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The History of Behavioral Treatments in Autism: From the Punitive to the Positive

Jennifer L. Suppo, Ed.D.
Seton Hill University

Abstract

The behavioral treatments for persons diagnosed with autism have evolved from those that included punitive components to those that are now based upon principles of positive behavior supports. The proceeding document provides an historical overview of relevant behavioral approaches, including the type of approach and the quality of involvement and roles of the family, the professional, and of the individual with autism. In order for practitioners to make informed decisions in deciding the individualized course of treatment for a person with autism, they need to ascertain a good working knowledge of available methods of treatment.

Keywords: autism spectrum disorders, behavioral treatments, interventions – psychosocial/behavioral

The History of Behavioral Treatments in Autism: From the Punitive to the Positive

In 1943, Leo Kanner wrote an article describing eleven children who were withdrawn from others, had unique reactions to loud noises, perseverated on objects and things, demonstrated fits of outbursts or tantrums, and were socially inept to which Kanner blamed cold, aloof parents as the general cause (Kanner, 1943). Since 1943, the field of social and behavioral sciences has come to dispel this theory (Wolff, Narayan, & Moyes, 1988). However, the cause of autism is still unknown and there is no known cure. What is known is that treatments that are based upon Applied Behavioral Analysis (ABA) and Positive Behavioral Supports have been found to be effective in creating positive outcomes in children diagnosed with autism (Volkmar, Lord, Bailey, Schultz, & Klin, 2004). The author will provide a brief outline of behavioral treatment for persons with autism spectrum disorder (ASD); including how these treatments have evolved from those that include punitive components, to current treatments that are now based upon the principles of positive behavior supports.

Brief History on ABA

The name John Watson is often associated with the beginning of the science of ABA. In his 1913 article, “Psychology as the Behaviorist View It,” Watson demonstrated his belief that psychology should look towards observable behavior rather than inward thoughts thus changing the landscape of psychology in the early 20th century. In chapter one of his book, *Psychology from the Standpoint of a Behaviorist* (1919), he starts the chapter with a discussion of predicting human behavior and the use of laws and behavioral principles to control human behavior. Through Watson’s writings is seen the beginnings of ABA. However, it is through the manipulation of these aforementioned laws that the author looks to B. F. Skinner who is credited with organizing and bringing ABA to the forefront of behavioral sciences.

B. F. Skinner built upon the earlier works of Watson. He discussed the need to look beyond the use of Stimulus/Response behavior and he looked more closely at respondent and operant behavior (Skinner, 1938/1966). His influence upon behavioral sciences has continued throughout the 20th and 21st century and many researchers continue to expand upon the use of the principles of ABA. The science of ABA was further defined and clarified by the 1968 journal article by Baer, Wolf, and Risley (1968) that gave researchers the current dimensions of ABA: applied, behavioral, analytic, technological, systematic, effective and generalizable. Throughout the 1960's and 1970's, the use of ABA continued to spread. However, it maintained both the use of aversive and non-aversive treatments up until around the late 1980's early 1990's as seen in the works of Richard Foxx who published two books in 1982 (Foxx, 1982a, 1982b). One book centered on increasing behaviors through the usage positive interventions, which included, using reinforcers, structuring the environment, prompting, and shaping to name just a few (Foxx, 1982b). In his other 1982 book, he focused on decreasing behavior that in some cases involved the usage of physical restraints. The usage of many of these aversive procedures was saved for individuals as he says were "severe cases of self-abusive behavior, and occasionally to treat dangerous or highly disruptive behavior" (p. 51).

Throughout this period of time researchers, the field of behavioral science began to show success in treating multiple behaviors associated with autism as evidenced in the book *Perspectives in Behavior Modification with Deviant Children*, (Lovaas, & Bucher, 1974). The book edited by Lovaas and Bucher includes a number of studies conducted by various authors using behavior modification to treat what they list as childhood maladaptive behaviors. However, Ole Ivar Lovaas, the books editor, is often credited with ABA's association with autism.

Lovaas and Autism

O. I. Lovaas is the researcher most often associated with the autism/ABA connection. Much of his career was focused on applying ABA principles to treat individuals with autism. However, not all embraced Lovaas's early work because much of the public focus on his early work was on the punitive aspects he incorporated in his studies. For example, in his 1965 study, Lovaas incorporated the use of electric shock to modify children with autism's behavior (Lovaas, & Bucher, 1974). Early studies were typically conducted in laboratories removed from any familial connection. For example, the 1965 Lovaas study was conducted in an experimental room with a connecting observation room and is described as containing metal strips on the floor that were to be utilized in the shock treatment (Lovaas, & Bucher, 1974). Nowhere is there a mention of family or friends, just an impersonal, cold, empty room devoid of any comforts a typical person might expect in today's therapy or research settings. Even behavior of affection as measured by hugs and kisses in this study was elicited by nurses, not family, and the result of a child not responding to a nurse's bid for affection was to receive an electric shock. A study conducted by Lovaas, Koegel, Simmons, and Long (1973) demonstrated their continued use of aversives, for example, the researchers stated, "Many children would work only for food and required an occasional slap on the buttocks if the therapist was to control undesirable interfering behavior" (p. 136). However, the beginnings of the shift to the use of non-aversives is seen during this time period as evidenced in the focus of the Lovaas et al. (1973) study that relied more on the use of primary reinforcers, such as food, than aversives. Additionally, the Lovaas study provides an

example of the beginnings of family involvement. For example, the participants in this study conducted by Lovaas et al. were also in and out of institutions; however, there is mention of family participation with the children who are allowed to go home. The researchers stated that after a child was discharged from the institution their parents had “found a school placement for the child and their (the researchers) involvement became minimal.” However, therapists often visited with the child’s school to discuss a child’s progress with the teacher to provide support for the educator and parents were to call if they had difficulties with their child after release from the institution (Lovaas, Koegel, Simmons, & Long, 1973). Although Lovaas continued the use of both aversive and non-aversive behavioral intervention throughout the 1970’s and the early 1980’s, by the latter part of the 1980’s Lovaas shifted his focus to non-aversive interventions (Smith & Eikeseth, 2011).

Lovaas is widely known and often cited for his original UCLA Young Autism Project Study in which he compared children who received up to forty hours of weekly one-on-one intensive intervention therapy with children who received less than ten hours of weekly one-on-one therapy for over two years (Lovaas, 1987). Lovaas found that children who were in the forty hour a week group did significantly better than the group that received ten hours a week of therapy. Lovaas’s method, which is frequently used today, included one-on-one discrete trials with trainers, however, the use of adhesives is no longer in place today. This was not the first study in which Lovaas looked at using early intensive behavior intervention, also known as EIBI, to help children diagnosed with autism. However, this study popularized the usage of EIBI for children diagnosed with autism and is probably one of the more controversial studies because of the intensity of which Lovaas says that therapy needs to be delivered (Lovaas, 1987). Lovaas continued to be an advocate of EIBI throughout his career. Based on its predecessor, the UCLA Young Autism Projects incorporates Lovaas’s 1987’s EIBI. However, in a synthesis of literature based upon UCLA’s Young Autism Project, the review encompasses the changes that evolved over the years in which there is a shift to include families and the studies the researchers synthesized included all or part of the community, clinical, and home locations (Reichow & Wolery, 2009). The shift from cold institutional settings and towards the inclusion of the family as part of the solution is voiced by Lovaas himself in a 1993 article in which he advocated for the field to see “parents as colleagues” and not bystanders to the process of helping their child (p. 626).

Shift in Focus: Positive Behavioral Supports

The use of aversive techniques in ABA lost momentum in the late 1980’s early 1990’s. There is not one defining moment that stands out to mark its decline in usage. However, a seminal article demonstrating the shift from aversive to non-aversive use of behavioral management techniques was the article by Horner et al. (1990) in which the researchers suggest rather than use aversive techniques they advocate what they call “an emerging technology of positive behavioral support” (p. 4). Horner et al. lay out what they believe are nine common themes to set up a positive/non-aversive program of support. The author has included Horner et al.’s list of nine because the list embraces the philosophy of the following interventions as they are implemented today which include: positive lifestyle change, functional analysis, multi-component interventions, manipulation of ecological and setting events, emphasis on antecedent manipulations, teaching adaptive behavior, building environments with effective consequences, minimizing the use of punishers, and distinguishing emergency procedures from proactive

programming. Horner et al. also embraces the viewpoint that an intervention should have social validity. With the shift in focus to positive behavioral supports came the beginning of the concepts of inclusion of children with disabilities into general education classroom, and person-centered planning that looked to the individual needs of the child for direction in planning interventions including academic placement choices (Artesani, & Mallar, 1998; O'Brien, C., O'Brien, & Mount, 1997). Furthermore, during this period society began to support concept of self-determination for individuals with disabilities. During this time occurred the shift in where individuals with disabilities were seen as just that, individuals, who had wants, needs, hopes and dreams and who should be enabled to choose their own path in life to the fullest extent of which they are capable (Wehmeyer, 1999). This shift is seen in many of the current interventions for children with ASD that utilize positive behavioral supports. The author will examine their approaches to the level, type, and quality of involvement and roles of family, the professional/interventionist, and the target individual: TEACCH, Picture Exchange Communication System (PECS), Denver Model, and Pivotal Response Training.

TEACCH

TEACCH which was founded in the early 1970's by Eric Schopler at the University of North Carolina (Siegel, 2003). The TEACCH model focuses on creating an environment based on the needs of the individual students using structured work stations that reinforce learned skills and visual strategies such as visual schedules to incorporate predictability and routines into a child or an adult with autism's day (Mesibov & Shea, 2010; Siegel, 2003). Although TEACCH is based upon the principles of ABA its emphasis is on structure and predictability (Siegel, 2003). The person with autism is the center of the treatment and a plan of action is centered around the individual person. Within the TEACCH methodology, autism is seen as a culture (Mesibov & Shea, 2010a). Professionals and families have to be highly involved in the setting up and maintaining of a child's environment using this approach and professionals highly encourage collaboration with families (Mesibov & Shea, 2010a). The ideology of TEACCH have been shown to be successfully implemented across environments including both self-contained and inclusive classrooms and within a child's home environment (Panerai et al., 2009). The researchers Mesibov and Shea (2010b) stated that the TEACCH system fits into the current evidence-based approaches for individuals with a diagnosis of autism, including ongoing assessment of educational goals. TEACCH creates an environment for the individual learner with a diagnosis of autism to help facilitate transitions and promote independence; however, the TEACCH can be adapted for use in any location with the support of the professionals and families of the child diagnosed with ASD.

Picture Exchange Communication System (PECS)

As describe The Picture Exchange Communication System (PECS) was created by Bondy in the late 1980's and achieved popularity in the early 1990's by the Bondy and Frost team as an augmentative and alternative communication (AAC) system for children who have not developed or use speech functionally (Frost & Bondy, 2002). The approaches features a child being taught the process of finding a communicative partner to engage in reciprocal exchange of functional communication (Bondy & Frost, 1994; Frost & Bondy, 2002). PECS is divided into six phases in which the communicative partner, either a parent or professional, starting with high preferred primary reinforcers, engages and guides the child to interact and to eventually, as they move through the phases, make requests (Bondy & Frost, 1994; Frost & Bondy, 2002).

However, Frost and Bondy (2002) believe the end goal is for students to “demonstrate both responsive and spontaneous commenting” (p. 223). PECS is based on Skinner’s Verbal Behavior (VB) that is based principles of ABA; however, PECS and VB focus is on the acquisition of functional language (Frost & Bondy, 2002). PECS has been found effective in increasing spoken language including spontaneous speech, social-communicative behaviors such as eye contact, and decreases in problem behaviors, such as tantrums (Charlop-Christy, Carpenter, Loc, LeBlanc, & Kellet, 2002; Gordon et al., 2011; Jurgens, Anderson, & Moore, 2009). PECS is for children with autism who are nonverbal or have very little functional communicative skills. It requires teacher and parent involvement to for setup, ongoing child training, and communicative partners need to provide the child with ASD ongoing support. However, it is easy for others to understand and can be used at home, school, and in most community settings.

Denver Model/Early Start Denver Model (ESDM)

The Denver Model was started in 1981 as part of a federally funded preschool program in which families are the center of the decision making team and their child’s learning centers on relationship building through play and social interactions (Hall, 2009; Vismara & Rogers, 2008). The Denver Model is a developmental approach to teaching that incorporates discrete trials, naturalistic teaching, and “sensory social routines” (p. 1008) based on goals and objectives that stem from the needs of the individual child that can be integrated into a self-contained, inclusive or one-on-one environment (Hall, 2009) (Rogers et al., 2006). A variation of this model known as the Early Start Denver Model (ESDM) is a combination of both the Denver Model and Pivotal Response Training (PRT) (Vismara & Rogers, 2008). Created for children as young as twelve months old, the ESDM promotes the Denver Models developmental and relationship building and fuses it with PRT’s ABA principles and discrete trails to deliver teaching lesson (Vismara & Rogers, 2008). Researchers have demonstrated that both the developmentally based Denver Model and its derivative the Early Start Denver Model to be successful in helping young children diagnosed with autism to make gains in adaptive behavior, social and communicative outcomes (Dawson et al., 2009; Rogers & DiLalla, 1991; Vismara & Rogers, 2008). ESDM places parents at the head of the decision-making and parents are an integral part in the intervention process in both the Denver Models and the Early Start Denver Model. Educators are at the center of implementing the treatment, training and providing ongoing support for both the child and the parent. Furthermore, the program is individualized to meet the needs of both families and their children diagnosed with autism.

Pivotal Response Training (PRT)

Pivotal Response Training (PRT) is a method of teaching children with autism focusing on “pivotal responses” within a child’s natural environment that is based on the principles of ABA; however, it is not as structured as discrete trail training that is the typical association made with the mention of ABA (L. K. Koegel, Koegel, Harrower, & Carter, 1999; R. Koegel & Koegel, 2006). Pivotal responses are taught on multiple behaviors simultaneously such as motivation, self-initiation and other deficit areas including social and communicative deficits.(L. K. Koegel, Koegel, Harrower, et al., 1999; L. K. Koegel, Koegel, Shoshan, & McNerney, 1999; R. Koegel & Koegel, 2006) Although PRT program is based on the belief that children with autism need the maximum amount of therapeutic hours as needed to be effective, much of the treatment is delivered within the home, general education class of a school or a naturalistic environment and is ongoing throughout the day (L. K. Koegel, Koegel, Harrower, et al., 1999; R. Koegel &

Koegel, 2006). PRT incorporates parents into the program, including parent training on PRT techniques and parent delivery of treatment at home and in the community (L. K. Koegel, Koegel, Harrower, et al., 1999; R. Koegel & Koegel, 2006). Educators and parents work together to create goals and objectives for the individual child based on an adapted general education curriculum because PRT ultimate goal is the successful inclusion of children with autism into a natural environment which would include inclusion into the general education classroom (R. Koegel & Koegel, 2006). PRT is an evidenced-based technique that has been shown to be effective in increasing motivation, social initiations, reciprocal play and language gains just to name a few (Ingersoll & Schreibman, 2006; L. K. Koegel, Koegel, Shoshan, et al., 1999; Minjarez, Williams, Mercier, & Hardan, 2011; Stahmer, 1999). PRT encompasses family involvement in both the creation and implementation of the intervention. Unlike TEACCH where the environment is arranged based on the student, PRT fits the child into a preexisting environment.

Discussion

The use of the ABA principles is incorporated into many treatments currently used for children with autism. However, although these treatments include the use of ABA principles, they are devoid of earlier aversive practices, such as electric shock therapy. Autism treatments today are more commonly aligned to ABA more aligned with positive behavior supports (Horner et al., 1990). Most current programs for children with autism are multi-faceted, incorporating training for children and parents, and both at home, school, and out in the community. In addition, many programs are individualized to meet the needs of both the child and the family. Furthermore, the concept of self-determination is at the center of planning. Providing support for the child with autism that includes support for their family is an integral practice today in autism treatments. Practitioners and families need to be knowledgeable of the different methods available for children with autism to make informed decisions that are tailored to meet the individual needs of the child and the family unit.

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About the Author

Jennifer Suppo, Ed.D. is an Associate Professor and Graduate Program Director of special education at Seton Hill University where she teaches undergraduate and graduate courses in special education. She has taught in both autistic support and life skills middle school classrooms. Her research focus is on parent training, autism, and moderate to severe disabilities. Dr. Suppo has presented at both national and international conferences and has published articles on topics ranging from professional development to parent training.

Author Note: Correspondence concerning this article should be addressed to Jennifer L. Suppo, Division of Education, Seton Hill Drive, Box 431F, Seton Hill University, Greensburg, PA 15601. E-mail: jsuppo@setonhill.edu

How Early Experiences in a Kindergarten Classroom Shape the Development of Self-Regulation Skills of Children

Eloisa Darcy, Ed. D.

Sarah Sarette, Ed. D.

Anna Boghigian

Marley Martin

Abstract

Providing the support that children need to build self-regulation skills has come to the forefront for educators today. This study investigated how kindergarten students (N=19) improved their self-regulation skills through direct instruction and effective scaffolding techniques. Self-regulated instruction was adapted to behavior activities for three months. Data were collected from 19 heterogeneously grouped students in an experimental (N=19) classroom. The effects of self-regulation interventions were administered through an individual pre- and post- student questionnaire on self-regulation. Descriptive statistics for post-test student questionnaires show no statistical significance in emotional regulation, goal setting, and behavioral regulation. Descriptive statistics for the Teacher Child Behavior Rating Scale (CBRS) show a statistical significance in areas assessed by the classroom teacher. The results of this study suggest that the participants increased self-regulation skills due to appropriate interventions. Self-regulated learning positively affected performance.

Keywords: *self-regulation, kindergarten, self-monitoring*

How Early Experiences in a Kindergarten Classroom Shape the Development of Self-Regulation Skills of Children

The academic demands for kindergarten classrooms today are rigorous (Rimrn-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009, p. 958). The demands of *No Child Left Behind* have altered kindergarten instruction from behavioral/social regulation skills to a more academic focus (Rimrn-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009, p. 958). Rimrn-Kaufman, Curby, Grimm, Nathanson, & Brock (2009) state that, “children’s behavioral adaptations within the classroom environment, such as a child’s ability to persist at work, stay on task, attend to learning goals, and participate actively in learning” has been shown to increase academic achievement in kindergarten (p. 958). Children who have difficulty learning after entering school may lack the self-regulating skills needed to succeed in our schools (Tangney, Baumeister, & Boone, 2004). Educators contribute by finding ways for students to increase academic success every day; and helping students to improve self-regulation skills is a promising avenue to achieve this (Baumeister, Vohs, & Tice, 2007). Deal and Bolman (2008) state, “Doing the right job requires a structure or structures well suited to what an organization is trying to

accomplish[and]...shapes purpose that translates into measurable performance goals” (p. 111). Students benefit from educators who think about what it takes for students to stay on task and focus on learning. It takes more than the mere expectation that students should pay attention and focus on tasks at hand. Understanding and modeling behaviors consistent with expanding their knowledge of what self-regulation looks and feels like has positive effects on student learning. As children grow older and their brains develop, they can increasingly take control of both their thinking and their feelings, particularly if a neural system is repeatedly exercised (Ebert, Rockstrom, Lutzenberger, & Birbaumer, 1984). Conversely, if children do not systematically engage in self-regulatory behaviors at a young age, the corresponding brain areas may not develop to their full potential (Bodrova & Leong, 2008, p. 2). Lastly, “The way in which self – regulation influences the adjustment to school during kindergarten is theoretically important because the start of formal schooling is a critical period in which children’s performance at school has lasting effects that may matter more for their academic success than at any other time” (Entwisle & Alexander, 1998, p. 104). Students who have good self-regulation skills develop better academic skills quicker and had higher reading scores compared to students who lacked self-regulation skills.

