push verbal speech in an autism classroom, that’s basically what you can do. Because a lot of the social skills and behavior is just because there is a lack of
communication. Once you get them communicating, it’s better. It takes time and some may never talk but the fact that they do have those devices, makes it much better. Much better world.

Erica, a preschool special education paraprofessional, had this to say about using AAC technology to facilitate communication:

I mean, challenges . . . just kind of getting the child to identify or recognize that this is what will help them communicate with kind of . . . like, we had a very low student that I don’t think she made the connection that this was to use to let us know you need to use the restroom. We still had to physically assist her to even get her to use the technology. She never independently did it on her own; whereas, some kids after about a week quickly recognized that’s what it was for and are excited to use it.

Gerri, a preschool special education teacher, elaborated about the AAC technologies that work best for her students. She elaborated on how technology allows students to get past their frustrations caused by not being understood:

Well, of course. That is just typical of children because they have a tendency to have meltdowns. Even with the switch, they get frustrated. It is sensory stuff with them. If they get upset about something, even the verbal kids, it is just not going to work. However, I find the best thing working with the kids is iPads. When they really get upset, you can chill one all the way out using the iPads with them. We do iPads. They have individual iPads. They work well for them.

Henry, an AT specialist, stated the following regarding accurately matching AAC devices to the communicative needs of students:
Some of the kids probably low incidence, where their cognitive abilities are kind of low, we probably go to—to go with a GoTalk 1 or GoTalk 4, because the whole goal is to use a device of course, but at the same time, they got to be able to manipulate and understand the picture for the request or for the task, so typically, if the kid is on the low incident side, we may go with a GoTalk 4.

**Lack of resources.** Access to AAC is now more convenient and affordable with technological advances such as iPads and other mobile technologies (McNaughton & Light, 2013). However, participants in the current study specified a lack of AAC resources as a barrier to AAC utilization.

Cathy, a preschool special education teacher, stated that planning was not difficult but rather tedious because of a lack of resources:

Another thing is, as far as the planning piece it becomes a little—I wouldn’t say difficult but it becomes tedious because we don’t have as many tools as we should have. I feel like we—there should be an abundance of tools. Like, I should have maybe five or six big macs; I should have maybe four or five tech tops. Because, with the number students we have in the classroom, it is hard to always have to changes the pictures out and make it individualizes. So, since we can’t do that—it’s individualized to a point but it’s more generalized. . . . So, on that one device, because I think I only have two big macs. I use one for activities over there then I use this and we do as group activities. Therefore, I have two pictures on it. One is underneath the other so I can switch it when I need to, which becomes something tedious. It is used for the good morning, but for breakfast or for lunch, he does not want to say, “Open please,” even though he can, he does not want to say it because I am asking him to say it. . . . So, I have a picture of me opening cereal
and then I’ll say “Open please” on the device so I have to keep switching the pictures back and forth to do the good morning or the open please or whatever I have to do. That can become a challenge.

Samantha, a preschool special education teacher, expressed that a lack of AAC supplies created challenges and that parents supplement AAC resources not provided by the district:

The only challenge that I see is myself. I can handle myself. The other challenge is supplies. Sometimes supplies are limited, but there is always a way of getting what you need in order to make things happen for the children. I will send home letters to parents to purchase things. But otherwise, you don’t let it be an obstacle for making sure a child gets what they need.

During an analysis of observational data, it was determined that some classrooms were more equipped with AAC tools than others. Henry, the AT specialist, believed that preschool teachers have all of the AAC devices they need and can access low-tech AAC, such as picture cards and visual schedules, readily. He also availed himself as a resource for teachers requiring additional support. Nonetheless, observational data support the argument that AAC tools are limited and teachers innovatively multipurpose AAC devices throughout the school day. Access to individualized and dedicated AAC devices could create more possibilities for spontaneous expressive communication. Spontaneous communication is expressive communication that occurs without prompting and can be carried out through the use of AAC if it is accessible (Reichle, York, York-Barr, & Sigafoos, 1991).

Lack of Professional Development and Training

The third major topic generated from the data analysis was inadequate professional development and training. Stahmer et al.’s (2005) study determined that early childhood
educators desire and need more professional development around early interventions, such as AAC. Generally, the preschool special education teachers and paraprofessionals felt that the school district’s professional development training was insufficient. Most of the participants acquired their AAC knowledge from colleagues, previous school districts, the Internet, and one-on-one training provided by the AT specialist during visits to their classrooms. One of the three preschool special education teachers reported receiving extensive training in AAC. Neither of the two preschool special education paraprofessionals reported having any in-depth professional development training on the use of AAC. Six of six participants were intrigued about the possibilities of new AAC technologies. Table five displays data regarding the lack of professional development and training shared by participants.

Table 5

<table>
<thead>
<tr>
<th></th>
<th>Professional development</th>
<th>AT specialist</th>
<th>Updated AAC technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathy (teacher)</td>
<td>Received advanced training in communication and AAC utilization in a previous district; current district training is inapplicable for an advanced user of AAC</td>
<td>No data collected</td>
<td>New ways to program activities and lessons</td>
</tr>
<tr>
<td>Gerri (teacher)</td>
<td>Received district training on choosing and implementing AAC</td>
<td>Views the AT specialist as a resource for AAC support</td>
<td></td>
</tr>
<tr>
<td>Samantha (teacher)</td>
<td>Inequitable training opportunities; has received district professional development; uses the Internet/self-taught</td>
<td>AT specialist has provided one-on-one training in the classroom; finds the individualized training most effective</td>
<td>Has independently researched updated AAC technologies</td>
</tr>
<tr>
<td>Henry (AT specialist)</td>
<td>Facilitates classes where teachers trained on the purpose of AAC and how to implement</td>
<td>Provides technology and AAC support to the special education preschool teachers</td>
<td>Is curious about new technologies being developed for students with severe disabilities</td>
</tr>
</tbody>
</table>
Erica (paraprofessional)  | Has not had much professional development; received most AAC training from supervising teacher  | Has been trained on the process for requesting AT support from the AT department  | Would like to learn about a variety of AAC technologies to improve skills and knowledge  
Rita (paraprofessional)  | Only training received was from the AT specialist coming in the class and offering on-site training  | Only training received was from the AT specialist coming in the class and offering on-site training  | Would like more in-depth training on proper use and an introduction to more AAC devices  