There is growing evidence that self-regulation can and should be taught in the classroom (Blair & Razza, 2007; Diamond et al., 2007). The acquisition of self-regulation skills strengthen the student’s ability to regulate their emotions, actions, and thoughts before reacting, especially in situations that there is a need for pause, to focus on a task, and to listen to the teacher (Ponitz, McClelland, Matthews, & Morrison, 2009, p. 606). During the preschool and kindergarten years, children begin to acquire skills and knowledge that corresponds to their ability to self-regulate (Ponitz, McClelland, Matthews, & Morrison, 2009, p. 606). It is the professional responsibility of educators to work towards helping and fostering their students in developing this skill set. These formative years are important because school success depends on a strong foundation as well as a student’s ability to focus and self-regulate.

School presents a unique challenge for children. According to Riggs, Jahromi, Razza, Dillworth-Bart, and Mueller (2006), children who cannot properly self-regulate their emotions (e.g. screaming if they do not have their way, physically lashing out, or bullying other children) often elicit negative reactions from the social environment, which in turn, can exacerbate or maintain their regulation problems over time (p. 302). Teachers need strategies to help provide support and guidance. This study was designed to test an easy-to-learn set of strategies that can be implemented in every classroom to help address these concerns. Thus, the principle objective of the present research is to examine the direct teaching, practicing, and assessing self-regulation skills and its effect on student behavior.

A Functional Theory of Self-Regulation

For the purposes of this study, self-regulation (i.e. self-control, self-determination) is defined as “the capacity to override one’s thoughts, emotions, impulses, automatic or habitual behaviors” (Gailliot, Mead, & Baumeister, 2008, p. 472) and to work autonomously. According to Zimmerman and Schunk (2011), self-regulation is an integrated learning process (p.1). It consists of the development of a set of constructive behaviors that affect one's learning (p. 1). Rather than creating learned helplessness, students need to take an active role in their own learning (Winne, 2011, p.19). When taught strategies, children will be more successful in

school, have better peer interactions and friendships, and less psychopathology. (Lyon & Krasnegor, 1996, 235-236).

Sustained attention is crucial for successful learning. Teachers frequently need to “jog” students back to task after their attention has waned. According to Reid & Lieneman (2006), when left to their own devices, students, particularly learning disabled students, will only be on-task for 30 to 60 percent of the time (p. 7). Educational implications are evident from this statistic. If a student does not complete a task set forth by the classroom teacher, a student may lose out on developing the knowledge and skills incorporated in the lesson.

With this in mind, the researchers for this study utilized the behaviorist approach to improve attention to task. Behaviorism is based on a theory that a relationship exists between behavior and the environment (Reid & Lieneman, 2006, p. 5). This approach requires direct observation as “ongoing data collection of objective information” (Reid & Lieneman, 2006, p. 5). Behaviorists believe that learning is hierarchical, where a “child must master skills in a prescribed order” (Reid & Lieneman, 2006, p. 5).

The use of Zimmerman’s three phase process of learning, which includes “the preaction phase/forethought, the action phase/performance and volitional control, as well as the post action phase/reflection (Perels, Dignath, & Schmitz, 2009, p. 18) provided the framework for this study. In conjunction, the researchers utilized Harris and Graham’s Self-Regulated Strategy Development (SRSD) model (Reid & Lienemann, 2006, p. 32). For this study, students learned the strategy of self-monitoring. Self-monitoring refers to purposeful attention to some aspect of one’s behavior followed by documentation of its frequency or intensity (Reid & Lienemann, 2006, p. 32). Self-monitoring has been the most thoroughly researched method of self-regulation (Duckworth, Akerman, MacGregor, Salter, & Vorhaus, 2009, p. 26). For the purposes of this study students were taught and practiced self-monitoring of attention (paying attention when cued).

Methodology

The study investigated a heterogeneously group of kindergarten students (N=19) to help regulate their attention to task behavior. The study was based on the premise that if daily support of self-monitoring skills across the school day were taught and monitored, then the classroom teacher will have helped the students regulate, internalize, and manage their own behavior.

Research Question

What effects does the behavioral strategy of self-monitoring have on student behavior?

Setting

The school district where this study took place is located in Southeastern New Hampshire with a population of almost 30,000 according to U. S. Census Bureau (2010). This study was conducted at one of the eight district K-5 elementary schools. The enrollment for the elementary school where this study took place was 386 students (N=386) with 29 full-time teachers. The average student-teacher ratio is 13 to 1. Of the 386 students, 3 percent are Asian, 4 percent Hispanic, 3 percent African American, 89 percent White, and 1 percent are unknown. The number of students eligible for free and reduced lunches is 42 percent. Four of the remaining

elementary schools with similar student body size range from 31 percent to 47.6 percent of students eligible for free and reduced lunches (U. S. Census Bureau, 2010).

Participants

The classroom teacher within this environment is a female with thirty three years of teaching experience. She holds a Bachelor of Science Degree in Elementary School (K-8) teaching and a Masters of Education Degree in Literacy. She also holds a Doctor of Education Degree in Educational Leadership K-12. The intent to conduct research in this kindergarten classroom was due to expressed interest by the teacher to learn ways of helping her students grow behaviorally through strategy instruction.

Of the participants who were included in the study (N=21), nineteen students (aged 5-6) participated with parent consent. Ten students (53 percent) were male and nine students (47 percent) were female. Four students were identified for special education services. Title I services are provided to students who are performing below average on Title I reading assessments. Within the experimental classroom, four male students attended Title I services and Response to Intervention instruction.

Consent

The Principal and Assistant Principal of the research site interviewed the classroom teacher and researcher(s) prior to giving permission to research. Once permission was granted by a University Institutional Review Board (IRB), administration, and the parents, the study was conducted.

Participation was voluntary. Parental consent was obtained February 2015 through a parent information meeting held in the experimental classroom. Fifteen out of twenty-four parents/guardians attended with five students accompanying their parents/guardians. The experimental classroom teacher and researcher were present. Following a brief presentation and question and answer period, one hundred percent of the parents/guardians in attendance agreed to the research and signed a consent form. The remaining seven parents/guardians were contacted by telephone to discuss the research and to answer questions. Two parents did not give consent for their child to participate in the study. Therefore, it was explained to those parents that no data would be collected however their child would still learn the strategies taught as part of the regular classroom instruction.

Independent Variable

The researchers and classroom teacher began role-modeling self-regulated strategy instruction in March 2015. Within the experimental classroom once a week, interventions to include on-task behavior were modeled with the following three components:

The on-task goal was designed to:

1. Address self-regulatory and strategic needs of the student(s).
2. Help the students understand where, when, why, and how to use the self-monitoring strategy.
3. Set up individual conferences, the teacher and student met to appraise growth and set goals according to these growths. (Wehmeyer, 2007)

The researchers and classroom teacher utilized an eight-step process when introducing a new target behavior to the participants:

- Step 1- Identify examples of the targeted behavior.
- Step 2- Describe the benefits of using self-management.
- Step 3- Assist students to practice the target behavior with cue (i.e. chime).
- Step 4- Review the self-monitoring sheet with students for the first time.
- Step 5- Teacher model how to use the self-monitoring sheet.
- Step 6- Provide guided practice within role-playing situations.
- Step 7- Provide independent in the use of the self-monitoring sheet in the actual setting.
- Step 8- Review through conferencing student's level of proficiency of the on-task behavior with the use of the self-monitoring sheet.

The teacher continued strategies modeled and practice throughout the remainder of the school week to provide generalization of skills. The research concluded the first week of June 2015.

Dependent Variables

SM1a6 Student Questionnaire on Self-Regulation

This thirteen item questionnaire, developed by Brandy and Moore (2010), was used to assess the participants' ability to regulate negative emotions, disruptive behavior, and to set and attain goals. The questionnaire allows participants to "rate how true each item is, ranging from 1 (never true) to 4 (always true)" (Brandy & Moore, 2010, p. 3). Due to the age of the participants, the scale was modified to include items ranging from 1 (never true), 2 (sometimes true), and 3 (almost always true). Examples of items in the questionnaire are; I get distracted by little things, I have a hard time sitting still during important tasks, As soon as I see things that are not working, I do something about it.

The questionnaire is designed to be completed by the participant. Due to the age of the participants and differentiated reading abilities, the researchers determined to read each item to the participants in a quiet area within the regular education classroom and record responses. The researchers asking the thirteen-item questionnaire included two undergraduate Elementary Education/Special Education teacher candidates from a university in southern New Hampshire. A past full-time faculty member of the same university, with a Doctorate of Education Degree, also participated in administering the questionnaire.

Child Behavior Rating Scale (CBRS)- Teacher Edition

The Child Behavior Rating Scale (CBRS) has been used in many studies regarding self-regulation (Lim, Rodger, & Brown, 2010, p. 369-371). The scale includes items that measure approaches to learning, self-regulation, and social-emotional development. It is demonstrated to be strongly predictive of reading and mathematics achievement in elementary grades and validated in a wide range of cultural contexts (Schmitt, S, Pratt, M, & McClelland, M, 2014, p. 642-646). The classroom teacher rated participants from a 1 (The child never exhibits the behavior described by the item), to a 5 (The child always exhibits the behavior described by the item). Sample questions include: Observes rules and follows directions without requiring repeated reminders, concentrates when working on a task; is not easily distracted by surrounding activities, complies with adult directives, giving little or no verbal or physical resistance, even with tasks that he/she dislikes.

Data Analysis

SM1a6_Student Questionnaire on Self-Regulation

With a modified questionnaire, items 1, 2, 3, 4, 5, 8, 10, 11, 12, and 13 used a reverse score. If a participant rated themselves as 3 (Almost Always), they received a score of 1. Questions 1, 2, 3, 4, and 5 measures the participant's ability to regulate his/her emotions. Participant's responses were added and compared to the total score of 15. Scores were converted to a percentage. Questions 6, 7, and 8 measures the participant's goal setting ability. Participant's responses were added together and totaled out of 9. Scores were converted to a percentage. Questions 9, 10, 11, 12, and 13 measured participant's ability to regulate his/her behavior. Participant scores were added out of a total of 15. Scores were converted to a percentage. Higher total scores show a participants stronger ability to regulate.

Child Behavior Rating Scale (CBRS)

No modifications were made to the scoring of this scale. Items 12 and 13 are worded differently, meaning the scoring is reversed for these two items. For example, if the teacher rated a participant as a 5 (Always) on the questions: Expresses hostility to other children verbally (teasing, threats, taunts, name calling, "I don't like you, etc.), this would inflate the participants score. Participant's scores were added out of a total of 77. Scores were converted to a percentage.

Results

SM1a6_Student Questionnaire on Self-Regulation

For this study, it was hypothesized that self-monitoring interventions would improve self-regulation skills in participants. The mean and standard deviation obtained from the individual participants are based on pre- and post-testing. Table 1 reports the means and standard deviations for the three subtests administered using SPSS.

Table 1
Differences in Means and Standard Deviations for Pre and Post-Test Subtests

Measurement	Pre-Test (N=19)		Post-Test (N=19)	
	M	SD	M	SD
Emotion Regulation	66.80	9.43	68.10	13.11
Goal Setting	65.10	3.45	68.00	3.41
Behavior Regulation	66.05	17.64	66.63	10.31

Note. Scores are displayed as percentages.

The data in Table 1 show that the means for the emotional regulation and goal setting post-tests are higher than the pre-test mean. The behavioral regulation post-test mean is .58. Paired sample *t*-tests were used to test the significance between the pre- and post-test means for the three regulation subtests.

The Emotion Regulation mean difference between the pre- and post-test is 1.3. The standard error is 3.10. The *t*-value for this test was .43 (19) with a *p*-value of 0.70. The difference between the pre- and post-test is not significant at the .05 level. The results of the test are in Table 2.

The Goal Setting mean difference between the pre- and post-test is 2.89. The standard error is 21.40. The *t*-value for this test was .60 (19) with a *p*-value of 0.60. The difference between the pre- and post-test is not significant at the .05 level. The results of the test are in Table 2. The Behavioral Regulation mean difference between the pre- and post-test is .60. The standard error is 4.43. The *t*-value for this test was .13 (19) with a *p*-value of 0.90. The difference between the pre- and post-test is not significant at the .05 level. The results of the test are in Table 2.

Table 2
Paired Samples Test: Mean Differences between Pre- and Post-Test Scores for Self-Regulation Questionnaire

Subtest	Sig.	<i>t</i> value	df	<i>p</i> value*	Mean Difference	Std. Error Difference
Emotion Regulation	0.19	0.43	18	.70	1.32	3.10
Goal Setting	1.00	0.60	18	.60	2.90	5.00
Behavior Regulation	0.61	0.13	18	.90	0.60	19.30

Note. Scores are displayed as percentages. **p* < 0.05, two-tailed.

Child Behavior Rating Scale

For this study, it was hypothesized that self-monitoring interventions would improve self-regulation skills in participants. The mean and standard deviation obtained from the classroom teacher are based on pre- and post-testing. Table 3 reports the means and standard deviations for the rating scale administered using SPSS.

Table 3

Differences in Means and Standard Deviations for CBRS Pre and Post-Test

Measurement	Pre-Test (N=19)		Post-Test (N=19)	
	M	SD	M	SD
Child Behavior Rating Scale	67.73	16.93	85.94	12.41

Note. Scores are displayed as percentages.

The data in Table 3 show that the means for the Child Behavior Rating Scale post-tests are higher than the pre-test mean. The mean difference between the pre- and post-test is 18.21. The standard error is 9.60. The *t*-value for this test was 8.30 (19) with a *p*-value of 0.01. The difference between the pre- and post-test is significant at the .05 level. The results of the test are in Table 4.

Table 4

Paired Samples Test: Mean Differences between Pre- and Post-Test Scores for Self-Regulation Questionnaire

Subtest	Sig.	<i>t</i> value	df	<i>p</i> value*	Mean Difference	Std. Error Difference
Chile Behavior Rating Scale	0.01	8.30	18	.01	18.21	9.60

Note. Scores are displayed as percentages. **p* <0.05, two-tailed.

Discussion

Children develop differently. Self-regulation skills can be gained from a young age. For example, infants show self-regulation when they are able to suck their thumb to soothe themselves (Conway, 2009, p. 18). Self-regulation is the ability to control emotions based on a particular situation. Children with self-regulation are able to be flexible with unknown outcomes as they arise and behave appropriately (Conway, 2009, p. 17). As age increases, so can self-regulation skills. This study examined the effect of self-regulated strategy interventions to aid in on-task behavior during instruction within a kindergarten classroom. Self-monitoring

interventions used scaffolding techniques to help students internalize skills. For this study, it was hypothesized that self-regulation interventions would positively affect assessed rating scales.

Post-test Performance

SM1a6_Student Questionnaire on Self-Regulation. The number of research articles accessed through regular search engines such as ERIC and Psych Info was surprisingly low when comparing results. What is available for self-regulation questionnaires is predominantly related to adolescents and college students. Panadero, Tapia, & Huertas (2012) results showed that scripts enhance self-regulation more than rubrics when secondary students measure their self-regulation (p. 810-813). Bakracevic Vukman & Licardo (2010) found that adolescents decreased in self-regulation skills between the ages of 14 to 18. Results from this study are not consistent with earlier research. When each task was analyzed separately, regulation skill scores indicated that the participants' ability to regulate their emotions and goal setting slightly increased. Behavioral regulation, the main purpose for this study, remained consistent.

Child Behavior Rating Scale

In line with previous research, the results from this study are consistent with von Suchodoletz, Gestsdottir, Wanless, McClelland, Birgisdottir, Gunzenhauser, & Ragnarsdottir (2010) when understanding the importance of behavioral self-regulation in young children's development. The current study found that self-monitoring interventions resulted in increased on-task behavior among kindergartners in a heterogeneously grouped classroom. When sharing the pre-post test results with the classroom teacher/researcher, she identified that scaffolding instruction in self-monitoring strategies ensured students' understanding of each strategy, why it aids behavior, and when to employ such skills was significant.

Discussion of Methodological Limitations

This study has multiple limitations. First, the sample size was large enough to produce results and run the proposed analysis, but it was too small to make strong statements on the effectiveness of the interventions. The sample was also from a single grade in a school district in southeastern New Hampshire. Although this grade was chosen specifically because of the developmental level of children's ages of five to six, it does not provide a wide scope of ages or developmental stages.

Second, this study did not take into account urban and rural schools in terms of sameness or differences. Conducting research in both settings so that those sameness/differences are identified could help provide educators with further results.

Third, in designing this study, the researchers selected only one classroom due to ease of gaining permission and implementation. Due to the specific demographics of the school and the classroom, the findings can most likely be generalized to children only in the same environment.

Fourth, several factors could have contributed to the inconsistency in self-regulation scores as assessed by the participants. Sequenced instruction in self-regulation strategies was at the beginning stages of students' understanding of how/when to employ such skills. Some of the questions did not pertain to strategies being taught (i.e. emotion regulation). The age of the participants in answering the questions may have prohibited their responses. The pre-test was

administered by two undergraduate students with a brief training along with an adult (Ed. D) researcher. The post-test was administered by only two adult (Ed. D) researchers. This may have contributed to inconsistencies when administering the questionnaires to participants.

Administering the rating scales to the participants within the classroom setting may have caused a distractive and less confidential environment when assessing. A quiet environment outside of the classroom might have helped participants focus and provide answers in a safe manner.

Fifth, there is also no research conducted to prove strong reliability and validity when using the student self-regulation questionnaire. Therefore, the results from this study may not provide strong statistical analysis.

Sixth, it is possible to not rule out biasness as teacher ratings could have been influenced by possible teaching effectiveness being challenged.

This study does have a strength worth noting. Behavioral observations were conducted weekly in the participant's attention and responses to tasks through an interval recording and self-monitoring sheets. This process helped the researchers identify early deficits in self-monitoring, in order to aid in targeted interventions, particularly for participants who could be more at risk for continuing problems. Scaffolding then could be tailored to meet developmental needs.

Implications

Kindergarten classrooms, such as the one used in this research, shows how modeling of self-regulation skills improve student behavior. Future research that examines children's positive self-control and work habits are potential mediators between classroom management and children's achievement. Further research with this age group and data collecting on academic achievement while collecting self-regulation data would help inform educators of academic and behavioral gains, particularly if conducted over an academic year and possibly monitored over the course of subsequent years. Including participants parents in the research would also provide a home-school connection. Further research could also include parents in training and follow through of skills in the home environment.

The findings speak to the importance of teacher preparation in organizing their instruction in ways that promote self-regulation skills. Most teacher preparation programs and professional development for certified educators offer a myriad of classroom management techniques that are not tailored to children's needs or development. The present findings suggests that while teachers deliver academic instruction, they can infuse self-regulation skills at an early age and see positive results.

When implementing strategy instruction, there are practical considerations for educators to understand. Strategy instruction requires sustained effort and substantial time investment. It is always important to "loop back" once a strategy has been taught. Repetition and practice help students to make sense, meaning, and generalization of skills across the school environment(s). Re-teaching, review, and modeling is needed. This will require a commitment from teachers, students, and administrators who determine the amount of instructional time for subject areas.

Conclusion

Kindergarten students need time to learn, how to use materials in school appropriately, and how to consider social and emotional issues for themselves and others. They need to understand how and when to self-regulate within the context of the school environment so that they experience positive development during a crucial time in their childhood. Increasing self-regulation in children's development has shown to enhance social skills with peers (Onchwari & Keengwe, 2011, p. 284). Therefore, educators must strive to provide developmental consistency and foster a feeling in children socially and emotionally within and across learning environments. The results of this study translate to positive development in self-regulation skills among kindergarten students, improving the development of learning as early as possible.

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About the Authors

Dr. Eloisa Darcy is currently a Reading Specialist at the Maple Street Magnet School in Rochester, NH. She started her teaching career 1982. From 2004 to 2016 she was a kindergarten teacher at Chamberlain Street School in Rochester, NH. She received a B.S. from Eastern New Mexico University in 1981, and a Master degree from New England College, Henniker, NH in 2010. She received her Ed.D. in K-12 Leadership from New England College in 2014. Her research interests center on improving the understanding, performance, and academic improvement of young students' learning. She has explored the impact of parent involvement and the effect it has on her students with remarkable results. She also has investigated the

implications that self-regulation had on student behavior and learning in young children with much success. She continues to use the strategies she has learned to teach young children the importance of learning and the impact it will have on their future.

Dr. Sarah Sarette is a certified School Psychologist employed with a public school district in central New Hampshire. She not only has been a School Psychologist, but has taught K-8 regular and special education classes. She has also been a principal and a teaching consultant/Assistant Special Education Director. She earned her Ed.D in Educational Leadership K-12 at New England College in 2014. Her Bachelor of Science in Elementary Education K-8, M.Ed in Special Education K-12, and Certificate of Advanced Graduate Studies in Administration and School Psychology was obtained from Plymouth State University in Plymouth, New Hampshire. She also is an adjunct professor for various colleges/universities. Dr. Sarette's training expertise lies in working memory, self-regulation, and mathematics. Professional Development for teachers, paraprofessionals, and parents in various special education topics is a true joy for her.

Marley Martin was an undergraduate researcher during this research project. She holds her A.S. in Education and Certificate in Special Education from NHTI: Concord's Community College in 2014. Immediately upon graduating she transferred to Southern New Hampshire University (SNHU) to pursue her B.A. in Elementary Education and General Special Education, during her junior year she participated in this research project. Ultimately that experience led her to choose to student teach in a kindergarten classroom as well as a special education placement in Concord, NH. Marley graduated in May 2016 from SNHU Summa Cum Laude and was inducted into Pi Lambda Theta National Education Honor Society, she also obtained her teaching certification in both K-6 and Special Education K-12. Currently, she is pursuing her NH Alternative Four certification for Early Childhood Special Education while she teaches as a Special Education Preschool Teacher for the Concord NH School District. When she is not teaching, she can be found enjoying New Hampshire's and neighboring Maine's beautiful mountains and beaches.

Anna Boghigian has been working towards becoming a teacher her entire life. She is currently studying for her bachelors in Elementary Education with a certification in Special Education at Southern New Hampshire University. This is her first academic research article and one that has spurred her interests in educational research where she hopes to continue with articles and studies in the future.

Mothers' Perspectives and Experiences of Speech Generating Devices

Yeunjoo Lee, Ph.D.
California State University, Bakersfield

Luis A. Vega, Ph.D.
California State University, Bakersfield

Abstract

Families play a critical role in the lives of students who use a speech generating device (SGD). This study address (a) mothers' experiences of having a child who uses a SGD, (b) their perception of the effectiveness of a SGD(s), (c) their perceived impacts of SGDs on their family dynamics, and (d) their perception of decision making process. Data were collected through surveys and individual phone interviews. The results show the mothers' needs for continued support and training in programming and integration of the technology in children's daily lives. Implications for teacher preparation programs are presented.

Mothers' Perspectives and Experiences of Speech Generating Devices (SGDs)

Assistive technology (AT) allows students with disabilities to develop, maintain, and enhance their abilities. In 1997, the Individuals with Disabilities Education Act (IDEA) recognized the importance of AT and mandated that Individualized Education Program (IEP) teams must consider AT for every child with a disability. As such, special education personnel need to have training and knowledge of AT to adequately serve students with disabilities. In reality, training for special education personnel is lacking (Lee & Vega, 2005). According to Lee and Vega (2005), 22 percent of special education personnel had received more than 40 hours of AT training while 48.7 percent had no training or less than 5 hours of training. Special education related personnel in their research described limited knowledge as the biggest barrier to using AT (41%). Their report is alarming and seeks for more attention from teacher educators.

Communication is a crucial survival skill to exchange ideas and information and allows individuals to meet their social needs and define who they are. Children who are nonverbal or have unintelligible speech require additional supports to accomplish their goals to be an independent communicator. More than often, those children use various types of AT, including Augmentative and Alternative Communication (AAC). AACs are all forms of supports designed to assist individuals to communicate and can be unaided (e.g., sign language, gestures, or body language) or aided systems (e.g., electronic communication boards). Electronic communication boards have been used for decades and changed greatly with the advance of technology. Current electronic AAC devices can provide digitized or synthesized speech and multiple layers of picture icons to choose from (i.e., speech generating devices, SGDs).

While evaluating and/or using SGDs, home environments as well as classroom or clinical settings should be taken into consideration. Home is an integral part of a child's life, particularly for children with disabilities, and family members are respected contributors and participants in

the assessment and decision making process addressing their child's needs in home and school environments (Parette, Huer, & Hourcade, 2003; Parette, VanBiervliet, & Hourcade, 2000). Collaborative team work is imperative throughout process, and professionals should be keen to any challenges to build an effective team. Professionals may encounter family members' distrust and lack of understanding regarding their roles as a family member in decision-making process. Family members' apprehensions and frustration are to be acknowledged and respected, and conflicts need to be resolved or compromised through a collaborative team process to produce the best benefits of AT use.

Contrary to the collaborative team process, a traditional decision-making approach only focuses on a child within a classroom (Parette et al., 2003). Parette et al. reported that education personnel fail to consider family priorities and concerns and, instead, focus on the child within a classroom during the decision-making process. This issue becomes acute when families come from diverse backgrounds. Some minority groups may perceive education professional to be higher authority than them. It leads to a communication gap in decision making process and prohibits the family member from contributing to their child's education experience (McCord & Soto, 2004). They also have different perceptions of assistive technology, which may not be consistent with education personnel. A sound decision making team should take into consideration various factors (e.g., cultural, environmental, familial, physical, or cognitive) when selecting a SGD for a child.

Families and their children should be prepared by receiving training and services in order for them to benefit from AAC devices to their full extent (Kemp & Parette, 2000; Marshall & Goldbart, 2008). Education professionals need to be aware of families' needs and understand the similarities and differences between their own cultures and the cultures of the families that are serving (Marshall & Goldbart; McCord & Soto, 2004). Although researchers have repeatedly voiced the importance of family involvement, there has been limited research on the topic. Most published studies are informational (Kemp & Parette; Parette et al., 2003; Parette & Scherer, 2004; Parette et al., 2000) or involve professionals as participants (Parette, Huer, & Brotherson, 2001). More research is warranted to examine our current practices and to assist meeting the needs of families and their children.

To further understand the unique role that SGD plays and the needs that it serves, within the context and perceptions of students with disabilities and their families, this research sought to answer the following questions: (a) Mothers' perception of decision making process, (b) their knowledge of a SGD(s), (c) their perception of the effectiveness of a SGD(s), (d) their perceived impacts of SGDs on their family dynamics, and (e) their experience of having a child with a SGD(s).

Method

A mixed methodology (qualitative and quantitative) was employed to answer the research questions. Participants were requested to complete a questionnaire and a voluntary follow-up phone interview.

Data Sources

Participants were recruited from a mid-sized city in California and a listserv of AAC users and their families. This listserv has over 300 members who are AAC users or have family members

who use AAC systems (Institute on Disabilities, 2011). An email was sent to the members of the listserv to describe the purposes and procedures of the research. Participants in the local area were recruited through the use of flyers.

A total of 24 parents expressed interest in this study, and 20 of them completed a survey. Of the final list of participants, two of the respondents were from the local area, and 18 were from the AAC listserv. All of the participants were biological or adopted mothers of children with speech generating devices (SGDs).

The survey participants were mothers with an average age of 44.8 (range = 33 to 57, $SD=6.5$). Their children ranged from 6 to 20 years old ($M = 12.95$; $SD = 4.17$) and used a SGD for two to 15 years ($M = 7.8$, $SD = 4.17$). Sixty five percent ($n = 13$) of the children had orthopedic impairment, and 30 percent ($n = 6$) had mild/moderate intellectual disabilities. Table 1 shows the detailed demographic information of parents and their children.

Table 1. *Demographics of Survey Participants*

Primary Language ($N = 20$)	English	19 (96%)
	Spanish	1 (4%)
Participant Age ($N = 19$; $M = 44.84$; $SD = 6.50$)	30-35 years old	2 (10.5%)
	36-40	4 (21.1%)
	41-45	2 (10.5%)
	46-50	8 (42.1%)
	51-55	2 (10.5%)
	56-60	1 (5.3%)
*Child Age ($N = 20$; $M = 12.95$; $SD = 4.17$)	6-10	6 (30%)
	11-15	8 (40%)
	16-20	6 (30%)
Child's Disability	Mild/Moderate Intellectual Disabilities	6 (30%)
	Moderate/Severe Intellectual Disabilities	2 (10%)
	Behavior Disorder	1 (5%)
	Learning Disability	1 (5%)
	Autism	2 (10%)
	Traumatic Brain Injury	1 (5%)
	Hearing Impairment	1 (5%)
	Orthopedic Impairment	13 (65%)
	Cerebral Palsy	9 (45%)
Years of AAC use ($N = 20$; $M = 7.8$; $SD = 4.17$)	Visual Impairment	2 (10%)
	1-3	3 (15%)
	4-6	5 (25%)
	7-9	4 (20%)
	10-12	4 (20%)
	13-15	4 (20%)

*note: there are families with more than one child with AAC.

Ten of the twenty participants agreed to participate in a phone interview after completing a survey. A phone interview was selected because of physical distances between the interviewer and participants. Interviews were conducted during the participants' preferred time and in their

primary language. Nine interviews were conducted in English, and one in Spanish. Phone calls were made from the first author's office by a female graduate-level research assistant. Interviews were conducted in a semi-structured format, tape-recorded, and transcribed verbatim by the research assistant. Each interview lasted between 45 minutes to an hour. The interview questions are presented in Table 2. Table 3 contains demographics of the participants obtained through phone interviews.

Table 2. *Interview Questions.*

Interview Questions
1. Tell me a little bit about your child.
2. When your child's teacher or other school personnel mentioned about using the AAC device for your child, what was your first thought?
3. How do you feel about using the AAC device now?
4. If a parent asks you about an AAC device for their child, what would you suggest?
5. How did the AAC change your family's life?
6. How did the AAC change your child's life?
7. How did the AAC change your life?
8. What are some barriers to effectively using your child's AAC device?
9. What are some things that you would like to change in your child's AAC device?
10. Please tell us anything that teachers or other professionals can do to be more helpful to you and your family.
11. Have you met and shared your experience with other parents whose children use an AAC device through a meeting or over the internet?
a. Tell me your experience of it.
b. How did you meet them?
c. If no, go to #12.
12. What suggestions would you give to future parents whose child uses an AAC device?

Survey Instrument

Survey items included questions on demographic information and families' perception of their child's SGD. In addition, it contained questions that examined families' acceptance of SGD, the effectiveness, and its impact on family dynamics. The questionnaire contained a total of 2 multiple-choice questions, 10 open-ended questions, and 16 likert-scale questions (*Strongly Agree* = 1, *Strongly Disagree* = 6).

A Spanish version of the survey was developed for one mother whose primary language was Spanish. The survey in Spanish was reviewed by the second author who is fluent in both English and Spanish. The Spanish version was revised according to the second author's feedback.

Interview Data Analysis

A qualitative approach was implemented to explore the experiences of mothers who have a child with communication impairments. This method is inductive in nature and produces descriptive information that enhances understanding of a particular group of participants (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2001). In this method, researchers serve as an instrument to analyze rich data collected through interactions with participants.

Interviews in this study were audiotaped with participants' consent and transcribed in verbatim. Transcripts were analyzed using a constant comparative method (Merriam, 1998). In the first step of analysis, interview transcripts were reviewed to get a sense of the mothers' perspectives. After the first reading, the first author carefully reviewed each transcript while taking notes and comments. Then, notes and comments on each transcript were examined to develop themes. Themes from each interview were compared, and major categories were developed (Merriam, 1998). The second author then read the transcripts and examined the proposed categories for inter-rater agreement (100%), supporting a consensus model based on face validity.

Table 3. *Demographics of Interview Participants**

Participant	State	Age	Education	Child's Age	Years of AAC	Child's Disability
Marcy	CA	47	NA	13	7	CP, OI
Jenny	MA	53	NA	19	15	CP, OI
Mary	MS	43	High school	18	13	OI
Joan	PA	44	NA	15	10	Undiagnosed neuromuscular disorder
Teri	CT	46	NA	18	15	M/M, VI, CP
Anita	OH	49	NA	11	8 1/2	M/M, CP,
Penny	CO	53	College	12	5	OI, CP
Linda	DE	47	NA	20	10+	M/S, BD, LD, OI
Claire		41	College	15	8	CP
HJ	VA	54	Graduate	10	8	VI, OI
Konnie	CA	NA	NA	NA	NA	NA

Note: CP=cerebral palsy, OI=orthopedic impairment, M/M=mild/moderate intellectual disabilities, M/S=moderate/severe intellectual disabilities, VI=visual impairment, BD=behavior disorder, LD=learning disabilities, NA=Not Available.

* The information in this table was primarily provided by the interview participants (mothers).

Results

An analysis of the ratings of the Likert scale questions show that participants had a positive experience during decision making process. Ninety percent ($n = 18$) of the respondents strongly or moderately agreed that they were comfortable sharing their ideas with a decision making team ($M = 1.4$; $SD = .099$). A majority of the respondents ($n = 16$, 80%) also strongly or moderately agreed that the team members often asked their opinions during the evaluation ($M = 1.75$; $SD = 1.16$). While mothers seem to be respected and encouraged to involve in decision making process, they also reported some levels of emotional and financial stress. Nine participants (45%) stated that AAC devices added unexpected stress ($M = 4.4$; $SD = 1.39$), and six parents (30%)

agreed that the devices caused financial stress ($M = 4.25$; $SD = 1.77$). Further, the survey results confirm that caregivers need more training and support to use a SGD. More detailed results from the likert scales are shown in Appendix A.

Increased Independence and Competence

All of the interview participants were grateful for their child's SGD and expressed that the devices improved their child's social and communication skills and changed their lives. Mary, a mother of an 18 year-old child said,

The greatest thing is that it gives her other opportunities and different roles she can play because, like I said, she can babysit for her sister, she can call someone and sing happy birthday to them, for her it is very much the social aspect much more than communicating the basic needs...it has really opened up her social domain.

Moreover, mothers also discussed their child's new ability to control environment. Jenny, a mother of a child who had used a SGD for 15 years, stated that "it opened up the ability that he can use a computer environmental control, so he has more power...the device has given him power that he just couldn't have like he can turn on lights, he can turn on radios..." Mary also agreed that the SGD improved their child's quality of life beyond communication and gave the child a sense of competency. Overall, SGDs permitted children to play different social roles and to experience new sense of control.

Stresses, Challenges, and Barriers

Even though their child's improved independency lowered parents' frustration levels, participants experienced financial burden, unexpected stress, and additional responsibilities related to their SGDs ($n = 11$, 55%). The participants shared the challenges and barriers of having SGDs during interviews. One parent stated that "it takes a lot of time; I mean a lot more time, programming and setting it up and trying to put things in the right place."

HJ, who has a 10-year old boy, stated the following:

The stress of programming it...I think there is a lot of stress associated with it, though it's very unclear as to how to really organize the communication aspect of it. I mean, the technical aspect of it is simple, you know you can learn to program it...but to really learn how to really communicate and to sort of motivate a child to learn to use it effectively and for the school system to provide effective support for the teachers [it is not easy].

While interview participants expressed that they were comfortable operating the system, their challenge was in how to integrate SGDs into their lives and how to encourage their child to use SGDs. This concern is consistent with the survey results that demonstrated lack of training for parents and provides critical aspects to improve the services for children and their parents.

Of equally important, professional and public knowledge, skills, and attitudes towards SGDs were often perceived a challenge. Anita stated that,

I think the biggest thing is community at large, and that would also include, basically anyone who works with your child who doesn't believe in the device... my daughter had a

school speech therapist for five years who refused to use the communication device, and I think the bottom line was she just was intimidated by it.

Likewise, Jenny expressed that people did not know how to respond to a child's SGD. The fear or lack of experience to SGDs are not limited to the public. According to Penny, whose child had used a SGD for 5 years, her child's speech therapist told that her daughter would become less verbal if she used a SGD. Joan added that her speech language pathologist did not know how to teach language with the device. She commented that

We really had a hard time with, we didn't have as hard time with getting the technology as we did getting the supports and services and we really didn't get a speech therapist that was qualified to work with him until he was like in the ninth grade because they, they don't have AAC background.

Coupled with professionals' knowledge, their open communication and willingness to collaborate was discussed during the interviews. Anita, made a reference to education personnel by stating the following:

I'm really comfortable with communication devices... I really don't know a whole lot about this, but with what you know, let's talk about what your child can do, let's talk about what your expectations are. Not only of what your child can do with this or what you want your child to do with this, but how I, the professional, can support and challenge your child in making these, or meeting these goals.

Professionals' limited support and knowledge prompted some parents to transform their roles as parents and advocates. Linda stated,

We had a wonderful speech pathologist in the fact that she cares so much for Sarah and wants her to use the device effectively, but [she] doesn't really understand, wants to understand, or gets involved in the programming of it. She just sends me notes on what she wants done, which I really don't have a problem with 'cause half the time I don't like what she wants done anyway.

The partnership between Linda and the speech pathologist was successful in making the best use of their SGD and provides an alternate idea of the relationship between parents and professionals. Half of survey participants ($n = 10$) confessed that their child did not use a SGD as much as they expect him/her to do. The above mentioned challenges should be resolved to further improve educational services to families and children with SGDs.

Discussion

Mothers expressed their perceptions and experiences of having a child with a SGD in this study. They were mostly positive about decision making process. Seventeen of 20 participants expressed that they have adequate knowledge to maintain the devices ($M = 1.4$). Fifteen mothers reported that they received some degree of training on their AAC device while five mothers expressed that they received limited or no training at all. Phone interviews emphasized the needs

for continued support and training in programming and integration of the technology in their daily lives.

The results of this research confirms that family members experience additional responsibilities and stresses that come with the use of AAC devices (Bailey, Parette, Stoner, Angell, & Carroll, 2006; Jones, Angelo, & Kokoska, 1998; Marshall & Goldbart, 2008). The challenges should be addressed promptly and effectively since they prevent families from using SGDs to their full extent (Parette & Angelo, 1996). Family members' stress and challenges can be exaggerated by lack of knowledge and continuous supports. Issues of support and training for families were repeatedly raised in other literature (Angelo et al., 1996; Marshall & Goldbart, 2008; McCord & Soto, 2004; Parette et al., 1996).