*Note. AAC = augmentative and alternative communication. AT = assistive technology. PECS = Picture Exchange Communication Systems.*

**Professional development.** Henry, an AT specialist, inferred that comprehensive AAC training is offered by the school district. However, the data revealed gaps in knowledge regarding assessing communicative competence, AAC device utilization, and being a strong communication partner when using AAC. Gaps in knowledge could also be attributed to lack of AAC training in preservice programs and alternative routes to special education licensure. According to Soto et al. (2001), having knowledgeable and skilled AAC users in the classroom predicts success for students using AAC. Participants in the current study indicated that they would like to have more specialized professional development in AAC utilization. Three out of three preschool special education teachers and two out of two preschool special education paraprofessionals stated that district-wide professional development is the only training they had ever received. Two out of three preschool special education teachers reported that professional development trainings are superficial and redundant. One of two preschool special education paraprofessionals wants more in-depth training on facilitating communication through AAC.

Gerri, a preschool special education teacher, acknowledged receiving some professional development from the school district:

The assistive technology specialist, this was back when we first started doing alternative communication things, I actually did a workshop with them and did some training with
them on setting up devices, and picking the different types. It was interesting. Of course, now there is so much more.

Cathy, a preschool special education teacher, shared her AAC professional development training experiences when working in a different school district, when she was a paraprofessional:

Well, it goes back, of course when I transferred from a para to the teaching position, a lot of the technology courses were offered for new teachers. Therefore, when I crossed over, or transitioned, I asked to take courses. They were just in basic communication. We were also—we were encouraged but we also—during [professional development] days, we had to take those courses. It was just embedded in what we did. Every year, at least two or three times a year we had courses in AT. They talked about how to modify stories, and we did a lot with the tech talks . . . and we talked about how to use them connected into the computer. We had many switch activities, computer games.

Henry, an AT specialist, highlighted how his department provides AAC professional development for teachers:

We’ve facilitated a couple of AAC technology classes, basically, just giving the teacher exposure on the purpose of the AAC device, which is the voice for a student. Also, how to implement pictures, whether it’s using a device or whether you’re using a picture sketcher or whether you’re using it for activity schedule or whatever. It allows the kids to understand what’s going on throughout the day. We also show them how to create the templates, so they can do it on their own without us actually being involved with it. Also, how to implement AAC devices the different types of GoTalks, and not just GoTalks, different types of AAC devices.
Gerri, a preschool special education teacher, spoke about the importance of AAC professional development and her desire to facilitate communication: “It was one of the things that the district wanted and I wanted professional development. I wanted what was best for those kids. The communication, if you cannot communicate, then forget it. Communication is the key. Most definitely.”

**Assistive technology specialist provided individualized training.** Rita, a preschool special education paraprofessional, noted that she received training directly from the AT specialist and had this to say: “All the training that I have had on AAC have been from the technology person coming in and showing us how to use it. That is the only training that I have had using those devices.”

Samantha, a preschool special education teacher, expressed her views of working with the AT specialist:

They’ll come to me one-on-one because when they see that you have a desire to use AT, they’ll give you what you need. Therefore, they will come to me one-on-one and help me, but I have had training through the school district. In addition, many of the things I do is self-taught.

Henry, the AT specialist, shared his perspective on his responsibility to hold teachers accountable for using AAC:

Some of the challenges kind of deal with mostly the protocol piece of it, and that is the teachers taking a device, and training the kids on the device or getting them to use the device. You know sometimes it can be a task getting teachers to follow through with that piece.
A review of professional development document data indicates that preschool special educators participating in this study have been trained on the implementation of AAC devices. However, the effectiveness of the professional development training remains questionable because semistructured, open-ended interview responses indicated that most educators in the current study felt inadequately trained to meet the communication needs of their students.

**Updated AAC technologies.** Erica, a preschool special education paraprofessional, stated the following concerning her desire to learn more about AAC technologies:

I would like to learn more of a variety of what really is out there to be effective in that department. I have only had a little experience with a couple of things. I’m sure there’s more of a variety of things and ways that we can use technology to help our kids communicate and function in the world around them and I just would like to be a little more experienced or a little more knowledgeable on what is out there and what’s available.

Likewise, Cathy, a preschool special education teacher, said,

Learning about new ways to program activities and lessons. That’s always a plus. The cons are repeating the same things over and over. I feel like new courses should be added, maybe new devices, something different to use because we’ve used the same stuff forever.

Kent-Walsh, Murza, Malani, and Binger (2015) suggested that communication partners who receive training will yield better communication results from AAC users. Thus developing AAC utilization and communication skills for special educators, the primary communication partners for students using AAC at school, is critical. Communication partner training should be a part of any AAC training; however, the value of training communication partners often goes
unrecognized (Kent-Walsh et al., 2015). A review of professional development documents in the current study indicated a focus on device access, referral processes, and AAC device familiarity. Furthermore, observational data support the notion that participants use AAC devices but often are not maximizing communication exchanges. For instance, Gerri was observed not responding to a communication attempt made by a student, facilitated with a picture card, during instruction.

Summary

The researcher employed a qualitative constant comparative analysis approach to explore data within-case and cross-case. Overall, three major topics emerged from the analysis of the data: (a) differences in perceived roles of teachers and paraprofessionals, (b) challenges and barriers to using AAC in the classroom, and (c) lack of professional development. The educators perceived their roles as facilitators of communication differently. In addition, the researcher discovered some challenges and barriers to special educators efficiently utilizing AAC. Finally, the data reveal a need for more professional development on communication partnerships and AAC implementation.