In this study, mothers struggled to program SGDs and had difficulty integrating them into daily lives (Angelo et al., 1996; Bailey et al., 2006a; McCord & Soto, 2004). Thunberg and colleagues (2009) researched whether parent training would make any differences in child-adult daily communication at home. The results showed that interaction between parents and their child with Autism Spectrum Disorder was increased. Moreover, children's irrelevant and unnecessary verbalizations were decreased during home activities (Thunberg, Ahlsen, & Sandberg). Thunberg et al.'s research provides positive outcomes of parent training and suggests to provide parent training before introducing SGDs. Education for parents should include hands-on experience along with modeling on how to integrate SGDs in a daily life.

Professionals are not and should not be the only source of support and information for families. Families can obtain information through formal and informal sources, including internet, support groups, books, and/or workshops. Supports from other parents who have similar experiences would empower and enlighten families who go through similar situation (Marshall & Goldbart, 2008). As important as it is to increase self-determination and efficacy of children with disabilities, it is also just as important for family members to feel empowered and encouraged to be their child's advocates.

Mothers in this study were strong advocates for their child and were actively involved in their child's education. Half of the interview participants requested to their school district to evaluate their child as a potential SGD user. Whereas family members asked for information and training in previous studies (Angelo et al., 1996), parents in the current study did not rely on schools and agencies. Some parents in this study spent many hours trying to understand and use their AAC devices and transform themselves as parent-educators and experts. They even created a website and conducted workshops for AAC users and their families. In particular, one mother urged that parents should take a leading role and be involved with using AAC since children spent most of the time with their families.

The current study suggests that professionals modify their practices from child-centered to family-centered (Starble, Hutchins, Favro, & Prelock, 2005), have ongoing conversations related to families' needs, and encourage and empower SGD users and their families (Angelo et al., 1996). Families change as their children grow. Professionals need to be sensitive to the changes and needs that come along with children's maturation. While doing so, education personnel must pay great attention to the impact of an AAC device on family dynamics and cultural differences

(Bailey et al., 2006; Parette et al., 1996; Vanbiervliet & Parette, 2002). Culture shapes and defines the roles of AAC devices in each family. Families experience different types and levels of stress, depending on their socioeconomic status, experience, education, language, years with AAC devices, and cultural backgrounds. Education professionals will need to recognize the stressors and support families to adjust to ever-changing environments.

Education professionals' attitudes and knowledge have been discussed as a barrier of using AAC devices in previous literature (Bailey, Stoner, Parette, & Angell, 2006b; Huer, Parette, & Saenz, 2001; Marshall & Goldbart, 2008). Their training issues should be addressed from two directions. First, teacher and therapist training programs ought to increase instruction on assistive technology, including AAC during their professional preparation programs. Second, school districts should make conscious efforts to provide continuing education and supports for teachers and related professionals. Pre-service special education teachers receive only 1 or 2 years of training in teacher preparation programs, and only few or none of the courses are devoted to AAC. The lack of training on AAC contents is also apparent in pre-service speech language pathologists and occupational therapists (Cistigan & Light, 2010). While speech language pathologists take a lead implementing an AAC device and supporting children and their families, special education teachers are required to accompany the pathologists throughout the way. The roles of both special education teachers and speech language pathologists are critical to successfully implement and support children to be an effective communicator.

Upon the graduation of respective training programs and entering the workforce in a classroom, local school districts take over the responsibility of providing professional development activities in collaboration with teacher training programs. Particularly, school personnel who work with an AAC user will require extra planning and training time to get acquainted and learn about the devices. The training should involve discussions of using the devices in school settings; enhancing literacy skills; and integrating the devices in home environments. Another important emphasis should be on educating communicative partners to be effective and responsive (Bailey et al., 2006a). Effective and efficient use of communication systems requires considerable time investment and collaboration efforts among educational personnel, parents, and students (Bailey et al., 2006b). It should be noted that professional knowledge and collaboration are major features that guarantee access to all students and their families (Fitzpatrick & Brown, 2008).

Teachers indicated that the biggest challenge of using assistive technology is the lack of time (Bailey et al., 2006b; Lee & Vega, 2005). Current practices focusing on accountability and testing, coupled with limited budgets contribute to less time for teachers to learn, plan, and implement effective use of assistive technology and collaborate with other team members. Budget deficits also impede teachers from attending workshops and conferences to share and update their knowledge and skills. School personnel and administrators should find ways to overcome this economic hardship. Numerous workshops can be offered via internet using video conferencing or online courses. Webinars and email listserves are also effective ways of sharing information about AAC devices.

Limitations of the Study

This study provides a snapshot of mothers' perspectives of using SGDs. There are several aspects that need to be considered to interpret the results. Only 20 participants completed a survey, and ten mothers participated in a phone interview. The results only represent a small number of mothers who volunteered to participate in the study and who were recruited through limited channels. The mothers may not be a representative sample of family members of a child who use a SGD. Furthermore, we might have different results if the study involved other family members (siblings, fathers, or other primary caretakers). It is recommended that future research involves higher number of participants and recruit other family members as well as mothers.

There is a paucity of studies that involved family members of children who use an AAC device. Further research is warranted to involve SGD users and their families with diverse backgrounds and to examine how children can most efficiently use SGDs. Another area is to examine the effectiveness of pre-service SGD training and the transferability of their training to their job settings. A longitudinal research study is also necessary to examine the adaptation process of SGDs for children and their families.

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Appendix A (see following page)

<i>Number and Percentage of Responses in the Likert Scale Items.</i>		<i>Item</i>						<i>M SD</i>	
		Strongly Agree 1	Moderately Agree 2	Somewhat Agree 3	Somewhat Disagree 4	Moderately Disagree 5	Strongly Disagree 6		
		(N = 23)							
1.	I feel comfortable sharing my ideas with the evaluation team of my child's AAC device.	15 (75%)	3 (15%)	1 (5%)	0 (0%)	1 (5%)	0 (0%)	1.45	.99
2.	Team members often asked my opinions during the AAC evaluation.	12 (60%)	4 (20%)	2 (10%)	1 (5%)	1 (5%)	0 (0%)	1.75	1.16
3.	I have adequate knowledge on how to maintain the AAC device.	17 (85%)	0 (0%)	2 (10%)	0 (0%)	1 (5%)	0 (0%)	1.4	1.05
4.	I feel comfortable operating the AAC device.	16 (80%)	2 (10%)	1 (5%)	0 (0%)	0 (0%)	1 (5%)	1.45	1.19
5.	My child uses his/her AAC device at home.	14 (70%)	1 (5%)	3 (15%)	1 (5%)	0 (0%)	1 (5%)	1.75	1.37
6.	The AAC device is helpful for my child.	15 (75%)	5 (25%)	0 (0%)	1 (4.3%)	0 (0%)	0 (0%)	1.25	.444
7.	The AAC device generates unexpected stress.	0 (0%)	1 (5%)	7 (35%)	1 (5%)	5 (25%)	6 (30%)	4.4	1.39
8.	The AAC device restricts family activities.	1 (5%)	0 (0%)	2 (10%)	1 (5%)	5 (25%)	11 (55%)	5.1	1.37
9.	My child uses his/her AAC device as much as I expect him/her to.	7 (35%)	3 (15%)	4 (20%)	5 (25%)	1 (5%)	0 (0%)	2.5	1.36
10.	The effects of the AAC device meet my expectation.	9 (45%)	8 (40%)	2 (10%)	1 (5%)	0 (0%)	0 (0%)	1.75	.85
11.	The AAC device adds to the financial stress.	2 (10%)	3 (15%)	1 (5%)	2 (10%)	6 (30%)	6 (30%)	4.25	1.77
12.	Family members assume additional responsibilities due to the AAC device.	5 (25%)	0 (0%)	6 (30%)	2 (10%)	5 (25%)	2 (10%)	3.4	1.73
13.	The AAC device draws unnecessary or negative attention to my child.	1 (5%)	2 (10%)	2 (10%)	0 (0%)	5 (25%)	10 (50%)	4.8	1.64
14.	I was informed of various AAC devices that were being considered for my child.	9 (45%)	1 (5%)	5 (25%)	1 (5%)	1 (5%)	3 (15%)	2.65	1.87
15.	I received training on how to use the AAC device.	8 (40%)	3 (15%)	4 (20%)	2 (10%)	1 (5%)	2 (10%)	2.55	1.70

16. My input has been valued and taken into consideration for the selection of AAC device.	13 (65%)	5 (25%)	2 (10%)	0 (0%)	0 (0%)	0 (0%)	1.45	.69
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Teachers' Pedagogical Competence in Adapting Curricula for Children with Learning Difficulties (LD) in Primary Schools in Ghana

Abdul-Razak Kuyini Alhassan
University College of South East Norway

Chigorom Okechukwu Abosi
University of Botswana

Abstract

Ghana education service (GES) has not achieved much in curriculum adaption to address the needs of children with disability. The aim of this study is to investigate teachers' pedagogical competence (TPC) in curriculum adaptation to include children with LD in primary schools. Mixed-Method Design Strategy involving 387 sampled teachers was used. The results will add to the body of research that show that teachers are inadequately prepared for inclusion of learners with disabilities in primary schools. Specifically, this study showed that some Ghanaian primary school teachers (PST) have limited competences in curricula adaptation. There was a significant association between curriculum adaptation and teachers' competences in teaching children with LD in Primary schools in Ghana. The PSTs are increasingly facing challenges in meeting the needs of children with LD due to: limited competence, poor class environment and inadequate teaching and learning resources. The study recommends that the Government of Ghana (GoG) provides intensive training in curriculum adaptation to PST to enable them address the needs of children with LD effectively.

Key words: inclusion, curriculum adaptation, differentiation, competence, Ghana, learning disabilities.

Teachers' Pedagogical Competence in Adapting Curricula for Children with Learning Difficulties (LD) in Primary Schools in Ghana

Ghana is currently running an eight-year primary education system. It consists of Two-Year Kindergarten and Six-Years-Primary Education. The subjects taught include basic mathematics, citizenship education, English language, Ghanaian language, music and dance, natural/integrated science and physical education. The Ghanaian languages are the mediums of instruction at the lower primary (primary 1-3) and English language is used at the upper primary (primary 4 and 6). The objective of GES is to ensure that primary education curricula are responsive to the needs of all learners so that every learner can derive benefits from teaching and learning in the primary school (GES, 2004; 2008; 2010).

To achieve this goal, great emphasis is placed on curriculum adaptation, participatory pedagogies and child-friendly teaching/learning materials. Additionally, teaching manuals, teacher-guide and other supportive teaching materials are developed to facilitate effective teaching in the general

education classroom (GES, 2004; 2008; 2010; Casely-Hayford, et al., 2011). While it is the policy and objective of the GoG to provide equal educational opportunities for every Ghanaian child, GES (2004) indicates "... Not much has been achieved in the area of curriculum adaptation ..." (p.15). Teaching in the primary school in Ghana is saddled with inaccessible, inflexible curriculum, and leaves little or no room for assessment and identification of children's learning needs, let alone addressing them during instruction (GES, 2004; Agbenyega & Deku, 2011). The rigidity of curriculum, conditions of service coupled with lack of knowledge of inclusive teaching practices exacerbate teaching for teachers, especially those practicing multi-grade teaching, to adapt curriculum to address the diverse learning needs of children with learning difficulties and disabilities in primary schools.

Curriculum adaptation

Curriculum adaptation or differentiation "...is the process of modifying or adapting the curriculum according to the different ability levels of the students in one class" (UNESCO, 2004, p.14). Also, Wrights (2005) argues that curriculum adaptation is comprised of a modification to the following: quality; time; the level of support; input; difficulty; output; participation; alternate goals; and substitute or functional curriculum (p.1). This means that curriculum adaptation is viewed in terms of reorganizing curricula content, the use of appropriate grouping, instructional strategies, methods and application of appropriate instructional resources to meet diverse needs of all pupils in the regular classroom (Yuen, Westwood & Wong, 2005).

In addition, UNESCO (2009) emphasizes that curriculum should be adapted to meet all aspects of children's development: cognitive, emotional, social, skills and creative abilities. Similarly, it takes into consideration all characteristic of learners' variations: multi-ability, multiage, sex, religion, culture, conception and misconceptions etc. to offer curriculum rich in meaning (Ford, Davern & Schnor, 1992; Shulman, 1987). UNESCO (2009) states that:

An inclusive approach to curriculum policy has built-in flexibility and can be adjusted to different needs so that everyone benefits from a commonly accepted basic level of quality education. This ranges from varying the time that students devote to particular subjects, to giving teachers greater freedom to choose their working methods, and to allowing more time for guided classroom-based work (p.18-19).

Clearly, this implies that teachers who teach children with LD must first have competence to adapt and attuned to curricula goals, content, lesson materials and working methods in order to meet the needs of all learners. Hoover and Patton (2005), however, observed that in adjusting curricula to the needs of learners with LD, teachers must: select learning content that must be relevant and related to students' culture, back-ground, environment, and prior experiences; employ multiple content knowledge and skills that must be taught overtime and across subject areas; integrate cognitive and academic goals; all those involved in students' learning must have high expectations of the students, at the same time valuing their diverse learning needs and abilities; and active learning and inquiry-based tasks should be employed in teaching the students (p.76).

Similarly, Tomlinson and Javius (2012) argue that the inclusion of children with various disabilities is possible if teachers are willing to develop the capacities to teach up for excellence.

To do this, teachers would have to ensure that “All students deserve equitable access to an engaging and rigorous curriculum” (p. 1). In addition, teachers and all those involved in the inclusion must apply the following inclusive principles: accept that human differences are not only normal but also desirable; develop a growth mind-set; work to understand students' cultures, interests, needs, and perspectives; create a base of rigorous learning opportunities; understand that students come to the classroom with varied points of entry into a curriculum and move through it at different rates; create flexible classroom routines and procedures that attend to learner needs; be an analytical practitioner (Tomlinson & Javrus, 2012, p.2-5).

Also, Shulman (1987) asserts that teachers' ability to learn and comprehend subject matter or curricula and their capacity to adapt the curricula, reorganize it in new ways and represent it for learners to understand is a competence every teacher must have. He implies that to teach is to understand what is to be taught. The comprehension of curriculum helps teachers to adapt it to fit into the diverse needs of learners. This should be done using appropriate activities and emotions to make learning easy for understanding. Recent studies underscore the importance of teachers' skills in curricula adaptation (goals, content and materials) for pupils with LD in inclusive classrooms (Stainback & Stainback, 1992; Mastropieri & Scruggs 2000; Kuyini & Desai, 2008; Alhassan & Abosi, 2014).

Agbenyega and Deku (2011), for instance, have found in their study in Ghana, that PSTs still use prescriptive curriculum and inflexible teaching methods in the regular classroom. Similarly, Kuyini and Desai (2008) research in Ghana has disclosed that most teachers, were making minimal instructional adaptation for learners with disabilities. The problem was exacerbated by large class size, lack of teaching assistants and teaching and learning materials. Consistent with this, UNESCO (2004) observes that some teachers find it difficult to modify curriculum. However, some studies for instance, Vaughn, Schumm, Klingner and Samuell's (cited in Vaughn & Argüelles, 2000) found that teachers even have to adapt textbooks and other reading materials in order to meet learners' needs in regular classroom. Likewise, Schumm and Vaughn (cited in Vaughn and Argüelles, 2000) revealed that learners tend to respect and prefer teachers who adjust curriculum and teaching styles to their needs to teachers who do not do adapt curriculum and teaching styles. Akin to this, Simpkins, Mastropieri and Scruggs' (2009) study on curricula adaptation showed that children at risk had better learning outcomes when curriculum is adapted to learners needs. Both learners and teacher reported to have high degree of satisfaction with the curricula adaptation strategies and the materials used.

On the contrary, Westwood (2001) argues that “any approach that suggests giving 'less' to some students is open to criticism under principles of equity and social justice” (p. 6). Westwood and his colleagues argue that some learners may not even be comfortable using a watered down curriculum. Further, they argued that curriculum content and materials are often watered down in situations teachers have large class size, more workload, and inadequate preparation time. On the basis of this argument, they recommend that teachers be rather trained to develop the required competences and skills to effectively teach the same curriculum to all children, rather than watering down curriculum (Westwood & Arnold, 2004; Westwood, 2001; 2004; 1997; van Kraayenoord, 2007).

Overall, curricula adaptation or differentiation plays a pivotal role in the inclusion of all learners, particularly those with LD in the primary school. Any effective curricula adaptation or differentiation must comprise of modification in the curricular, learning content, methods of teaching and assessment and the environment where the learning takes place. It is not “a variety of activities”. It is a way of planning, assessing and teaching a heterogeneous group of students in one classroom where all students are learning at their optimal level” (UNESCO, 2004, p.4).

Children with learning difficulties (LD)

Several factors create difficulties for children to learn or socialize with their age peers in schools and at home. Although LD is thought to be relatively new among Africa educators, major causes of LD among African children are not new. The major causes of LD in Africa are socio-economic and environmental factors. This is not to suggest that LD in Africa is not caused by biological and other psychological factors. For instance, Abosi (2007), Aro et al. (2011) and Author (2011) point out that apart from biological and physiological causes of LD, several other potential causes of LD among African children including: school related factors, culture, language of instruction, home related factors, and factors within the child. Children who experience LD in Africa often fail class exercises, perform poorly and loose respect from their peers and, at times, from teachers, who ought to have protected and supported them to overcome these barriers.

According to Abosi (2007), children with LD in Africa are those “...who experience learning difficulties independent of obvious physical defects such as sensory disorders. It is understood that such children have the ability to learn but it takes them a longer time to comprehend than the average child. These children are generally and frequently referred to as slow learners or underachievers” (p. 197). The Australian National Health and Medical Research Council (1990), Westwood (1997) also states:

‘...the term is applied to students whose difficulties are not directly related to a specific intellectual, physical or sensory disability, although students with disabilities often do experience problems in learning and in social adjustment. Students who have, in the past, been referred to as ‘slow learners’, ‘low achievers’ or simply ‘the hard to teach’, certainly fall within the category ‘learning difficulties’ (p.1).

LD is a broad term, describing learners, who show both the signs of developmental and academic problems and challenges irrespective of the origin of the problem (Julie & Peter, 2005; Kavale & Forness, 2000; Westwood, 1997). In most African countries, however, children with LD are often referred to as “slow learners” (Author, 2007; Aro, et al., 2011). Although African experts do not have their own definition of LD, they often have their own local terminologies describing individuals who exhibit characteristics and symptoms of learning disabilities and difficulties (Avoke, 2001; Agbenyega, 2003; Alhassan, 2013). In Ghana, for example, terminologies such as “*Asotowo*” and “*Buluus*” (idiots or fools, and reduced intellectual abilities) are often used to refer to children with LD and disabilities in Ewe and Ga communities (Avoke, 2001; Agbenyega, 2003). Among the Dagbambas and some communities in the Northern Region of Ghana, “*Zuðkping lana*” and “*Zuuku*” (empty-headed) are used for children, who manifest difficulties in learning basic social skills, basic calculation; and those experiencing difficulties in organizing their daily activities and adjusting well in social events.

In Ghana, it is a constitutional right of every child, at the pre-tertiary levels, to have equal educational opportunity to quality education independent of their ability or disability. This is to promote access, participation, quality and inclusion of all children (GES, 2004). Therefore, several adaptations need to be made to facilitate the inclusion of children with LD in the general education classroom. One of the fundamental adaptations required to be made is curriculum. According to GES' (2004) report, curriculum adaptation is one of the areas Ghana's policy of inclusive education has not made impressive strides. In the general education classroom, Ghana national education curriculum does not address the diverse learning needs of all learners, especially those with special needs.

Research objectives

This study aimed to address the following objectives:

- a) To find out the level of primary school teachers' pedagogical competences in adapting curricula to meet the needs of learners with LD in primary school.
- b) To find out whether or not teachers' pedagogical competency in curricula adaption is associated with their skills in teaching children with LD.
- c) To explore teachers experiences of adapting curricula to meet the needs of learners with LD.

Methods and Design

Mixed-Method Design was used. The underlying philosophical assumption for using mixed-method design was its *dialectical position* (Rocco, et al., 2003). This approach was required for a holistic comprehension and meaningful investigation of teachers' competences in curricula adaptation. Accordingly, mixed design strategies (descriptive and phenomenology) were combined and carefully applied in the study.

Sampling design

The sampled teachers (n=387) were carefully selected using a multi-stage sampling strategy. To do this, the entire population of the general primary school teachers in Ghana (N= 198,403) (GNAT, 2009) was grouped into ten regions. Then, the Northern Region was randomly selected. The population of teachers in the Northern Region was 11538 (The Northern Region Education Directorate- Statistics Unit [EMIS], 2012). The sample size (n=387) was then determined using the following formula: $n = N/1+Ne^2$ (Carlderon & Gonzales, 2010).

Having had the appropriate sample size, the population of teachers in the region was again clustered into 26 districts. Twenty districts were randomly selected for the study. At the district level, a proportionate stratified sampling technique was used to draw the sample (n = 387) from the population of teachers in each of the districts. This was to ensure that all teachers in the districts were properly represented. At the district level, teachers were sampled and stratified based on the characteristics of the population.

Participants (10 informants) for the qualitative phase of the study were selected based on the following criteria: a) The participants must have some experience of teaching children with LD in the primary school, b) The participant must have a child or children with LD in his or her

class, c) participants must consent to be observed and interviewed, and d) have ample time to participate in the study.

Instrument

Three types of instruments were used to gather the data for this study: questionnaire, observation checklist and interview-guide. The questionnaire has three sections: demographic information, aimed to gather data on teachers' background variables (e.g. age, gender and class size). Section two, sought to find out association between adaptive instruction and teachers' competences in teaching pupils with LD. In this study, curricula adaption was *the independent variable*, and teachers' competence in teaching pupils with LD was the *dependent variable*. To answer the questions in this section, teachers were asked to use a scale of 1 to 3 to respond to their competence and skill level in teaching pupils with LD. The scale was interpreted as: "1" Limited competence, "2" Moderate competence and "3" Adequate competence. Similar scale was used for skills in curricula adaptation: "1" represented Poor skills, "2" Good skills, and "3" Very good skills.

Section three of the questionnaire had a self-developed Teachers' Competence Scale for curriculum Adaptation (CA Scale), made up of 5 items describing effective curriculum adaptation behaviors in the regular classroom. It embodied a collection of teaching practices and behaviors carefully identified in the inclusive education literature. Current thinking suggests that those teaching practices/behaviors produce better inclusion of pupils with diverse learning needs in the regular classroom. The competence scale for curricula adaptation contained self-assessment items, measured on the 4-point Likert-type statements aimed to measure teachers' competence in curricula adaptation. The scale was developed and worded in the following fashion:

- a) Adapting curricula materials for pupils with LD: 1, 2, 3, 4.
- b) Modifying learning content for pupils with LD: 1, 2, 3, 4.

The scale was interpreted as: "1" representing "No competence", "2" representing "Limited competence", "3" representing "Moderate competence" and "4" representing "Adequate competence". The data gathered from this section offered answers to research question one and were analysed using descriptive statistic. The same items were also used as observation checklist. It was designed to cross-check the responses or data the respondents provided on the scale for curriculum adaptation. This gives one the opportunity to comment as to whether or not teachers used their perceived competence on the scale for curriculum adaptation in their actual teaching practices in the general education classroom.

The interview guide dealt with teachers' experiences of teaching children with LD in the general education classroom. Some of the questions that guided the interviews were:

Tell me about your experiences of adapting curriculum to meet the needs of children with learning difficulties in primary school.

Tell me about some of the challenges you face in teaching children with LD in primary school.

All questions in the interview guide were not strictly followed during the interview. Teachers could stray from one topic, question or subject to another without being forced to stick strictly to the original plan in the interview guide. What was important was that the researchers were able to track the topical trajectories that got lost during the interview whenever those trajectories were considered appropriate and central to the subject matter (Turner, 2010; Cohen & Crabtree, 2006). The interview guide provided a great freedom and flexibility in sequencing the questions and in the amount of time and attention given to different topics and interviewees.

Reliability and validity

The researchers conducted a field-test involving 31 PST to see whether the research instruments were reliable and feasible to obtain the relevant data needed for the study. Prior to the reliability test and factor analyses, a group of experts in special/inclusive education including one university lecture, two teacher educators and three general education teachers carefully scrutinized and assessed the instruments for their relevance, content, cultural, face and construct validity. The feedbacks from the experts recommended that some of the items be removed whereas others were recommended to be included. In the end, the 22 items were reduced to 13, which, was further reduced by reliability test to 5 items, suggesting a very good sign of data reduction and consistency.

The reliability test was performed. The result showed Cronbach's alpha coefficient of 0.88, indicating that the instrument was reliable. Also, factor analytic approach was applied. Principal component factor analysis with Varimax Kaiser Normalization was used to examine the commonalities among the items. Factors ranged from 1 to 2 with coefficient of 0.79 to 0.98. Most of the items scored above 0.70, suggesting that the research instrument was consistent and reliable. Reliability of the observation data was assessed using inter-observer scores to measure the consistency of the data. In doing this, inter-observers or raters were carefully trained on how to score the observation checklist during observation.

On the part of the qualitative data, we cross-checked the data gathered from individual interviewees and we also posed questions to determine whether other interviewees also experienced similar situations. The reliability was assessed using multiple data sources, triangulation, member checking and external audit.

Data collection

In order to gather data for the study, 463 questionnaires were administered to teachers in the twenty districts (20) of the Northern Region. It took four months (7th May, 2012 to 29th August 2012) to receive all the administered questionnaires. The returned questionnaires were more than the determined sampled size (n=387). However, only 387 questionnaires were used in the study. Out of the 387 sampled teachers, 50 respondents were observed using observation checklists to cross-check the responses provided in the survey questionnaire. The observation was conducted in 25 primary schools with the assistance of inter-observers (inter-rater or scorer). The inter-observers' main role in the observation was to observe if teachers were demonstrating the skills listed in the observation checklist and scored them accordingly. The observation of every teaching session lasted for 35-45 minutes. That was the time scheduled for each subject in the school time table. At the end of every observation, the researchers and the inter-scorers met to compare scores and determine the final scores for each observation.

The qualitative data were generated from 10 informants using in-depth and group interviews. Individual interview lasted 45 minutes to 1 hour for each informant, while 1 hour to 1 hour 30 minutes was used for the group discussion. The groups were three consisting of four members each. In addition, archival sources such as lesson notes and class exercises were used to aid the selection of qualified candidate for the interviews and also to see how curriculum was adapted.

Data analysis

The quantitative data which were generated from research question one, two and three were analyzed using descriptive statistic, Chi-Square (χ^2) test (cross-tabulation) and linear correlation. On the other hand, the qualitative data were analyzed using Interpretive Phenomenological Analysis (IPA).

Results

Background variables

The result on the teachers' background variables showed that 53.7 % (208) of the sampled teachers (n=387) were rural schools teachers, while 179 teachers (46.3) urban teacher. Female teachers were 74(19.1%), whereas their male colleagues were 313(80.9%). 315(81.4%) of the teachers were trained, while 72(18.6) were untrained. 198(51.2%) had training in special needs education and 189 (48.8%) did not have any training in special needs education. 203(52.5%) of the teachers taught small class size (45 and below pupils), while 184 (47.5%) taught large class sizes (46 and above). The largest class size observed was 138, while 17 being the smallest. Teachers' qualification ranged from Senior High School (SSS) to bachelor degree. Majority of them, 54.0 % (209), had diploma degree, whilst 63(16.3%), 59(15.2%), 32(8.3%), 24(6.2%) had degree, SSS, Post-Middle Teachers Certificate "A" and Post-Secondary Teachers' Certificate "A" respectively. Participants' ages ranged from 20-54, though they had 6 to 30 years of teaching experience.

Teachers' pedagogical competence in curricula adaptation

To find out the pedagogical competence levels of teachers, curriculum adaptation scale (CA Scale) was used to gather the data. The data were analyzed by means of descriptive statistic. The CA Scale was interpreted based on the total means scores with "1" representing "No" competence, "2" representing "Limited" competence, "3" representing "Moderate" competence and "4" representing "Adequate" competence.

Based on this interpretation, the result in Table 1 shows that the mean composite scores is 10.1(2.0), suggesting that the 387 sampled teachers have limited competence in curricula adaptation. Their competence level is between 1.38 and 2.42, implying limited competence in curricula adaptation. The highest mean scores (M=2.42, SD=0.93) is item 2(Using assessment information to plan lesson). This was followed by item 1(Adapting curricula materials for pupils with LD), item 4(Using different instructional strategies), item 3(Modifying learning content for pupils with LD) and item 5(Using IEP to support pupils with LD) with means scores of M=2.27, SD=0.89; M=2.06, SD=0.89; M=1.94, SD=0.87 and M=1.38, SD=0.77 respectively.

Table 1: Curricula adaptation (CA Scale)

	N	Mini mum	Maxi mum	Mea n	SD
1. Adapting curricula materials for pupils with LD	387	1	4	2.27	0.89
2. Using assessment information to plan lesson	387	1	4	2.42	0.93
3. Modifying learning content for pupils with LD	387	1	4	1.94	0.87
4. Using different instructional strategies	387	1	4	2.06	0.89
5. Using IEP to support pupils with LD	387	1	4	1.38	0.77
Valid N (listwise)	387				

Source: Survey data, 2012

In order to establish whether or not a relationship exists between the responses of teachers on the CA Scale and what they actual do in practice, 50 teaching sessions of the sampled respondents (n=387) were observed. The result (Table 2) shows that the relationship between the two variables is not significant and negative ($r = -0.10$, $p = 0.48$). This suggests that teachers responded that they had limited competence in curricula adaptation on the CA Scale, and in practice, they were, indeed, not adapting curriculum to support children with LD in the general education classroom.

Table 2: Correlations between observed and perceived competence in curriculum

		Observed competence in curricula adaptation	Perceived competence in Curriculum adaptation
Observation data curricula adaptation	Pearson Correlation	1	-0.10
	Sig. (2-tailed)		0.48
	N	50	50
Curriculum adaptation	Pearson Correlation	-0.10	1
	Sig. (2-tailed)	0.48	
	N	50	50

Source: Survey data, 2012

Curriculum adaptation and teachers' competence in teaching children with LD

The result in Table 3 shows that there is an association between curricula adaptation and teachers' pedagogical competence in teaching children with LD in the general education classroom. A higher percentage of the teachers, 32.1% (124), reported having "Limited competence" and "Poor skills" in curriculum adaptation. Whereas 24.4% (94) concurrently had Good skills and Moderate competence in curriculum adaptation, only 11.4 % (44) claimed to have "Very Good skills" and "Adequate competence". Furthermore, the test result indicated that χ^2 statistic (df) = 215.697 (4), P -value < 0.00. The result of Cramer's V was = 0.53 with P -value of 0.00. This implies that there is a strong statistical relationship between curricula adaptation and teachers' competence in teaching children with LD in the general education classroom. GES, therefore, should encourage teachers to increase their curricula adaptation practices in order to meet the needs of children with LD in the general education classroom.

Table 3: Cross-tabulation of curricula adaptation and teachers' competence

			Curriculum Adaptation			Total
			Poor Skills	Good Skills	Very Good Skills	
Curriculum Adaptation	Limited	Count	124	38	2	164
		% of Total	32.0%	9.8%	0.5%	42.4%
	Moderate	Count	38	94	20	152
		% of Total	9.8%	24.3%	5.2%	39.3%
	Adequate	Count	7	19	45	71
		% of Total	1.8%	4.9%	11.6%	18.3%
Total	Count		169	151	67	387
	% of Total		43.7%	39.0%	17.3%	100.0%

χ^2 statistic (df) = 215.697^a (4), P value <0.00. Cramer's V value = 0.528, P value <0.00 a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 12.29.

Source: Survey data, 2012

Teachers' experience of adapting curricula for children with LD in classrooms

The qualitative phase of the study generated two categories of themes: meeting the learning needs of children with LD and schedules and instructional times. The finding is presented in a narrative form. Only few informants' voices are utilized to generalize for the rest of the interviewees (internal statistical generalization).

Meeting the needs of children in the classroom

The qualitative study reveals that teachers faced increasingly difficult challenges meeting the learning needs of children with LD in the general education classroom. The situation of teachers, who benefited from non-governmental organizations (NGOs) support, was even better compared to teachers who did not. The support some teachers received from NGOs included training on child-centered methodologies, curricula differentiation and teaching and learning materials. Such NGOs included UNICEF, VSO, GTZ, FDF and other local NGOs. The few supported teachers were familiar with inclusive teaching practices. But the bulk of teachers who did not receive such support depended largely on the traditional ways of teaching. They said that they lacked the most vital teaching and learning aids/materials including chalk, furniture, text and exercise-books. When researchers asked the teachers to tell them how they managed to adapt curriculum to meet the needs of children with LD, they said:

Most of us do not have any other option than to use lecture method in the classroom. In fact, the basic things that should be made available for us to teach are not available. To use techniques like child-centered methods require lots of resources and materials and they are just not available in schools. For example, we all know that chalk is a basic necessity in all classrooms. It would not be a good practice to teach without demonstrating on the chalkboard. So, the chalks are supposed to be provided by the GES. Can you believe that sometimes we come to school and do not get chalk to use? In my school for instance, GES hasn't provided chalk for the entire year, not to talk of textbooks and other TLMs. So, in this school, we have our rule that no child should wear a slipper (sandals) to school. Those who violate this rule are made to pay 10 pesewas

(less than one cent). This money is collected by the pupils and used for chalk. Any day this money is not available to buy chalk, we sit at the office and allow the children to play for the whole day. If the teacher is kind, he or she will use his or her own money to buy the chalk and teach. Although I learnt some schools are now using markers, when we get to that point, teachers will not be able to teach at all because they may not want to use their salary for markers since they are expensive (verbatim expression of interviewee).

The interviewee revealed that the basic resources that should be available for any effective inclusive education practice is not available in schools. Also, teachers talked about how they met the needs of children with LD in regular classrooms in under-resourced schools.

Researchers: *I can see that you have limited furniture, textbooks and classrooms. Please tell me how you meet the needs of learners under this condition?*

Teacher Henriatta (not real name): *"It is funny the way we teach here"* she said:

We run six-classroom system in the school. But we don't have enough classrooms to accommodate all the pupils. So, we have to think strategically. Class 2 has 51 pupils and class 4 has only 35 pupils. So we have to combine the two classes (class 2 and 4) in order to accommodate all the pupils. That is the only way we can accommodate all the children because the remaining classes have more than 51 pupils in each (verbatim expression of interviewee).

Teacher Henriatta explained that *"In a situation where this type of grouping ought to be done to ease tension in school, teachers described it as a compulsory multi-age teaching"*. In one of the focus group discussions, teachers unveiled that although the compulsory multi-stage teaching made accommodation of all pupils possible; it was difficult to meet the needs of all learners. It made class management, instruction delivery and assessment of pupils' progress cumbersome. Fascinatingly, when the researchers probed further to find out if the compulsory multi-stage teaching solved the tensions of classroom shortages in the school, teachers replied affirmatively. But teacher Feruza (a class 4 teacher) explained further:

Yes, but with some problems. It is not normal to force two classes into one, especially when two teachers are teaching simultaneously; the two voices are interrupting each other. I don't know how the pupils feel. Our voices should be confusing them. But we have to carry on, that is the only way we can handle the situation. Alternatively, I sometimes wait for Henriatta to finish before I start my lesson. But then, we waste a lot of time.

Yes, Teacher Henriatta interrupted: *I have been feeling the same way, the two classes distract each other and it is affecting the teaching process. But the children may not tell how it affects them too. But this is the affect. We have never discussed this problem together, because we all know the problem and the goal we are trying to achieve. But, I didn't know that when she uses morning hours to mark register and homework, it is because she is waiting for me to finish teaching before she can start her lessons. That*

could also be a way out. Honestly, it is annoying teaching at the same time in one class (verbatim expression of interviewee).

Indeed, it was obvious that distractions and confusions were unavoidable in compulsory multi-class teaching. Teacher Henriatta again said, “*Sometimes no matter how we try to stop the children from playing during lessons, they always find their way to do it*”. As they kept narrating their story, the researcher were deeply reflecting on the outstanding characteristics of these two classes, pupils’ seating arrangement (pupils sat facing each other at the back), teacher-pupil relationship and the sonority of the teachers’ instruction without its corresponding concrete examples.

The pedagogy in those classrooms also boiled down to what Freire called “narrative education” (1970). It was obvious that the teachers’ phenomenological experiences of teaching included compromises to teach separate classes in one classroom, empathizing with the pupils, their judgment of teaching practices and their own evaluation of the experiences gained through teaching under such conditions. Subsequently, the researchers empathized by restating what the teachers said earlier: “... *the two classes distract each other and may be affecting pupils’ learning*” and then asked: if compulsory multi-stage teaching distracts teaching and learning process, how do you then meet the needs of the slow learners? Teacher Feruza commented immediately:

Impossible! You know, this can’t be done here. How can we do it? Sometimes when we are teaching, the big boys in the class four are stretching their hands hitting those in class two. In worse scenarios, they just get into the side of my class and beat the children up while we are there. And sometimes too, they will be throwing stones at each other as if they are in a war front. More to the point, there are certain activities we can’t perform with them in this kind of environment. Assuming one of us is to teach music and dance or do any group activity, we can’t teach this group together because the gap between them is too wide. Therefore, the question of paying attention to the slow learners is not possible. Therefore there is the need for teachers to shift in how they are presenting content (verbatim expression of interviewee).

Teacher Henriatta, explained:

Even in a typical normal classroom. Teachers cannot meet the needs of the slow learners. The environment does not allow you even if you want to do it. Even to organize a physical space for those who can’t hear or see very well is a problem. There is no axial for easy movement. Whether Ghanaians like it or not, this phenomenon affects teaching and learning tremendously (verbatim expression of interviewee).

In schools such as that of Henriatta, the common solution to inadequate textbooks was to write the entire passage on the chalkboard for pupils to copy. That was the only means teachers could ensure that all pupils participated in lessons. Some of the teachers expressed their views in the following script:

In my school, class four English reading books are only ten copies. They are to serve more than 56 children any time we have English language. So, we have to copy the entire passage on the blackboard for them to copy. Besides, the classrooms are packed with children and it is very troubling to teach using any other method apart from the lecture method. Therefore, we are not able to focus on the slow learners or give them the necessary attention they need. Even to put the slow learners into different groups so that their colleagues could help them is a problem. I have tried this method many times and wasted my time in the end. It was difficult to control the groups. Even in the normal class, it is difficult to attend to or have time for all of the students. My intention was to cover the whole topic once and for all, while everyone gets the chance to participate actively. This did not work out well because we could not achieve the goal of the lesson (verbatim expression of interviewee).

Schedules and instructional times

Under the GES official rule, all basic schools that run one-session system must start school at 8:00 a.m. and close at 2:00 a.m. But all schools that run shift system must begin at 7:00 a.m. and close at 12:15 a.m. The afternoon shift begins at 12:15 p.m. and ends at 4:45p.m. Teachers, however, start school very late and close very early. In most of the cases, teachers in some of schools the researchers visited came to school around 9:30a.m and closed as early as 11a.m. In focus group discussions teachers said: “*most of us do not have ample time to adjust curriculum, and teaching pace to the children’s learning styles because we rush through lessons in order to leave school early or to cover much of the syllabus*”. The paragraph that follows exemplifies the level of commitment teachers have for the teaching profession.