Chapter 6 presents a discussion of (a) findings, (b) major assertions, (c) delimitations and limitations, (d) implications for practice and policy, and (e) recommendations for future practice and research.
Chapter 6: Discussion, Findings, Implications, and Conclusion

Chapter 6 presents a discussion of (a) findings, (b) major assertions, (c) delimitations and limitations, (d) implications for practice and policy, and (e) recommendations for future practice and research.

A qualitative case study was used to explore the perceptions of AAC utilization among preschool special educators. Findings suggest that preschool special educators find the use of AAC beneficial and perceive AAC positively. However, preschool special education teachers and preschool special education paraprofessionals perceive their roles and responsibilities, as communicative partners and facilitators of communication, differently. The data reveal that both preschool special education teachers and paraprofessionals have limited knowledge about the role of communication partner through the use of AAC. Additional findings suggest that special educators may be able to increase their understandings of AAC and communication if they are provided with professional development related to communication, AAC devices, and updated technology. District-level professional development is critical to optimizing the communicative exchanges of students utilizing AAC in special education preschool classrooms.

Discussion of the Findings

A within-case and cross-case analysis of the data reveals three major findings in the study. They are presented in the following sections.

Differences in perceived roles of teachers and paraprofessionals. A major finding of this study was that practitioners perceive their roles differently based on their positioning within the culture of the school as a preschool special education teacher or preschool special education paraprofessional. Teachers primarily perceive their AAC role in relation to communication and assessment, while paraprofessionals perceive their role more related to AAC tool and device
tasks. Cathy explicitly teaches students to communicate, as evident by a review of her lesson plans. Outlined in her lesson plan is an activity in which students must demonstrate understandings of nonverbal cue cards. Further support for her perceived role as communicative partner is highlighted by her following comment: “I try to keep in constant communication with the students even though their levels are a little lower.” In contrast to Cathy’s approach, preschool special education teacher Gerri views her communicative role in a different manner. Gerri spoke about using the iPad to “chill students out.” She went on to say that students in her classroom gesture to indicate their needs and wants. Both of these teachers use AAC systems in their classrooms. However, Cathy’s responses, classroom practices, and lesson plans reveal communicative reciprocity in her use of AAC systems. It can be inferred that she perceives AAC as a communicative tool. Gerri, on the other hand, is primarily facilitating students to use AAC for labeling and requesting. She perceives AAC as a way for students to get their needs met and answer questions. Her classroom practice did not reflect many opportunities for students to engage in interactive conversational exchanges. Gerri’s interview responses suggested that she values AAC. However, the researcher did not observe an appropriate amount of AAC utilization or accessibility in her classroom. This is on par with Henry’s comments about visits to preschool special education classrooms; he noted that, on occasion, he visits classrooms and does not see any AAC utilization. These preschool special education teachers differ in their AAC instructional practices. Nonetheless, they both perceive their role as being a facilitator of communication.

Both preschool special education paraprofessionals, Erica and Rita, perceive their AAC roles similarly. They essentially focus on device maintenance, classroom setup, and device accessibility. Erica said this about her responsibilities: “make sure everything is set up in the
classroom before the kids get in,” “making it accessible and up to date,” “I play the background kind of role.” Rita said, “I demonstrate the use of it. I introduce every little key.” It is problematic if paraprofessionals do not view themselves as facilitators of communication. There could be missed opportunities for students to increase communication and cognitive skills if paraprofessionals are not using AAC systems with intent. Sociocultural theory (Vygotsky, 1934/1963) explores the social, cultural, and historical nature of interacting. It is possible that the interactions between colleagues, parents, and administrators shape paraprofessionals’ self-perceptions and aid in defining their perceived role. Paraprofessionals may not always be involved in instructional decision-making, thus setting an expectation that they will be involved in more rote classroom tasks. Their social interactions within the culture of school may account for the ways in which they described their classroom roles in this study as “behind the scenes” and “background.” This background view of their role could adversely impact their social interactions with students.

Vygotsky’s (1934/1963) zone of proximal development provides more insight into the criticality of paraprofessionals in preschool special education classrooms. The zone of proximal development is concerned with optimal development being achieved for children through guidance and social interactions with adults. Preschool students with disabilities and complex communication challenges need all of the communicative partners in the classroom actively engaging them. The role of AAC communication partner should not be exclusive to the preschool special education teacher. The findings of this study suggest that school roles dictate staff–student interactions and that paraprofessionals focus on AAC tools, while classroom teaches focus more on student development and facilitating communication.
Additional findings suggest that every participant placed a high value on encouraging verbal speech in conjunction with the use of AAC. Samantha said, “It’s always been my desire for children to talk.” Likewise, Henry stated, “Associate those pictures with what you want the student to do, but in hope, at the same time, to encourage the student to use words.”

Henry, an AT specialist, spoke about his role from a diagnostic perspective. It is his responsibility to determine what type of AAC individual students or whole classes need to communicate more effectively. Samantha perceives her role in a similar fashion. She stated, “I look at what the kids’ needs are after an assessment, whole classroom, and then individual.” She indicated that, with the help of the AT specialist, communicative competence is determined and then devices or unaided AAC systems are assigned. Samantha’s commitment to facilitating communication for families of students with disabilities was evident during a review of documents. She provided a picture card home note that parents use daily to encourage their children to communicate information about their school day. Picture card home notes were used as a data point for document review.

During the semistructured, open-ended interviews, all educators spoke about the importance of communication in special education preschool classrooms. However, teachers, paraprofessionals, and AT specialists spoke differently about their daily roles and responsibilities. The preschool special education paraprofessionals primarily spoke about device maintenance, classroom preparation, and ensuring devices were accessible. On the other hand, preschool special education teachers discussed assessing communication competence and shared more information about their instructional practices that are facilitated by the use of AAC.

The literature review noted that communication impairment is one of the criteria for a diagnosis of ASD. Gerri’s classroom is specifically designed for students with ASD.
Approximately one-half of persons with ASD do not use functional speech and require some type of intervention service (National Research Council, 2001). Although speech and language pathologists provide speech intervention services, children with ASD rely heavily on the AAC resources provided within the classroom environment, where they spend a considerable amount of time. It is therefore critical to determine how special educators view their role as facilitators of communication. Schools often use special education paraprofessionals to serve in vital roles in supporting students with disabilities. Light (2003) argued that special education paraprofessionals may have more direct contact with children using AAC than other staff members. However, owing to perceptions about their role, they may be underutilized as an intentional communication partner, Additional research needs to be conducted about the roles, responsibilities, and relationships between special education teachers and special education paraprofessionals.

Congruent with other literature, researchers found that early childhood educators have difficulty using AAC efficiently and need more training and support to facilitate the communication of preschool-aged students (Barker et al., 2013). Additionally, themes in the literature have identified a lack of research regarding the use of AAC for young children in natural school settings (Barker et al., 2013). Many of the studies involving preschool-aged children take place in clinical settings with a trained interventionist. More research is needed surrounding the use of AAC in classrooms and the role of the special educator as facilitator (Barker et al., 2013; Kaiser & Roberts, 2011).

**Challenges and barriers to utilizing AAC.** The second major finding in the current study underscores challenges in relation to assessing the needs of students and how to accommodate those needs. Utilizing AAC with students with decreased cognitive and verbal
abilities was highly challenging for most of the preschool special education teachers and paraprofessionals. Rita said, “I want them to be able to communicate even though they don’t have a voice there, but they not understanding the concept of picking and choosing.” Erica concurred: “We had a very low student that I don’t think she made the connection that this was to use to let us know you need to use the restroom.” Cathy shared her experience communicating with a nonverbal student using PECS and a GoTalk device. She said,

With that student and a lot of students like her it’s hard to get them to make the connection of what it is they are asking for. So, even when they are using the pictures and we are going back and forth . . . you want this, you need to press the button. You never know if they are really understanding what it is.

Samantha said, “The PECS were more abstract . . . because it’s hard to understand when you see an X that that means no. They don’t understand that means no.”

Preschool special education teachers shared specific instructional strategies they use when they encounter challenges utilizing AAC. For example, Samantha said this about PECS: “What I tend to do is go and find the correct picture of the object. If it means I have to go outside and take a picture of a car moving, so we can see the action.” Some of Cathy’s responses diverged from the rest of the group. She viewed lack of resources as a bigger challenge than meeting students’ communication needs. Cathy was observed efficiently using AAC in her classroom and appeared to be more comfortable using AAC to facilitate communication than the other participants were. This may account for why she perceives a lack of resources as the most significant barrier to AAC utilization.

The current literature noted barriers and challenges to AAC utilization, including needing significant support and training, time constraints, and needs surrounding programming and
maintenance of AAC devices (Finke et al., 2009; Kent-Walsh & Light, 2003). Researchers have recognized that AAC could have a positive impact on student learning and achievement. There is a gap between the potential uses of AAC and the reality that exists with students with disabilities successfully accessing AAC in the classroom. Preschool teachers noted a number of barriers to the implementation of AAC in the classroom. These included identification of the proper AAC device, unrealistic outcomes and expectations of AAC, failure of school systems to replace or repair the devices, cost of the devices, and technical difficulties (Morrison, 2007). Finke et al. (2009) reported on six barriers teachers often expressed on the lack of use of AAC in the classroom for students with disabilities. These include (a) time management, (b) obtainability of the proper equipment, (c) monetary expense, (d) funding, (e) teacher knowledge, and (f) teaching training on AAC. Several teachers and paraprofessionals in the current study expressed barriers to AAC utilization inclusive of limited knowledge, lack of professional development training, and poor understanding of students’ communicative needs. Recognition of these barriers is important for educators to advance in their knowledge of AAC.

Lack of professional development and training. The third major finding from the current study suggests that special educators need professional developmental to advance their knowledge about communication and AAC. Participants reported receiving no training during preservice and superficial professional development training in their current district. Erica, a preschool special education paraprofessional, said this about AAC training:

I’m sure there’s more of a variety of things and ways that we can use technology to help our kids communicate and function in the world around them and I just would like to be a little more experienced or a little more knowledgeable on what is out there and what’s available.
Erica also shared that she had not received any AAC training outside of the training from Cathy, her supervising teacher. She said,

I have an awesome classroom partner in crime and she has a lot of experience with them, so she kind of knows what to do and she’ll give me a free training and we’ll pick it up and take off with it.

All participants expressed the need for more AAC resources and training. However, teachers reported having had some professional development training. Paraprofessionals reported having little to no AAC training. This implies that the working relationship between preschool special education teachers and paraprofessionals is extremely important for the transfer of knowledge, skill, and practice. Some teachers reported that although professional development training for AAC was limited district-wide, they could depend on their AT specialist to provide specialized assistance when requested. Henry, an AT specialist, said,

Sometimes we issue stuff and a lot of times teachers don’t ask questions . . . then we do a follow-up, we realize hey something’s not right, and then we dig a little deeper and we realize they don’t know how to implement it, or when we train them we need to do follow-up training.”

Preschool special education paraprofessionals who participated in this study have limited knowledge about the use of AAC devices and often rely on their supervising teacher and AT specialist to support them. It is therefore recommended that more professional development training on AAC be provided to all preschool teachers and paraprofessionals. All preschool teachers and paraprofessionals should be trained both at the preservice and in-service levels to understand the functional aspects of AAC and develop skills for assessing communicative needs (Shinohara & Wobbrock, 2011). Furthermore, AAC technology is constantly developing, and it
would be useful to move from the outdated devices currently in use to updated AAC devices to avoid a situation of underserving students with disabilities.

**Assertions**

The following assertions were developed based on findings from the current study. There is a growing population of students with complex communication challenges that need to be addressed by public educators. Special educators need to be afforded the training and tools to help children with communication challenges communicate. Based on the findings of this study, special educators are not receiving enough training or professional development. The professional development that special educators receive needs to include training on understanding and accommodating students’ communication needs.