It was exactly 8:43 a.m. when the researchers arrived at B3 School (pseudonym). There was no single teacher and pupils were everywhere playing. Later at 9:10 a.m. Mr. Thomson (pseudonym), the assistant head teacher of the school arrived. He was in his late forties and had also taught in the school for many years. “*I thought you were an officer from the District Education Office*” was the first remark he made after the researchers introduced themselves. Teacher Naima and Joseph (pseudonym) came together on a motor-bike twenty minutes after Mr. Thomson came. Teacher Naima was the only teacher the researcher interviewed in B3 School:

The researchers: Madam kindly explains to us some of the reasons why teachers in Ghana come to school very late.

Teacher Naima:

If a country pretends to pay its teachers, the teachers pretend to teach. Let be frank with you. You see, all schools in the country have the same official opening and closing times. They also have the same school days and vocations. And all syllabuses and schemes of work are provided by the GES and they are the same throughout the country. For example, all one session schools are supposed to start lessons at 8.a.m. and close at 2 p.m. likewise, all schools that go on shift system have to start at 7 a.m. and close at 12:15 p.m. for the afternoon shift to begin and then close at 4:45 p.m. This is how school

schedules and instructional times are supposed to be operating officially. But teachers plan the timetable to suit their school conditions.

Researchers: Does it mean that in practice teachers can teach the subject the way they find suitable to them?

Teacher Naima:

Yes, in practice, teachers have the freedom to arrange or teach school subjects in a manner that suit them. But they are required to teach 4 -5 subjects in a day out of the 8 subjects. But most of us usually teach less than four subjects in a day. The 35 minutes allocated for teaching a subject is not enough, giving the fact that most of the children do not understand lessons easily. We will overburden them if we teach more than two or three subjects.

Researchers: Could you kindly reflect on how effective teachers follow school schedules and instructional times.

Teacher Naima:

You see, officially we are supposed to be seven teachers, that is p1 to p6 plus kindergarten. Is it not seven teachers? But we are only five teachers here. But personally, I only know four teachers. But the fifth person I have never seen him or her. This means the four teachers including me have to handle the six classes in addition to the kindergarten. And the day any one of us hasn't come to school, the situation becomes worse. So, it is very tight here.

Researchers: Then kindly explain to me how you and your colleagues take care of the needs of slow learners in your tight schedules?

Teacher Naima:

It is difficult to talk about them. Throughout the country, all government schools follow the same curricula no matter your ability or disability or location. Once a child is in the normal government school, they have to use the same curriculum. But we have been encouraged to take pupils' individual characteristics into consideration. And that is where the problem lies. If one is to take children's individuality into account, can one finish a topic within a term? Almost half of the children in my class are slow learners. Let me give you an example, I have a 17 year old girl in my class, who has just started school this term. She is over age but has never been to school. Because of her age she is placed in class two. And there are similar cases in other classes. That girl may not necessarily be stupid or slow learner, but because of her background she has problems picking up lessons. I wish I could help her, but it is difficult to do so because there is no time to help her. And I don't even know how to do it.

In most schools, some children are considered slow learners either because they are the first people to start attending school (first generation learners) in their families or those children who have started school at a very late age. The researchers probed further to comprehend what she meant by the phrase “*because there was no time to help her*”. She elaborated:

None of us live in this community. Although there is a two or so bedrooms apartment for all the teachers in this school, there is no electricity, no good drinking water and if anything happens to us here at night, there is no hospital or clinic to go to. It takes each one of us more than an hour to get here. We arrive here sometimes after 9 and sometime 10.00 a.m. depending on the type of means one gets. And by 11a.m. to 11.30 a.m. we will be preparing to go back, though we are supposed to close at 2 p.m. officially. But one thing is important for you to know. We handle more than two classes and I can't handle two classes and be able take care of the slow learners. Even those in the cities can't do that. Because after teaching each subject, one has to give exercise to make sure that more than half of the pupils in the class understand the lessons. These exercises have to be marked. We can't do everything.

Discussion

The results of the Chi-Square test showed that there was a statistical relationship between curriculum adaptation and teachers' pedagogical competence (χ^2 statistic (df) = 215.697(4), P -Value < 0.00; Cramer's V value = 0.53, P value < 0.00). This suggests that teachers' ability to teach children with LD in the regular classroom depends on their competence in curricula adaptation. Therefore, curriculum adaptation is one of the key competency domain GES must not ignore if the inclusion of children with LD in the regular classroom is to be successful. While the study finds that curricula adaptation is strongly related to teachers' pedagogical competence in teaching children with LD, the joint frequency (Table. 3) indicates that majority (32.1%) of the teachers have “Poor skills and Limited competence” in curricula adaptation. Likewise, an examination of the individual items on CA Scale (Table 1) has shown that teachers are not making significant use of the items related to curricula adaptation. They have “Limited competence” in all the five items. Thus, item 2(Using assessment information to plan lesson) has the highest mean scores of $M=2.42(SD=0.93)$, implying that teachers have “limited competence” in using assessment information to plan lessons. The same explanation applies to item 1(Adapting curricula materials for pupils with LD, $M=2.27, SD=0.89$), item 4(Using different instructional strategies, $M=2.06, SD=0.89$), item 3(Modifying learning content for pupils with LD, $M=1.94, SD=0.87$) and item 5(Using IEP to support pupils with LD, $M=1.38, SD=0.77$) respectively. Since the mean scores of the items are within “1” to “2” (No competence to Limited competence), it suggests that teachers, in this study, have limited competence in adapting curricula for children with LD in the regular classroom.

Correspondingly, in the qualitative phase of the research, most teachers related that they had challenges adapting curricula to address the needs of children with LD in regular classrooms. In the same vein, the findings from the observed teaching sessions have revealed that children performed poorly. Teachers did not adapt curricula objectives, content and materials to the levels of the learners' abilities. In addition, they did not incorporate learners' interest and background information into their lessons plan and instructions. None of the teachers observed or

interviewed, for instance, more attention on children who experienced LD as a means of adapting curricula and instruction to meet the needs of the learners. All learners, independent of their ability and disability, used the same curricula and were taught with the same instructional strategies. Teachers' difficulties in adapting curricula to the needs of learners were clearly expressed in the following extract:

It is difficult to modify curriculum to meet the needs. We are not able to satisfy the needs of the normal children, not to talk of the slow learners. It is even more difficult when we are forced to combine two classes into one. In such classes, we don't even think of them [slow learners] because of the workload and time constraints. Even if we have the time, how to do it is another problem. Practically, it is impossible to meet every child's needs in a learning environment. We have not yet acquired that knowledge (verbatim expression of interviewee).

Interestingly, this finding is consistent with a study conducted in Botswana. Mukhopadhyay (2012) found that many children with disabilities did not succeed in general classrooms due to teachers' lack of time and knowledge to differentiate curricula materials and learning content to meet the needs of learners with disabilities. Due to that, learners with disabilities were excluded from teaching and learning process in the general classrooms (Mukhopadhyay, 2012).

Also, some teachers gave extra time for certain children to complete their learning tasks. But they did not allow extra time during class test for children with LD to complete their tests. One of the teachers explained why that was not possible:

We teach all the children the same subjects and topics, and give them the same class work and exercise. And they must take the same examination or test. Even though we know that some children perform better than others, they all have to write the same test. We will be discriminating if we decide to give the slow learners easy test and give the good one difficult test. The children themselves will complain that we don't like them. And they will be teased by their peers. In addition to this, GES does not have any regulation telling us that we should give extra time to the slow learners during class test or examination (verbatim expression of interviewee).

In the same way, the study unearthed that teachers did not prepare teaching and lesson notes prior to teaching a lesson. Interestingly, most of the adaptations in curricula such as material selection and adaptation, goal setting, interest and background of learners, instructional strategies and assessment procedures occur at the lessons preparation stage. Yet, most teachers did not see the value of lesson notes, let alone using them during instruction. In connection with this, one of the teachers said:

Lesson notes preparation outlived its usefulness in the Ghanaian school system. Even the education officers, who have monitoring responsibility of our activities, pay lip service to it. They don't care about it. Whether we have it, use it or not. Once we can get them something to make them happy, they leave us in peace. The officers don't observe how the teachers teach using the lesson notes; neither do they check exercise books of pupils

to ensure that lesson notes presented to them, in fact, were used during teaching (verbatim expression of interviewee).

This finding is interesting in the sense that lesson notes preparation and its use in teaching is fundamental to any effective inclusive teaching. Recent thinking suggests that effective inclusion is dependent on the decisions teachers make during lesson notes preparation, instruction and for instructional adaptations (Kuyini, 2013, Shulman, 1987). In inclusive teaching, lesson notes help teachers shape and scrutinize decisions they make about the aims and objectives of the lesson, teaching and learning materials selected, teaching strategies adopted in teaching, learners background and interest (Shulman, 1987; Yuen et al., 2005). To a large extent, these processes and practices are under the control of the regular teacher. So, if teachers do not realize the value of lesson notes preparation, prioritize adaption of curricula objectives and teaching strategies, children with LD will, presumably, continue to experience difficulties in the school.

Hido & Shehu (2010), for instance, asked teachers in Albania about the possible causes of children's LD in general education classrooms. They found that teachers did not think about or reflect on their own methods of teaching, the way they communicated, their attitudes and behaviors towards learners, their instructional styles, actions, skills and how their position of power in classroom affected the way learners learnt. Only few teachers attributed the problem to curricula and lesson notes preparation. Yet, majority of the teachers blame children for not doing enough to learn. Similarly, contemporary views of effective inclusive teaching lead educators to believe that when learners' needs are not met in the learning environment, they indirectly feel or become alienated, marginalized and excluded from the learning and its environment. This feeling can invite variety of negative outcomes such as loss of self-esteem and poor motivation can easily occur (Kuyini & Abosi, 2014; Author, 2007; Kuyini & Desai, 2008; Hido & Shehu, 2010; Shulman, 1987; Ainscow & Goldrick, 2010; Mastropieri & Scruggs, 2000). In that way, learners' difficulties are compounded by teachers' teaching practices and lack of pedagogical competence.

It is clear from the above discussion that teachers encounter challenges in adapting curricula. Two main factors could be attributed to this problem: 1. Teachers might not have knowledge of curriculum adaptation due to their poor knowledge of inclusive teaching practices (Agbenyega & Deku, 2011; Author, 2007), and 2. They might generally be unwilling to adapt curriculum because it might be considered an additional workload for under-resourced schools and teachers especially in an environment, where the basic teaching and learning materials are so hard to come by. For example, some of the interviewee revealed that the basic teaching and learning material such as chalk that were not available in their schools. If this basic teaching and learning materials are not available, it would surely be hard for teachers to adapt curricula and teaching to meet the needs of learners, particularly those with LD. In such situations, teachers do not even have options than to rely on the traditional methods of teaching. This also indicates that Ghana inclusive education policy is at risk since teachers are likely to face serious problems in implementing the policy. One key issue about inclusion is that resources should be available and accessible to teachers to support children in schools. Once these basic materials are not available, teachers, who already complain of large class size, low salary, and workload, would lose confidence and enthusiasm to practice inclusion. It was also one of the reasons all governments were encouraged to provide resources for effective inclusion in schools during the Salamanca conference (Salamanca, 1994).

In respect of this finding, Shulman (1987) consistently reiterated that effective learning will not take place, and some learners will be excluded from teaching and learning once curricular objectives, materials and content are not prioritized and carefully adapted to learners' needs. Teachers might also consider its application in the general education classroom demanding and complicated. For instance, a study conducted in elementary school showed that teachers were generally unwilling to adapt instructional practices to include children with diverse learning abilities in general education classrooms (Kuyini & Desai, 2008). Other studies indicated that regular teachers were, however, more willing to adapt instructional practices when they were incorporated into the overall classrooms routines than to accommodate individual learners' needs (Schumm, Vaughn, Gordon, & Rothlein, 1994).

In view of this, it is possible that a traditional approach of using inflexible, prescriptive and examination-driven curriculum during instructions might create inequalities in terms of access to curriculum and knowledge acquisition among learners in the classroom. These practices again can lead to exclusion and school dropout of children with LD as their needs might not be met in the regular classroom.

Conclusion and Recommendation

Generally, the results of this study showed that teacher's competence to teach or include children with LD in the general education classroom depends on their pedagogical competences in curricula adaptation. Once teachers' competence in curricula adaptation and classroom practices are enhanced, they are more likely to have the capacity to address the needs of children with LD in the general education classroom. Therefore, the GES should provide intensive training in inclusive teaching practices for the general education teachers. It is still unclear what this training content should be when there are such limited resources in the schools. The question here is what types of strategies will one provide for teachers in a setting with such limited resources? Secondly, the teaching conditions in most schools are not conducive and need to be improved for effective teaching and learning. In the case of rural teaching conditions, teachers lack social amenities such as clinics, portable drinking water, electricity, good roads and trained teachers. On the other hand, in the semi-urban and urban schools classroom are overcrowded and often lack appropriate teaching and learning materials (TLMs).

Here, apart from effective teaching strategies that work in the classroom settings, teachers should be given training on effective collaborative strategies. This type of training should concentrate on how teachers can work effectively with parents, community leaders and governmental and non-governmental organizations. The issue here is that Head teachers and their teachers should be able to communicate their needs out clearly to stakeholders in education (parents, community leaders and governmental and non-governmental organizations). Sometimes there are non-governmental organizations such as IBIS, UNISEF etc. who are ready to support in situations teachers and learners in this studies found themselves. Also, those supporting organizations should always conduct effective needs assessment before providing any support, training and other material resources to schools. When these resources are provided, teachers should be trained on how to use them in their teaching and learning processes and be monitored. One key issue that reduces the quality of in-service training programs is the way trainers or facilitators

and training materials are selected. Therefore, trainers for the inclusive teaching practices who have the appropriate skills, experiences and the background should be selected for such training. The selection should not be based on “whom you know and who knows you” process. This issue of “whom you know” is what subtracts the quality of our education system today. Regarding the multi-grade teaching, where teachers were forced to combine classes due to lack of teachers, space and teaching and learning materials, we need to find ways of creating more opportunities for teachers and learners. But what resources can we use to create alternative ways of breaking up this transmission model of teaching in limited resourced schools so that all children will have the opportunity to benefit from instruction? This is a challenge. As researchers and teachers, we need to start thinking of alternative ways learners in limited resourced schools can be supported to succeed.

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About the Authors

Okechukwu Abosi was a professor of special education at university of Brunei but currently teaching at the University of Botswana.

Abdul-Razak Kuyini Alhassan holds a PhD in Special Education and currently works at the University College of Southeast Norway as Associate Professor in Pedagogy (Førsteamanuensis).

Parents are the Experts: Understanding Parent Knowledge and the Strategies They Use to Foster Collaboration with Special Education Teams

Colby Kervick, Ed. D

Abstract

The Education for All Handicapped Children Act (1975), PL-94-142, mandated parent participation as a required component of the provision of special education services to children with disabilities. It is widely recognized that a collaborative teaming approach is the most effective strategy to foster parent participation (Friend & Cook, 2010; A. Turnbull, Turnbull, Erwin, Soodak, & Shogren, 2011; R. Turnbull, Turnbull, & Wehmeyer, 2010). This article explores selected findings from a qualitative research study that investigated the perspective of parents of children with disabilities in order to understand: 1) how they acquired and shared knowledge about their child's disability, 2) how they navigated and negotiated special education processes and 3) how they fostered collaboration with professionals. By exploring the issue of collaborative teaming through the lens of parents, the study offers insight about the expertise of parents, the dynamics of collaborative teaming and the multi-faceted nature of the "parental role."

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Parents are the Experts: Understanding Parent Knowledge and the Strategies They Use to Foster Collaboration with Special Education Teams

Throughout the history of special education, parents have played a fundamental role in guaranteeing that all children with disabilities in the United States of America have the right to public education. Parent advocacy in the 1960s and 1970s helped to ensure that the doors to public schools were opened to children with disabilities. Moreover their efforts established parent and student participation as a key principle of the Education for All Handicapped Children Act (EAHCA) in 1975. This principle has been upheld in subsequent reauthorizations of the law as evidenced by the following language in IDEIA (2004):

Almost 30 years of research and experience has demonstrated that the education of children with disabilities can be made more effective by...strengthening the role and responsibility of parents and ensuring that families...have meaningful opportunities to participate in the education of their children at school and at home.

Despite recognition of the legacy of parent advocacy and subsequent legal requirements for parents to participate in the special education process, many families of children with disabilities continue to feel marginalized in special education meetings and processes. This sense of inequity grows from a perception that the professionals in the meeting hold more power and that their "expert" knowledge carries more weight than parental knowledge (Valle, 2009).

Much of the recent literature on collaborating with families in special education focuses on strategies, which professionals can adopt to foster increased parent engagement (Edwards & Da Fonte, 2012; Lo, 2012). For example, Staples and Diliberto (2010) offered strategies for engaging parents with a primary focus on establishing communication systems. Other scholars suggested tips for facilitating successful Individualized Education Plan (IEP) meetings, (Cheatham, Hart, Malian, & McDonald, 2012; Lo, 2012; Mueller, 2009). In addition, recent literature has unpacked many of the barriers parents faced in collaborating with schools, including the challenges school professionals encountered when working with families from diverse backgrounds (Blue-Banning, Summers, Frankland, Nelson & Beegle, 2004; Harry, 2008).

Although the literature on strategies for professionals and the literature on barriers to collaboration have provided some insight into what is not working in collaborative teaming, it is important to note that both bodies of work have focused primarily on professionals' perceptions of and solutions to challenges related to collaboration between parents and school professionals. To improve parent and professional partnerships and outcomes for children with disabilities, it is necessary to understand parents' perspectives on the experience of collaborating with schools (Blue-Banning et al., 2004; Valle, 2011).

Interpreting the Law

Over the last 30 years, schools and families have grappled with how to best meet the intent of the law and how to form effective partnerships. Research on parent participation in special education has evolved from examining rates of participation and parental satisfaction to offering frameworks and strategies for creating equitable teams (Harry, 2008; Shepherd, Giangreco, & Cook, 2013). Early studies conducted after the passage of the EAHCA in 1975 revealed that participation was mainly characterized by getting parents to sit at the table (Vacc et al., 1985; Vaughn, Bos, Harrell, & Lasky, 1988) whereas now researchers and professionals are grappling with what it means for parents to achieve equity in decision-making (Cook, Shepherd, Cook, & Cook, 2012; Ruppert & Gaffney, 2011; Staples & Diliberto, 2010). An underlying assumption about parent participation in special education has been that collaborative teaming is the model for assuring equal participation. By collaborative team it means that parents are considered to be equal partners in making educational decisions. However, this partnership is not explicitly stated in the language of the law (Welch, 1998). Although there is a legal requirement for shared decision-making, little direction is provided to special education teams about how to meet that expectation. As a result, a number of researchers have examined the practice of partnering with families and collaborative teaming in special education (Blue-Banning et al., 2004; deFur, 2012; Edwards & Da Fonte, 2012; Harry, 2008; Turnbull et al., 2011; Turnbull, Blue-Banning, Turbivell, & Park, 1999; Welch; Whitbread, Bruder, Fleming, & Park, 2007). The literature provides not only definitions of collaborative practice (Friend & Cook, 2010; Mostert, 1996; Villa & Thousand, 1999) but theoretical frameworks, which offer strategies to enact collaborative practice (Blue-Banning et al., 2004, Fialka, 2001, R. Turnbull et al., 2010, deFur, 2012). Researchers have deconstructed the complexity of the task and have continued to probe different facets of the teaming experience including parent voice (Hess, Molina, & Kozleski, 2006; Valle, 2009), parent satisfaction in the IEP process (Fish, 2008) and the interpersonal elements of teaming (Angell, Stoner, & Shelden, 2009). In practice, effective collaboration is a

complex process that requires intentional effort. Despite an overwhelming response from scholars and practitioners about how to collaborate with families effectively, there are still significant barriers that impact parent participation (Blue-Banning et al., 2004; Harry, 2008; Staples & Diliberto, 2010). To some degree, special education teams face challenges struggling to comply with the law while navigating the complexity of forming collaborative partnerships (Mueller, 2009; Turnbull et al., 2011). This is complicated by the rhetoric “parents are the experts” but in practice what does that mean? If professionals abide by that philosophy, why do so many parents of disabilities feel that their knowledge and expertise are undervalued by school systems? This study deeply explored what parent expertise means to parents and how parents operationalize it to foster effective collaboration with school professionals.