**Implications**

**Implications for preschool practitioners.** If preschool special educators are going to effectively implement AAC devices and systems in their classrooms, they need an appropriate knowledge base on the proper utilization. As indicated by the data, many preschool teachers have barriers and challenges in properly implementing AAC to facilitate communication in their preschool classrooms. The special educators who participated in this study expressed the need for more training to advance the communication abilities of students in their classrooms. Another implication for preschool special educators was meaningful and continuous reflective planning. This allows educators to determine the uses of AAC that individual students or groups of students have found to be most helpful in fostering classroom communication. Preschool teachers should reflect on and document their students’ communication progress. This would aid teachers in identifying the best practices for AAC use in preschool classrooms. If teachers were to keep a record of successful communication progression, then the information could be used to
promote a positive exchange of ideas with paraprofessionals, parents, and other teachers in the field (Edwards, Gandini, & Forman, 2012). There is a need for collaboration with other educators in the department to share knowledge and strategies. Effective collaboration, especially between special education teachers and paraprofessionals, is the key to success in enabling students with disabilities to develop socially and academically.

The role of the special educators in understanding students’ communicative abilities and needs is paramount. Researchers noted that AAC technology must be chosen relative to the individual student’s needs and developmental level and within the context of the student’s learning needs. This means that there must be a multidimensional understanding of students’ needs to individualize AAC utilization (Edwards et al., 2012).

**Implications for teacher education.** AAC can equalize instruction for students with disabilities. Many different factors have been identified to achieve this goal. Researchers have indicated that these factors include access to AAC devices and being trained on AAC utilization. There is also a need for teachers to learn how to appropriately match AAC devices and interventions to the user (Anna Courtad & Bouck, 2013). An increase in the numbers of students with disabilities and students with complex communication needs presents challenges for educators. When teachers are required to integrate AAC into their lessons, it can become an issue for some teachers if they do not have the necessary knowledge and skills (Boon & Higgins, 2007). This may be due to the lack of preservice and professional development training. When AAC technology becomes overwhelming for teachers, they tend to revert to traditional instructional and communication methods. Educators need more opportunities to develop their competencies surrounding cognition, human development, communication, and AAC. Educators should ideally receive more training on AAC during preservice. However, participants in this
study indicate that all of their AAC training has been provided through their school district. At a minimum, district-wide professional developments need to be mandatory for special educators and be comprehensive.

**Implications for professional development.** The preschool teachers and the paraprofessionals in the current study noted the need for more professional development training on the use of AAC for students with disabilities. Thompson, Siegel, and Kouzoukas (2000) conducted a study with special educators on their perceptions of professional development training with AT. Sixty percent of teachers felt that their lack of knowledge about AAC and limited professional development were major barriers for AAC use in the classroom. A similar study conducted by Hayes (2015) found that the greatest challenge of using AAC in the classroom was professional development. Clark and Peterson’s (1986) work on the theory of planned behavior links teacher knowledge to their beliefs and actions. According to Clark and Peterson’s theory, comprehensive and meaningful AAC training for educators could positively influence their perceptions, processes, and classroom practices. Hayes (2015) noted that professional development training should be an ongoing process for teachers and should be conducted throughout the school year. They also suggested peer-to-peer training on AAC for new teachers. Hayes stated that going outside the classroom and using supplemental resources online could also aid teachers in learning about AAC utilization.

Parette, Stoner, and Watts (2009) stated that when professional development training is provided, teachers’ self-confidence in the implementations of AAC increase, as do their knowledge and skills in the use of different technology devices. Teachers who have participated in professional development have indicated that they view AAC as a source of engagement for students with disabilities. However, teachers have also indicated that a lack of time to practice
skills in correlation with AAC training is a source of frustration and a barrier to transferring the
AAC knowledge and skills into the classroom.

Puckett (2004) examined the impact of professional development for special education
teachers in preschool to third grade. The purpose of the study was to incorporate the use of AAC
toolkits for students with disabilities. The participants used Web-based training and online
discussions related to AT. The training involved simulations and weekly discussion topics.
Following the online training, the teachers participated in a face-to-face workshop environment
that provided teachers with 25 hours of direct instruction related to the AT available in the
toolkit. The hands-on training survey was designed to determine teacher knowledge, use, and
confidence related to basic AAC applications. The majority of the participants noted minimal
knowledge about AAC applications. After the 25 hours of training, the participants indicate
proficient levels of understanding in most of the areas tested. This study supports the idea that
professional development in the form of AAC toolkits can result in increased knowledge, skills,
and implementation of AAC for special education (Puckett, 2004).

**Delimitations**

Creswell (2012) defined *delimitations* as an attempt to set boundaries within a study. A
delimitation of the current study was the exclusion of educators who instruct school-aged
children. Another delimitation was the exclusion of general education early childhood educators.
The final delimitation was the exclusion of general education classrooms as settings for this
study. Early childhood special educators were exclusively included in the current study to
narrow the study’s focus. The researcher chose the aforementioned delimitations owing to the
impact of AAC as an early intervention and because AAC is more commonly utilized in self-
contained preschool classrooms.
Limitations

Limitations that may exist and pose a threat to the transferability of this study are its small participant sample and time restraints. The research setting was urban preschools in the southeast region of the United States. This may pose a problem in transferring the results to other settings. Generalizations will not be made beyond the specific population from which this sample was be drawn. Furthermore, case study results may be less generalizable than results from other methods and do not aspire to be universally generalized (Guba & Lincoln, 1994). Time restraints will also be a limiting factor. Owing to the hectic lives of participants, their willingness to provide thorough, in-depth responses to the interview questions may be hindered by the pressure of time constraints. To address this possibility, semistructured, open-ended interviews were scheduled solely at the convenience of participants.

The participants of this study were limited to preschool teachers, paraprofessionals, and an AT specialist. Therefore study replication will be limited to teachers, paraprofessionals, and AT specialists in one demographic preschool special education setting in this geographic area. Second, the participants of this study were selected from one special education preschool program in an urban area. Therefore the responses may not be a true representation of the perceptions of all special education preschool teachers, paraprofessionals, and AT specialists who use AAC to facilitate communication among preschool students with disabilities in other parts of the region and the United States. Lastly, the results of the semistructured, open-ended interviews from the participants were be based on self-reported responses that might result in some biases in their answers. These aforementioned limitations were addressed by being mindful of them when the researcher interpreted the results of the study.
**Recommendations for Future Research**

Future research around deepening the understanding of perspectives surrounding AAC usage in special education preschool classrooms could expand the scope of the study and establish a different set of delimitations to understand the full range of perspectives surrounding preschool teachers’ experiences. First, a larger sample population expanding across the state could provide a broader perspective of the perceptions and experiences of preschool teachers’ AAC utilization. Providing more training for preschool teachers and paraprofessionals by the school district could increase teacher and paraprofessional knowledge of AAC devices. This would allow for a generalization of results and would give future researchers a more comprehensive understanding of the challenges presented by the students, parents, and educators.

A quantitative study could be conducted to provide empirical proof of the preschool teachers’ utilization of AAC and its relation to professional development training. Researchers could seek information on professional development training data and determine what the impact is on AAC utilization in preschool classrooms. It could also provide more insight into whether the current AAC practices used in preschool classrooms are effective or whether changes are warranted.

A comparison study could explore the similarities and differences among the responses from preschool teachers and paraprofessionals. Their responses should be explored to provide insight into the roles of communication partners and how teacher and paraprofessional relationships can be optimized for the communicative success of students. It would be valuable to understand the needs of preschool teachers, paraprofessionals, and students with disabilities based on an examination of both qualitative and quantitative data, which practices yield healthier outcomes and reduce barriers to AAC utilization.
Conclusions

Ultimately, preschool special education teachers and paraprofessionals perceive their roles in utilizing AAC differently. Preschool special education teachers view their role as assessor and facilitator of communication. Preschool special education paraprofessionals’ perceptions of their role are more associated with preparation and maintenance of the AAC tools. The special educators in the current study find it challenging to determine the communicative needs of students, specifically when students are nonverbal or have accompanying cognitive delays. Although participants found assessing and accommodating the communicative needs of students challenging, preschool special education teachers view it as one of their primary responsibilities. The perception of lacking AAC resources as a barrier was consistent within the current study. However, lacking knowledge and skills surrounding AAC appeared to being the most prevalent barrier to optimal communication among AAC users in preschool special education classrooms. Educators in the current study have not had adequate preservice or in-service training to facilitate communication through the utilization of AAC.

Learning is cross-cultural and takes place during socialization, which requires some mode of communication. Educators may be fulfilling a mandate of access by providing AAC tools but are missing changes to maximize communication through reciprocity. This is problematic, because sociocultural theory asserts the significance of communication exists externally before it can be internalized (Wertsch, 1985). When the practice of communication through AAC utilization lacks reciprocity, it lacks meaning. Therefore special educators should view the practice of AAC utilization in parallel to the practice of reciprocal communication.
References


APPENDIX A: PARTICIPANT CONSENT FORM

Title
Title of Research Study: Teachers’ perceptions of augmentative and alternative communication to facilitate communication among preschool students with disabilities.

Description of Project
The purpose of the study is to document teachers’ perceptions about augmentative and alternative communication (AAC) as it relates to AAC usage in preschool classrooms.

Explanation of Procedures
I will initially gain access to potential participants and their schools by obtaining permission first from the local school principal. Potential participants will be recruited through direct contact following a department meeting. I will inform potential participants of the study’s purpose and the content of the consent form. For those not present at the department meeting, I will (a) make phone calls to invite them to participate and email them a copy of the consent form or (b) send them an invitation through email to participate in the study so they will know the study’s purpose and be able to make a determination about participating. Those who agree to participate will be asked to sign two copies of the consent form—one they will keep for their records and one that will come back to me.

Following the receipt of the signed consent form, arrangements will be made to schedule interviews. Interviews will be conducted at the participant’s school unless he or she requests a more convenient location, which will be changed out of respect for the participant’s time and privacy. Interviews will follow an interview protocol, and interviewees’ responses will be recorded using an electronic recording device. At a later date, participants will be provided a copy of the transcribed interview for member checking.

Participants will also be asked to locate and provide documents related to AAC use in their classroom, such as lesson plans, dated from January 2016 to October 2017, and/or professional development materials from the last 3 years. I will arrange to access these materials for document review at the convenience of participants.

Finally, participants and local school principals will be provided with dates and times during which I will conduct observations of teachers only, using a systematic checklist. A systematic checklist will be used to observe and record teachers’ actions. Systematic observations will be expanded upon outside of the classroom following the observation. The observation of licensed special education teachers working in special education self-contained preschool classrooms with students ages 3–5 will involve observations of the teachers only, without the knowledge of their subjects.

Time Required
In-person meetings, follow-up phone calls, and follow-up emails to obtain signatures for consent will take approximately 10 minutes. Interviews will be approximately 20–30 minutes in length. Participants may spend varied amounts of time retrieving documents for review. Systematic classroom observations will last approximately 20–30 minutes. Participants can expect to spend 10–20 minutes reviewing transcribed interviews for accuracy related to member checking.
Risks or Discomforts
There are no known risks or anticipated discomforts associated with participation in this study.

Benefits
Potential benefits to participants may include a new understanding of their instructional practice and the practice of using AAC in their classrooms. Participants may also benefit from increased awareness about AAC in their district and the development of innovative professional training. Additionally, this research has the potential to benefit humankind by creating more equitable communication opportunities for students with disabilities through deepened understandings about the challenges teachers and students with complex communication challenges encounter.

Compensation
Participants will be compensated with gift cards valued at $25.

Confidentiality
The results of participation will be confidential. Pseudonyms will be used throughout the study. All hard data will be stored in a locked file cabinet; electronic data will be stored on a password-protected home computer device to which only the researcher will have access.