Research Design

This research was a qualitative case study bounded within a northeastern state. The unit of analysis was the stories of 12 parents. This article captures two primary themes from the study that explore how parents express their expertise and form collaborative relationships with professionals.

Site and Participant Selection

Sampling. Purposeful sampling was used to recruit participants. Purposeful sampling is a strategy used to select participants who will “purposefully” contribute understanding of the research problem (Creswell, 2007).

Recruitment. Recruitment of families occurred through several channels including contacts with a non-profit advocacy organization for families of children with disabilities, special education professionals and word of mouth. The 12 participants were drawn from different geographical regions of the state representing nine different school districts and at least 22 different school experiences.

Demographics. The study included 10 mothers and two fathers, nine of who had completed four-year college degrees. The remaining three had completed some level of college education. Ten of the participants identified themselves as Caucasian with two identifying as non-Caucasian. Additionally, of the 12 parents recruited, seven had children with high incidence disabilities including autism, learning or language disabilities or emotional disturbance. Five parents had children with multiple disabilities or developmental delay. Seven parents reported being partially satisfied with their experiences with special education whereas four reported being very satisfied and only one stated “less satisfied.” The ages of their children at the time of the study ranged from pre-school through post-secondary. Demographics of the participants are summarized in Table 1.

Table 1
Study Participants

Participant Pseudonym	Current age of Child	Disability Type
Will	Preschool	Multiple Disabilities
Andrew	Elementary School	Autism
She’ Ra Monroe	Elementary School	Developmental Delay

Kelly	Elementary School	Traumatic Brain Injury, ADHD, LD
Lulu	Elementary School	Language Impairment
Lindsay	Elementary School	Autism
Bethany	Middle School	Multiple Disabilities
Lina	Middle School	Multiple Disabilities
Holly	High School	Emotional Disturbance
Jane	High School	Multiple Disabilities
Katie	High School	Language Impairment
Maggie	Post-Secondary	Language Impairment

Data Collection

Interviews. Data were collected primarily through interviews. Twelve interviews were conducted with either a mother or father of a child with a disability. The interviews lasted between 45 minutes to two hours and used a semi-structured interview protocol. Questions were primarily open-ended and designed to allow the parents to reflect on their experiences with collaboration and teaming. The interviews also provided an opportunity for parents to draw, sketch or visually represent their experiences. This technique has been found to elicit deeper emotional responses from participants (Kearney & Hyle, 2004; Vince, 1995). Participants were asked to visually represent their experiences with their child's special education team and then to describe what the image represented.

Focus forum. Upon completion of the interviews, a focus forum was scheduled as a follow-up to the interview process. Five parents elected to participate in the focus forum. It was held in the evening and entailed a two hour structured conversation focused on emerging themes from the interviews.

Data Analysis

Several methods were used to analyze data: memoing, coding, and cross-case analysis. Through these techniques themes about parents' experiences with collaboration were identified.

Coding and memoing. Field memos were written after each interview and the focus forum. Through memoing, preliminary codes emerged that informed analysis of the interview transcripts and focus forum notes. The initial coding phase was characterized by recording first impressions of the data (Saldana, 2009). Subsequent coding and analysis of the interview data revealed six themes. Codes were finalized after conducting the focus forum and through this process resulted in 39 codes embedded within five themes.

Cross-case analysis. A third type of data analysis employed was cross-case analysis (Miles & Huberman, 1994). Each interview represented a case. Using cross-case analysis, a matrix was created that identified which participants provided data to support identified themes. Cross-case analysis of the data provided an accessible structure to examine codes and analyze themes that emerged.

Data Representation

Qualitative research is characterized by providing the reader a “complex description and interpretation of the problem” which includes voices of the participants (Creswell, 2007, p. 37). Data are presented in this article in two primary ways: 1) giving voice to parents’ unique or composite experiences within analysis of the themes, and 2) visual representation. Themes are written to maximize the voices of participants and to use their narrative as the vehicle to explore the main ideas of the theme. Additionally, participants were asked to draw their experiences with collaboration. According to Kearney and Hyle (2004), drawings allow the researcher to explore emotion. Through their research they found drawings unlocked participants’ feelings. Using a drawing prompt provided an alternative method to generate the perspective of parents beyond the interview questions posed. This article includes one participant drawing.

Data and Methodological Limitations

Trustworthiness

Creswell (2007) recommended adopting at least two strategies to evaluate the accuracy of qualitative research findings. The following procedures were employed in this study: a.) Triangulation of data through analysis of several types of data including interviews, focus forum and artwork; b) peer review through soliciting input from a colleague; c) member checking by having participants read transcripts before coding began.

Findings

Two primary themes that emerged from this study included:

- “Knowing My Child”- in which parents express their roles as experts about their children and reflect on the degree to which their knowledge is valued by school teams.
- “Constructing a Seat at the Table”- in which parents, reveal the strategies they employ to form collaborative relationships with school professionals.

Theme 1: Knowing My Child

Adopting a Role

Throughout the interviews participants conveyed the explicit knowledge they had about their children’s needs and the multitude of ways they share that knowledge with professionals. Participants articulated numerous roles they adopted in caring for their child. Through these roles parents revealed not only the knowledge they held about their child, but displayed the complexity of what it means to be “the parent” of a child with a disability.

Parents as case managers. Although the term “case manager” is often used in the context of professional roles, participants in this study communicated many examples of how they view themselves as case managers and as the ones who had a clear understanding of the whole child. Therefore “knowing my child” from the parent lens meant not only having long term intimate knowledge of their child’s needs, but also coordinating all facets of their child’s life, including multiple service providers.

Early in her son's life, Bethany created a visual display to share with service providers to help them understand the vast network of individuals providing service to her son as well to help convey an understanding that she viewed herself as his ultimate "case manager." Bethany shared, "I kept hearing that everyone was [her son's] case manager, but everyone was a case manager in their own realm and so there were six or seven of them and I was ultimately the case manager who connected all of those hubs." When children have complex needs, oftentimes there can be a variety of agencies and professionals providing services. Parents saw themselves as the cornerstones, managing the professionals, to ensure that the child's needs were getting met. This often included managing opposing personalities in order to keep the focus on what parents viewed as their long-term goals.

For Holly this process of "managing" the team became quite burdensome. As lines of communication broke down between the agencies serving her child, she found herself making multiple phone calls and having numerous separate meetings outside the team meetings to make sure each individual was clear about her perspective and what her son's needs were. Managing the relationships of all the team members was a central piece of how she ensured that her son's needs were getting addressed. Holly was very upset about this, recalling:

It's ridiculous because everyone has their own agenda, everyone has their own defenses, so like I want to have a conversation with like case management on what they're doing, I can't have it at that meeting because school's jumping all over them for something and then DCF is putting their two cents in, which is fine because I do like our DCF worker a lot, and then I have the LEA saying we should do this, so I can't, and nothing is settled. It's awful.

She remembered counting 40 emails that circulated among team members with regard to picking dates for one meeting. Her frustration mounted as her son's behavior escalated to the point where she had to call the sheriff's office on a frequent basis. At one point the sheriff's office stepped in as respite providers on days her son was sent home from school or was struggling at home. Her son experienced five different school settings in multiple locations with rotating teams of professionals. Like Holly, other participants described juggling multiple personalities and coordinating up to 20 service providers in meeting the needs of their children. This reality was captured through a drawing Maggie produced in the focus group (Figure 1) in which she represented the parent as a "juggler" who had the sense of the whole child and coordinated the integration of all the different types of services the child accessed some school related, some not. In describing the drawing she noted:

That parent is a juggler, although the balls interact and overlap but I feel like the parent is the one who has all the balls, is the one touching all of them. There's mental health, emotional health, education, there's social life, the family interactions and just at home life and how things go there. That all this is part of the whole picture of your child's life and making their life run smoother and part of their overall education.



Figure 1. Maggie’s depiction of parent knowledge. When asked to depict “parent knowledge” Maggie captured the multiple parts of the child’s life that the parent is knowledgeable about and manages including: 1) physical health, 2) education, 3) mental health, 4) social and 5) family.

Parents as interventionists. The reality is that many children with disabilities are not just receiving interventions in school settings; they are also receiving intervention at home. Andrew and his wife were actively engaged in networking with others and using their own resources to bring to bear on educational decisions for their son. He recalled referencing books on child development and tracking his son’s progress towards meeting developmental milestones. Additionally, he and his wife spent hours working with their son to develop eye contact. He described an exhausting routine early in his son’s life where he and his wife were juggling work and providing intervention:

She’s coming in and I’m going out. And so she’s doing the tuck to bed and then she gets some sleep and gets up in the morning and does the morning feeding, getting him washed and clothed and I come stringing in. I take him off to daycare, come home and go to sleep. Get up in the afternoon, run over to pick him up, we start daddy “face time” and the weekends it’s the other way around. She’s doing it and I’m working and sleeping and so 100% coverage by parents.

Lina applied her training as a nurse to assist the medical professionals in resolving her daughter’s feeding challenges. At first she faced resistance when sharing her perspective that oral feeding should continue to be a goal despite concerns by medical staff that her daughter might aspirate. She recalled:

Yeah I said “I would aspirate also if you squirt stuff in my mouth that I don’t want and leaving me flat on x-ray table.” So they said, “It’s my choice. You can go ahead and do it and if she aspirates that’s what it is.” She never aspirated. She never had aspiration pneumonia.

She’ Ra Monroe spoke of the importance of bridging between home and school and how much she appreciated when professionals would work with her son on skills or concerns that were being raised at home. Likewise, she envisioned that she also played a role in providing intervention. She expressed:

I'm there for him to solidify or to reinforce a lot of the learning. I'm by no means a teacher but I can give him the things they give me to teach him. I offer some different input on what might be motivators for him. I bring a lot of that into the school...so I bring all sorts of tools and stuff from home to create that bridge...

Parents as experts. Maggie shared the perspective that there is bridging between home and school and that the parents use their knowledge to provide intervention at home too. She recalled hours spent helping her daughter with homework and that she used the fact that she knew her daughter's memory was assisted by music to create songs to help her memorize information. Later she and her husband accessed music therapy through their own resources as an additional intervention to help their daughter. As she explained,

When you see your children you know what the, I guess what you could call, what the symptoms are. You might not know what they mean, whatever the disability or the issue, but you've seen them grow up. You know that age four she can't count to 10 so something is wrong here. I can't tell you what it is, but I'm the expert and can tell you this is what I see. And then when they start some of their information in the meetings and it's like they then, okay we'll take whatever we know from here but some what they know isn't, they're not seeing the whole picture. They're sort of seeing okay, we'll take this and we'll put a label on it and we'll run the ball with one play in mind. You have to look more than one play here because things kept showing up. So you have to keep looking back to the parent as, you are an expert here.

For Will and his wife, due to the rarity of their daughter's disorder, the information they shared with the team was often the most contemporary information available to assist professionals in developing interventions. He acknowledged that they provided 100% of the information regarding his daughter's needs to each new professional that they encountered. Will stated:

We provide all the information; we provide links to information and things like that. There's not a ton of information out there because it's a rare disease so there's only like 700 confirmed cases in the world right now so yea, we provide, nobody's ever heard of it whenever we talk to anybody.

Service providers change and in reality are only delivering intervention for a portion of a child's day. Participants universally expressed the importance of their role as a constant in their children's lives and acknowledged their long-term role as case manager, interventionist and expert on their children. As Bethany summarized: "We've been doing this for 13 years. Most of them are coming in for one. I respect their professional expertise and their knowledge and I expect them to respect mine which is, this is my life's work is raising my kids....".

Validity of Parent Knowledge One of the dynamics that some participants shared was the experience of feeling as if school based teams discounted information that parents brought to meetings about their children. Although parents did not always experience this as an outright dismissal, some parents noted feeling frustrated that items they felt were particularly important or urgent were overlooked or appeared to require additional professional expertise to validate

their perspective. Jane recalled turning to her son's pediatrician to reinforce a point she was trying to communicate to school professionals:

At the time [my son] had a pediatrician that had been with him since birth who was very supportive of us and I remember on at least two occasions and probably more, trying to make a point to the school but them not really hearing me. I didn't feel like they were understanding what I was trying to say or they were just flat out disagreeing with it and on at least two occasions I asked the pediatrician about this subject and he agreed with me and I asked him to write a letter. One time he wrote a letter and one time he actually came to a meeting and he said the same thing I did and they were like oh, okay, it was very immediate acceptance and agreement with him. I remember feeling simultaneously thank goodness he's here and why did he have to be here? He was saying the same thing I was.

Lulu experienced a similar dynamic in her role as an advocate for adoptive parents. She found that in her professional role she recommended to other parents that she accompany them to meetings so that school professionals would be more apt to listen. Lulu contrasted this with her experience as a parent where she did not feel heard but did not have the energy to fight with professionals over a service or decision that she did not believe was appropriate for her child.

Like Lulu, Kelly juggled the world of both parent and professional and noticed that even though the school-based teams that she has collaborated with around her daughter knew that she was an educational professional, it did not feel that her professional role afforded her more clout in meetings. She expressed:

And then the other piece is kind of the challenge of things, it seems like whatever the information about [my daughter] is being provided to any professional is more valid if it comes from a professional and it's really particularly interesting because I know that they know that I'm a professional and I know that they give me, I can tell, I know that they give me a different level, they assume a different level of knowledge and credibility on my part, but I still can tell at times like until I give them this information on a piece of paper, signed by a physician, it's not gonna be as real as it is just with me telling them and I don't really know why that is but I think it's a very real phenomenon.

Establishing Equity

Participants articulated a variety of ways that school professionals could foster a greater sense of equity beyond simply demonstrating that they valued parent knowledge. They articulated ways in which information could and should be shared and emphasized a need for frequent and open communication.

Sharing resources between school and home. Maggie and Lina felt that the elementary school professionals they worked with not only were receptive to their opinions on their daughters' needs but also were willing to share resources generously. Lina's daughter's medical needs were very complex and required numerous interventions by a variety of service providers. Lina valued the willingness of service providers to come to her home to watch how she provided care as well as their willingness to include her in decision-making and experimenting with new

equipment. She shared a specific example of the way in which she felt she was partnering effectively with a professional on her daughter's team:

The [physical therapist] is very good at introducing me to different like equipment or different opportunities that can go, like a tricycle, fitting special kids into a tricycle...so they had her try on those tricycles and then they said this is a better one for her and I go wow, I saw other kids doing this also. That was impossible for me to think she can ride a tricycle...that was a very good experience.

For Maggie, the experience of feeling like the team was sharing resources with her came when professionals on the team offered books as resources to provide her with more information about her daughter's language development. She' Ra Monroe echoed the value of feeling as if the team was providing resource beyond the scope of what was happening at school. After relaying a harrowing experience of her child letting himself out of her apartment in the middle of the night, she was touched by the special educator's advocacy to build a social story for him that addressed that home concern. He brought the social story home for her to be able to implement. That being said, participants highlighted that finding mechanisms to communicate information and establishing the nature of what information is important to share is also an essential component of "knowing the child".

Mechanisms for communication. One of the frustrations that some participants conveyed was that the structure and constraints of IEP meetings often negatively impacted their ability to share and receive information that they considered important to their child's program. Many of the parents interviewed noted that the traditional IEP structure did not allow nearly enough time for parents and school personnel to fully discuss the child's needs at home and at school and/or for parents and teachers to build positive and collaborative relationships. Lulu talked about opening up additional avenues for communication:

Really that piece is such a cliché but parents really are the expert on their children and I think, a lot of what I see it goes back to that piece about clear agenda for meetings because they often see professionals getting frustrated in meetings because we're sort of, the parent is sort of rambling about stuff that's not really on the agenda but pertinent to what's happening to the kid and I'm watching the special educators look at the clock because we have an hour and we're not even talking about the IEP goals yet. It sort of goes back to like making sure that there's other times and venues for the parents to talk about that stuff and they understand that, so they aren't saving up all the little concerns about homework or social stuff and for me an IEP meeting for where we really need to adjust goals or whatever it is. I think that's why parents do that because they feel like okay we've got everyone here.

Ultimately whether information was being shared through meetings or through other avenues, participants acknowledged that the process was extremely important and that school-based teams needed to recognize that information was flowing to other service providers. They wanted recognition that the point person for information distribution was the parent. Lindsay discussed a shift she has noticed in the medical system and urged others to consider the implications for special education teams. She explained:

It almost seems that a generation or two generations ago you went to a doctor, you didn't bring a lot of your own information, you didn't challenge what the doctor said, you took what they said and did it and it seems like the whole special ed area... still runs like an old school doctor's office where you show up and they will tell you what you will or will not do and instead it needs to be, "here's my information" and "here's how we are going to make it work for all of us" and "this is what I don't agree with," and it's okay for me to say that. I shouldn't be shut down for not agreeing.

While there have been advances in medicine in relationship to the ways patients share their knowledge with medical professionals, Lindsay believes that education is stuck in an old medical model. As parents talked about the process of information sharing and the importance of feeling heard in the process, they were also sharing the many strategies they employ to create a sense of collaboration with professionals.

Theme 2: Constructing a Seat at the Table

There are numerous resources that guide professionals in strategies to establish collaborative partnerships with families of children with disabilities (e.g., Lo, 2012; Staples & Diliberto, 2010; Turnbull et al., 2011). However, often times embedded in recommended practice is an assumption that the responsibility for creating and facilitating collaboration lies with professionals. The participants revealed a number of strategies that they use to facilitate collaboration with school professionals, evidence that creating collaborative relationships is not solely a professionally driven process.

Parent Strategies

One of the assumptions professionals may make in special education is that parents play a passive role in collaboration or that collaborative practice is achieved solely through the actions of professionals. Participants shared a number of strategies that they used to foster collaborative relationships with professionals. Some of these strategies were more visible and recognizable such as advocating for services, initiating meetings or requesting communication systems, while other strategies were subtler and reflected a side of collaboration that is not often identified in the literature such as the use of emotion. The process of collaborative teaming around a child is an emotional process, and parents utilized a variety of strategies that were emotional in nature. These included injecting emotion into the often bureaucratic structure of meetings, intentionally self-regulating their own emotions at times when they believed an emotional response might derail collaboration, or employing strong advocacy when they felt their child's rights were being violated. At other times it meant intentionally taking a more passive role as a strategy for self-care or to show confidence in the team's approach. The role of emotion is significant when we think about parent participation in meetings; often the meaning behind parents' actions may be misinterpreted as reactive or passive, yet from participants' perspectives those actions may be quite intentional. Lastly, interviewees described the importance of employing strategies to become as informed as possible about their child's needs as well as ensuring that team members had the best information available to inform programming. Parents used a variety of strategies to continue learning not only about their child's individual needs but how to navigate the system in order to effectively collaborate to ensure their children's needs were being met. Participants identified a variety of communication strategies that they felt contributed to a strong sense of collaboration on their teams. These strategies included frequent meetings, both formal and

informal, communication systems outside of meeting times and the use of questioning to promote deeper dialogue. I will address each of these strategies separately.