Hard data will be collected beginning October 15, 2017, and will be destroyed through shredding 3 years from the beginning of the study, making the ending date October 15, 2020. Electronic data will be collected beginning October 15, 2017, and will be destroyed through erasure 3 years from the beginning date, making the ending date October 15, 2020.

Inclusion Criteria for Participation
Potential participants for the study must be licensed special education teachers working in a special education self-contained preschool classroom with students aged 3–5. Potential teacher participants must have at least 1 year of experience working in a special education preschool class and using AAC. Paraprofessionals who work with participating teachers may be included in the study if they have been teaching for at least 3 years and the classroom teacher recommends the paraprofessional’s participation. A district-level assistive technology specialist who falls within the inclusion criteria for participation may also participate in the study. Participant age range for the study is between 24 and 65 years.

All participants must be 18+ years of age to take part in the study.

Signed Consent
I agree and give my consent to participate in this research project. I understand that participation is voluntary and that I may withdraw my consent at any time without penalty.

___________________________________________________
Signature of Participant or Authorized Representative, Date

___________________________________________________
Signature of Investigator, Date
PLEASE SIGN BOTH COPIES OF THIS FORM, KEEP ONE AND RETURN THE OTHER TO THE INVESTIGATOR
APPENDIX B: SEMISTRUCTURED INTERVIEW QUESTIONS

TOPIC: TEACHERS’ PERCEPTIONS OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION TO FACILITATE COMMUNICATION AMONG PRESCHOOL STUDENTS WITH DISABILITIES.

1. How would you describe your role and responsibilities in preparing students with disabilities to use augmentative and alternative communication systems to facilitate communication in the classroom?

2. Please describe any communication tools you use regarding the facilitation of communication for students with limited or no verbal abilities and share any success stories.

3. Please describe any challenges you encounter or have encountered regarding the facilitation of communication for students with limited or no verbal abilities.

4. Take a few minutes and describe any preservice or in-service training and/or professional development you’ve received on the use of augmentative and alternative communication systems to facilitate communication.

5. Describe how you have benefited from any preservice or in-service training and/or professional development on using augmentative and alternative communication systems.

6. Please take a little time to share your thoughts about using augmentative and alternative communication systems to facilitate communication among preschool students with disabilities.

7. Highlight some challenges you’ve encountered as an early childhood special education teacher in using augmentative and alternative communication systems to facilitate communication among preschool students with disabilities.

8. Share your thoughts on the benefits of using augmentative and alternative communication systems to facilitate communication among preschool students with disabilities.
9. Share your thoughts about the barriers of using augmentative and alternative communication systems to facilitate communication among preschool students with disabilities.

10. What skills regarding AAC use would you like to further develop through in-service training and/or professional development?
## APPENDIX C: SYSTEMATIC OBSERVATION CHECKLIST

<table>
<thead>
<tr>
<th>Teacher Actions</th>
<th>Was the Action Observed</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>The teacher easily manipulates and is comfortable with the use of AAC systems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teacher responds to all communication attempts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teacher models AAC use in the classroom environment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAC systems are used to facilitate expressive and receptive communication opportunities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teacher uses AAC systems during transitions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teacher uses AAC systems during instructional activities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The teacher engineers opportunities to increase communication when possible.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAC systems are used to foster inclusion.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAC systems are used for multiple purposes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAC systems are easily accessible.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAC systems are in good condition and operational.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate AAC systems are selected for utilization.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX D: DOCUMENTS REVIEWED

**Cathy’s Lesson Plans**

<table>
<thead>
<tr>
<th>Academic Domains</th>
<th>Key Developmental Indicators (KDI)</th>
<th>Social Emotional Learning</th>
<th>Language/Literacy/Communication</th>
<th>Math</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>38-48 months</td>
<td>Reviewing Essential Agreement and Nonverbal cues:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Language &amp; Literacy (LL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mathematical Thinking (MT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Language &amp; Literacy (LL)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scientific Thinking (ST)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Weekly Lesson Plans, Weeks of September 18th and September 25th, 2017, Special Education, Preschool, PreK**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Key Developmental Indicators (KDI)</th>
<th>Social Emotional Learning</th>
<th>Language/Literacy/Communication</th>
<th>Math</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathy's Lesson Plans</td>
<td>38-48 months</td>
<td>Reviewing Essential Agreement and Nonverbal cues:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subject</td>
<td>Day/ Duration</td>
<td>Resources/ Materials</td>
<td>Lesson Focus/Instruction/ Student Engagement</td>
<td>Essential Questions</td>
<td>Vocabulary words</td>
</tr>
<tr>
<td>------------------------------</td>
<td>---------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Social Emotional Learning (SEL)</td>
<td>M-F 8:20-8:35</td>
<td>Essential Agreement (MWF) Non-Verbal Cues (T/TH) (Will practice until 2d step training is completed. Will review Agreement and Cues daily throughout the year as well).</td>
<td>TSW review the essential agreement and nonverbal cue cards identifying each class rule as presented. (Interactive essential agreement)</td>
<td>How do I follow the rules? Why are following directions important? Can I identify each rule in our essential agreement? Can I demonstrate each nonverbal cue?</td>
<td>Essential Agreement</td>
</tr>
<tr>
<td>Language/Literacy/ Communication</td>
<td>Monday 12:10-12:45</td>
<td><strong>Dappled Apples</strong> by Jan Carr, <strong>Collages</strong>: magazines, glue, 9x12 construction paper <strong>Dress me for fall</strong>: pictures of various clothing items, e.g., sweaters, coats, shorts, sandals, pants, etc., templates of boys and girls, glue <strong>Technology</strong>: Go Talk 4x4 programmed with pictures from story.</td>
<td>TSW listen to the story <strong>Dappled Apples</strong>. TSW discuss what they see happening in the fall as it relates to the story and real-life activities. 9/18/17: TSW create a fall collage using pictures from magazines. 9/25/17: Students will discuss what they wear in the fall. Students will discuss what they see children wearing in the story as we prepare for fall weather. Students will create a &quot;Dress me for fall&quot; artwork. TSW dress the bare (word learned last week) person for fall given various clothing choices.</td>
<td>What happens in the fall? How does it feel outside in the fall? How should I dress in the fall?</td>
<td>Fall Season Collage Dress</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Math</td>
<td>Tuesday 12:10-12:45</td>
<td><strong>Dappled Apples</strong> by Jan Carr, <strong>Apple Seeds</strong>: large number flash cards, AAC device for nonverbal counting/reinforcement, apple seeds, apple template</td>
<td>TSW listen to the story <strong>Dappled Apples</strong>. Students will count the number of various characters they identify in the story, e.g., Can I count to 5? 10? 20? How many characters have I counted? How high can I count? Can I count in correct sequence?</td>
<td>Count Number Sequence Characters How many?</td>
<td>---</td>
</tr>
</tbody>
</table>
Samantha’s Home Report

Home Report  Date: ________________

Let me tell you about my day.

Today I had...

I really liked...

I had a good bad day at school.

This is something I want to tell you about:
<table>
<thead>
<tr>
<th>GOALS</th>
<th>COMMUNICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you don't understand, I will say it again.</td>
<td>I can tell you things I did today.</td>
</tr>
<tr>
<td>I can tell you my name.</td>
<td>I can ask for things I want.</td>
</tr>
<tr>
<td>I wait for my turn to talk.</td>
<td>I look at people when I talk.</td>
</tr>
</tbody>
</table>

**Date:**

**Needs to:**
- Sometimes
- Work on this
- N/A
Slide 1

Assistive Technology (AT) in Pre-School Classrooms

“AT in Action”

Slide 2

Access
Slide 3

Why AT for Young Children?

- Participate more fully in daily activities (school, home, community)
- Play successfully with toys and peers
- Communicate better their wants, needs & ideas

Access

Slide 4

What is “AT”

Assistive technology devices as identified in the IDEA 2004:

- Any item, piece of equipment or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of children with disabilities.
- The term does not include a medical device that is surgically implanted, or the replacement of such device.

Slide 5

What is “AT”

❖ a) The evaluation of the needs of a child with a disability
❖ b) Purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices by children with disabilities
❖ c) Selecting, designing, fitting, customizing, adapting, applying, retaining, repairing, or replacing assistive technology devices
❖ d) Coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs
❖ e) Training or technical assistance for a child with a disability and his family
❖ f) Training or technical assistance for professionals, including teachers, other individuals who provide related services to a child with a disability, and parents of children with disabilities
Slide 6

**Assistive Technology Referrals**

- Classroom Consultation
- Early Access Consultation
- Assessments
- Training

*Request for Onsite Assistance*

*Student Information*

*Consideration Checklist*

**Slide 7**

**Consideration of AT**

- Cognitive
- Social/Emotional
- Communication
- Adaptive
- Physical

**Slide 8**

**Which Children?**

- Motor challenges
- Difficulty with communication
- Sensory Concerns
- Cognitive delays
- Limited social skills
Slide 15

**Assistive Technology In Action**
- Specially Lined Paper
- Switches/ Accessible Software Toys
- AAC Pictures/ Communication Boards
- Step by Step Visual/ Tactile Schedule
- Adapted/ Interactive Books (Page Fluffers)
- Text to speech/ Speech to text devices
- Adapted Stylus/ Adapted Mice
- Touch Screen Computers/ Tablets

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Slide 16

**Domain: Cognitive (IPad apps)**
- Kids Counting
- Touch and Learn (ABA)
- PreK Math
- ABC Phonics
- RealColor: Cognitive Color
- What's That Little Sherlock
- PreSchool EduKidRoom
- Injini
- Rainbow Phonics
- HUGBrainED Phonics Awareness

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Slide 17

**Domain: Motor (IPad apps)**
- Build It Up
- Rad Sounds Lite
- KidsYoga
- DotsDot
- Paint and Learn
- Sort It Out lite
- Happy and You Know It
- ABC Trace
- Pen Bubbles Lite
- Coloring +
- Hill Climb
Slide 18

**Domain: Social/Emotional (iPad apps)**
- My Little DJ
- Touch & Say
- Happy and You Know It
- Going Places
- PhotoNotes/PhotoBooth
- Emotions, Feelings and Colors
- Potty Training Social Story
- Going Shopping
- Social Talk
- Exploring My World: Ready for School
- Allen Adventures

Slide 19

**Domain: Adaptive (iPad apps)**
- Bo’s Bedtime Story
- My Life Skills Box
- KET Healthy ME
- Choice Creator
- LiTample
- CuteBabyBathing
- PepiBath
- Kids’ Tidy
- Nutrition and Healthy Eating

Slide 20

**Domain: Communication (iPad apps)**
- WH Questions
- Speech Buttons
- Sounding Board
- Alexicom
- Gabby Tabs
- YES/NO
- GoTalk
- Name Things
- Sonoflex
Slide 21

Resources
- http://schools.nyc.gov/Academics/SpecialEducation/D75/For_employees/AdaptedBooks
- http://www.thegreycenter.com

Slide 22

AT Best Practices
- Gather information
- Work closely with family members and other team members
- Focus on IEP Goals & student strengths
- Make it fun and comfortable...be flexible
- Take note of successes and failures

Slide 23

AT in Action Videos
- Communication
  - https://www.youtube.com/watch?v=P6yBoB1zSK8
- Cognitive
  - https://www.youtube.com/watch?v=Q89hRcQ88zC
- Motor
  - https://www.youtube.com/watch?v=kQ-A3II907h
- Social Emotional
  - https://www.youtube.com/watch?v=Mq5f32RMDMw
Assistive Technology Team
- Edroce Etheridge emetheridge@atlanta.k12.ga.us
- Harry Davis hdavis@atlanta.k12.ga.us
- Tosha Mobley tmobley@atlanta.k12.ga.us
- Tonisha Johnson tjohnson@atlanta.k12.ga.us

- "Enabling Dreams"
- Atlanta Public Schools