Meetings. Participants acknowledged the value of face-to-face meetings as one means to promote collaboration. Lina identified meetings as an important strategy for building collaboration with her team. She stated, “The meeting is a good time. Yeah. That you have your input in there. They always give you a chance to speak. School is very nice of giving me to share my concerns or expectations for them.” She added that the school also invited her input through a yearly survey on her level of satisfaction, which she appreciated. For Kelly, the meetings served as a time where she could not only contribute some of her ideas but also strengthen relationships with team members. She shared:

You know I try to come to meetings or conversations from a perspective of appreciation for everything that they’re doing and appreciation for the effort and skill and energy that’s going into what they’re doing which I hope gives me a little bit of room to also make some requests or suggestions.

Kelly also identified that scheduling meetings at times of transition was essential to ensure that no ground was lost between school years. Kelly found that initiating a meeting as a mechanism to prepare new team members in understanding her daughter’s needs started the year off on the right foot. She recalled:

This year was the first time that I kind of insisted on a meeting with her teacher and special educator within the first two weeks of school and I know that’s really hard to pull off and I felt uncomfortable doing it and I hadn’t done it in the past but I felt like this is the way that I can be sure that her teacher, that she’s real to her teacher. That we as a family are real to her and that [my daughter], the bigger picture of [my daughter] is sort of real to her because it’s not going to be coming to her in the what do we know section of the IEP.

She’ Ra Monroe conveyed the importance of having informal meetings rather than the periodic more formal team meetings. She identified her presence in the building where her son goes to school as an intentional strategy she employed to remain in frequent communication with team members:

I’m present. Honestly that’s my best strategy. When he was in day care, I volunteered for about an hour every morning and every afternoon, and everyone knew I was there. At his school now I’m just there. We do have to have formal meetings but I touch base with his teacher, his para, the principal, and his special educator at least once a week. I just saw the OT at [convenience store] the other day and we had a little impromptu meeting there kind of just eating a Snicker’s bar. Yeah, so that’s my best way. I don’t do email well and I don’t do that like real formal thing really well. Just kind of be there. “Hi”, I’m here.

Lulu also valued meetings, expressing that her main strategy for fostering collaboration was “lots and lots of meetings.” Although She’ Ra Monroe and Lulu found that impromptu meetings

worked well to establish communication, other parents identified that systems for communication like email or communication books were equally important.

Alternate forms of communication. In Maggie's experience teachers were busy and with her work schedule she could not be present during the school day to informally check-in on her daughter's progress or relay concerns. She found that email or communication books were useful in establishing more frequent communication between school and home. She stated, "I know how busy they are and so to do email, or notes that was another thing back and forth, keeping a notebook or a journal that went back and forth. That was really helpful." Bethany's son had multiple service providers and two paraeducators who worked with him, so to her, daily communication was essential. Furthermore she expressed that an important strategy she used at the beginning of the year was to ensure that all team members were up to speed on her son's personality, abilities, and needs. Part of her strategy was to ensure that the community in which her child attended school was aware of who he was, and therefore could use that information to build more authentic relationships. The process of sharing critical information to strengthen team members' awareness in building effective programs was a strategy that many interviewees identified was part of the roles they played to promote collaboration. Jane emphasized the significance of sharing that information, noting that it deepened the team's understanding of how to read her son in order to maximize the effectiveness of the interventions:

I think it's a really strong understanding of what is going to work and not work. So if they're thinking of how are they going to do certain lessons or how are they going to manage a behavior problem, how tired he is at the end of the day, what are the signs that he's tired. Those are all really important things to know to be able to teach him well and those are the things that the parents are going to know better than anyone I think. I mean I can look at them and say, well, when his left foot turns in a little bit, he's starting to get tired, but not everybody is going to notice that, you know? Or I can say, well, when he starts talking like this, then it's getting to be overwhelming for him.

Parents can provide a very "real" picture of the child and this information can prove invaluable in designing effective programs for children. However, there were times participants found that it was more difficult to have their voices heard. They recognized that the process of collaboration could be emotional and needed to involve a range of strategies to ensure that team members were staying focused on their child and working towards a common purpose. These emotion-based strategies are important for professionals to understand.

Emotion. Participants viewed their intimate knowledge of their children as a vital contribution that they made during meetings and through other modes of communication. Sometimes the information they shared tapped into the emotional side of what it means to be a parent of a child with a disability and reflected the sense of urgency as well as hope parents hold for positive long-term outcomes. At other times emotion was used in connection with strong advocacy. In contrast, participants recognized that the emotional nature of collaborating on behalf of their children took an emotional toll. So for some participants, choosing to take a step back to self-regulate and restore emotional balance was an intentional approach.

Andrew saw the act of expressing emotion as a unique perspective that he brought to the table when collaborating with his son's team. He expressed, "I find myself introducing compassion, empathy for the child, needs, strengths, and his tendencies. So I try as best I can to describe [my son] and what I think his needs are from my perspective as his dad." Lulu described this as making "them remember that my kid is a kid." She spoke about helping the team develop a whole child perspective. That being said, there were times when most of the parents I interviewed felt that they were not being heard or team members were not understanding their children's needs. At those times, parents adopted an advocacy posture. Katie described these moments:

And as a mother you have to decide, I know the system is understaffed and underpaid and so am I going to be nice and be accepting of that or am I going to be like a witch and make sure that you take care of my child because I know that the squeaky wheel gets the grease and so I understand how systems work and I know that if you force them to do it, they will do it and maybe if enough parents come together but that's the thing.

Will felt that being transparent about the steps a parent might take to advocate for something deemed necessary for one's child was an important part of the process of collaborating with schools and a strategy he openly employed when necessary. He felt that exercising due process rights and being clear about one's willingness to utilize that step was important to communicate to the teams he was working with. He provided this example:

And I think too when you're dealing with somebody, a special educator, somebody who's knowledgeable about the system, I know it's a lot cheaper for them to get an air conditioner than it is for us to go to due process and so, and I know that they know that I'll say, yeah, I'm done talking about it, we'll just go to due process.

That being said, adopting a strong advocacy stance was not always a comfortable position for parents.

Jane commented on watching other parents whom she described as "aggressive" in fighting for things they believed were important for their child. In her mind an aggressive approach was not conducive to collaboration, raising the question as to whether or not the use of strong advocacy was in fact an indication of a breakdown in collaboration. If parents value differing opinions and exchange of ideas, at what point does that process reach a tipping point where what the child's needs may get lost or consensus cannot be reached? Jane commented:

And again, I come back to, and gosh, I think this all the time, that I'm actually probably pretty good at this and a lot of times it's the parents who don't really collaborate but they are very aggressive and a lot of times they get the services but I still don't think that that's the right way to go about things. I've had several times over the years that I think, well, look at so and so, their kid gets this and this and they're the kind of parent that goes to the meeting and just launches an attack. There's no collaboration but they're getting what they want and sometimes I think, well maybe I should do that, but it's just not my style. I keep fighting for that collaborative, the elusive collaboration.

Collaboration is not always easy and participants identified that there were times when they felt they had to employ strategies to regulate their own emotion and frustrations as a form of self-preservation. Jane saw this as a stage in her own development moving from a reactive or defensive position to one in which she could employ different strategies to address areas of disagreement. She described that process:

Well I think again a lot of it has to do with my improved confidence and in the beginning, I remember feeling...taking things very personally and feeling very defensive often and part of that might be because of some of the players on the teams but I think more than that it was just where I was at. It was all new to me. I felt at a disadvantage so I think that made me, nobody teaches you how this all works. You have to learn it as you're going as a parent and it's not easy. You're dealing with a lot while you're trying to learn this, all the relationships, the laws, and the rights. It's just very complicated and so I would often, because I felt at a disadvantage be defensive and take things personally. So as the years have gone on, I've learned not to do that and sometimes it's really hard actually...It doesn't come naturally to me, because it feels like it's potentially inviting conflict because you don't know how that person's going to take that feedback but I still make every effort to do that because I think it's important, if we're going to work together, that they understand how something feels to me if they say it. So that's one thing that I do. I also, if I don't understand something that they're saying to me, I will ask lots of questions and that's something I didn't do before but I do now. I don't really want to move on in a meeting until I feel like I completely understand what we've just gone through.

Jane became more confident over time about her knowledge and her skills in navigating the process, which allowed her to not feel as emotionally charged in the process. Lindsay, on the other hand, recognized that at times she needed to take a step back to regroup, and self-regulate. She recalled how emotional the process of evaluating her son had been. When services finally fell into place and she felt confident that the team was functioning well, she chose to temporarily disengage from the process as a way to recover and resume a sense of balance in her life. She described this time:

It's like let's have a meeting when we really need to have one. Otherwise I'm kind of operating under the no news is good news kind of, I just need, and I think my husband's the same, we just kind of needed a break from how intense that was and we fully expect that intensity will come back at some point with him getting older and social interactions becoming more and more complex and so we're kind of like, let's just enjoy this somewhat stable time for what it is. We have faith in his teacher. We have faith in his team. We love the school. We're happy. Like let's just enjoy that until it all blows up in our faces again...we're kind of stepping back basically.

Perhaps the level of confidence parents feel with collaboration is influenced by the sense of resilience parents experience or around their level of self-efficacy. For example, Will and his wife both worked as educational professionals. His confidence in working the system was a resource for collaborating with the team because he does not feel hesitant to jump in and

question practices that, were he less informed, he might take for granted. He acknowledged, “If there’s something I don’t understand or know, I ask. I know when to ask a question too. A lot of parents sometimes don’t know when to ask a question.” While some parents relied on their experience in the system or their own self-confidence, others found themselves more at ease when the personalities of their team members meshed well. The level of parental engagement and comfort, then, was influenced by more than just the parents’ knowledge and experience; the dynamics between the individual team members played a part as well.

Seeking information and support. Finally, participants expended a significant amount of time and energy gathering information through their networks to arm them with the knowledge and skills to actively participate on their child’s teams. These actions of networking and information gathering were ways in which parents felt they garnered support and strength to collaborate with school professionals. Parents were resourceful and expressed that having information was critical. From staying up late at night googling information on the Internet, to reading books, talking with other parents and accessing other professionals in the field as allies, the participants I interviewed were actively engaged in building their knowledge base and personal connections. Holly acknowledged that she was not afraid to call on professional allies:

I think also a big strategy is not being afraid to like calling [an ally] and saying, I don’t know what they’re talking about or you know, they’re talking about this testing or whatever and she’s like I don’t know why they are using that testing.

Two-thirds of the participants initiated contacts with professionals outside their school team for purposes of evaluation or consultation. Will consulted with a former colleague who steered him to a University professional who might have special expertise to assist with his daughter’s language needs. Katie and Maggie accessed an evaluator from an organization that specialized in remediating learning disabilities. Lindsay and Kelly took advantage of behavioral consultants, and Andrew’s wife actively networked with her colleagues to provide advice on programming and IEP development. Jane and She’ Ra Monroe included their child’s pediatrician in meetings. In these situations the consultation helped move evaluations forward, informed programming or provided additional expertise that they felt was needed to reinforce a point they wanted to share.

Discussion

This research was designed to add to the literature by offering an in depth exploration of parents’ experiences with collaboration with schools. The study offered a deeper understanding of parent expertise and how parents construct collaborative relationships within the special education context.

Establishing Collaborative Relationships

Whereas the research literature acknowledges the skills and behaviors professionals should engage in to foster collaboration (Blue-Banning et al., 2004; Sileo & Prater, 2012; Turnbull et al., 2011), parents in this study described ways in which they actively employed their own strategies to create a functional team approach. Strategies ranged from initiating meetings, sharing chocolate, and writing thank you-notes to more complex and obscure strategies such as employing emotion. The use of emotion as a strategy to foster collaboration was commonly

expressed by the majority of the participants and represented an approach to collaboration not described elsewhere in the literature. Parents described using emotion as a tool for engaging in advocacy and as a strategy for injecting a sense of hope and humanity into the process. They also described times when they refrained from showing emotion. This was done not to hide their feelings, but as a form of self-regulation, that served to help them disengage from conflict or to replenish their feelings and sense of stability. Some professionals may perceive that “disengagement” as a form of disinterest but several parents spoke of times where they intentionally disengaged to serve different purposes. This dynamic can be further explored through application of Kalyanpur and Harry’s (2012) work on culturally responsive practice.

Applying principles of culturally responsive practice. Kalyanpur and Harry contended that recognition of cultural differences is a critical factor in forming collaborative relationships. With specific regard to the perspectives of minority cultures, Kalyanpur and Harry asserted that special education policies and practices have been developed from dominant cultural values that sometimes do not align with the values and cultural orientations of families. Professionals are taught to implement special education procedures through the lens of dominant cultural values. Furthermore, they argued that through the teacher preparation process, “The knowledge you have received is highly specialized and is valued more highly than a layperson’s knowledge” (Kalyanpur & Harry, 2012, p. 24). The procedural qualities of meetings that often frame the conversation may inhibit parents’ abilities to feel comfortable in expressing or sharing their ideas and/or frustrations. Moreover, the emotional aspects of parents’ experiences may at times be overlooked or worse, de-valued by professionals who embrace a more “rational” approach. Kalyanpur & Harry described, “Parents’ silence can emerge as much from the professional imposition of the parameters for discourse as from differences in interpersonal communication styles” (p. 76). Although it may not always be comfortable for professionals to listen to and process the emotional contributions of parents, interpreting what they have to offer is important for strengthening trust and promoting collaborative relationships. Understanding and interpreting why parents might adopt an emotional posture and the intent behind it is a possible insight into another dimension of the cultural nuances of collaboration between parents and professionals. Although emotion is noted in the literature primarily as it relates to grief that parents of children with disabilities may experience (Turnbull et al., 2011), exploring broader applications of emotional dimensions and their relationship to culturally responsive practice, is perhaps a direction for future research.

Parent Knowledge

Participants in this study spent a great deal of time describing the knowledge they bring to the table as the experts on their child and identifying the aspects of professional knowledge that they value. Key points to understand were that parents played a variety of roles in raising their children. When considering the statement “parent as expert” it is important to understand that a dimension of what makes parents experts on their children is the complexity of what it means to be the parent of a child with a disability. Sileo and Prater (2012) wrote:

Parents make important contributions to their children’s education. They interact with their children in more settings than do educators, and they have the perspective of the “whole” person in mind when they participate in educational processes. (p. 144)

Participants identified multiple roles including case management, interventionist, expert, medical care provider, advocate among others. Part of what makes parent knowledge so rich and compelling is the complexity of the roles that parents adopt to effectively care for their children. Additionally, the richness of parent knowledge stems from the dynamic process of how they develop the knowledge and skills required to parent their children and negotiate effective programs and services with professionals.

Limitations

In reflecting on the potential contributions of this study, I acknowledge three primary limitations. First, this study is bounded within the stories shared by the 12 parents I interviewed. This study was conducted in one state with a relatively small sample size. While the participants offered their unique insights about the nature of collaboration, it is bounded within their experiences and therefore cannot be generalized to the experience of all parents. Additionally, the sample was primarily Caucasian and college-educated. The literature on collaboration with families in special education acknowledges the unique perspectives of families from diverse cultural backgrounds (Harry, 2008, Olivos, 2009, Sileo et. al, 1996); however, this study only included two parents who identified as non-Caucasian.

Another factor that may be seen as a limitation was that this study focused solely on the perspectives of parents. This was an intentional choice and reflected a desire to create an opportunity for parents to express their “truth.” Valle (2011) emphasized the importance of conducting more research that focused on gathering the stories of parents and warned that the heavy emphasis in the literature on “how-to” approaches mistakenly place the burden of fostering positive collaborative relationships in the hands of professionals (p. 187).

Implications for Research and Practice

In summary, this study illuminates how parents play a central role in fostering collaborative relationships with school and community professionals. At the core of this process are the parents who very much “juggle” all the pieces to ensure that their children are adequately supported in all facets of their lives. This research suggests that parents can play equitable roles and that in order for true partnership to evolve, professionals need to reorient how they approach collaboration with families. This includes honoring and valuing the expertise that parents bring to the table and not underestimating the importance of parental knowledge. Moreover it suggests that understanding the role of emotion in how parents participate in the process is significant and worth attending to. Further exploration of how parents develop and understand their roles as “experts” is needed in order to more acutely address the barriers to collaboration that still exist. Additionally, participants identified that more time is needed for communication outside of the structure of IEP meetings. In the best case scenarios shared by participants, mechanisms for frequent communication were in place, which strengthened collaboration and participants’ sense of equity. More research is needed to understand not just the barriers parents face in participating equitably in special education processes but also why professionals struggle to meet the intent of the law despite all the guidance on effective collaborative practice. What are the structural and/or attitudinal barriers that limit professionals in fostering collaborative relationships with families and how can those be mitigated through effective teacher preparation as well as ongoing support and mentoring in the field? By creating more equitable relationships

between parent and professionals, ideally special education teams can collaboratively strive for the greater purpose expressed so eloquently by Andrew: “How do you optimize the life of [a] child? How can you make this journey as bump free for them as you possibly can?”

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About the Author

Dr. Colby T. Kervick is an assistant professor in the College of Education and Social Services at the University of Vermont. Her primary appointment is in the Special Education program. Dr. Kervick's scholarship focuses on effective practices for collaborating with families of children with disabilities as well as models for dual certification field experiences. Dr. Kervick teaches undergraduate and graduate courses in foundations of special education, inclusive teaching practices, collaboration and behavior analysis. In addition, she supervises pre-service teacher candidates in field placements.

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Examination of Social Story Format on Frequency of Undesired Behaviors

Robyn Thompson, Ph.D.
University of Utah

Susan S. Johnston, Ph.D.
University of Utah

Abstract

The purpose of this investigation was to explore whether a difference existed between the effectiveness of paper-based format and tablet computer-based format Social Story interventions on frequency of undesired behaviors. An adapted alternating treatment design was implemented with four children with autism spectrum disorder (ASD). Data regarding frequency of undesired behaviors during target activities as well as social validity data regarding the perceived effectiveness and efficiency of the interventions were collected. Results revealed that Social Stories presented in both paper-based and tablet computer-based formats were effective in decreasing undesired behaviors when compared to baseline conditions, and that a notable difference did not exist between the effectiveness of the paper-based and tablet computer-based formats. Social validity data provided strong support for the use of both paper-based and tablet computer-based Social Story interventions in early childhood classrooms. Behavioral outcomes did not vary across paper-based and tablet computer-based formats. However, social validity data revealed that interventionist preference did vary across formats suggesting that interventionist preference should be considered when developing and implementing Social Story interventions.

Key Words: Early Childhood Special Education, Social Stories

Examination of Social Story Format on Frequency of Undesired Behaviors

Educators and practitioners are in search of interventions that are effective and that will improve the quality of life for persons with autism spectrum disorder (ASD; Horner, Carr, Strain, Todd, & Reed, 2002). One education based intervention is Social Stories™. Introduced by Carol Gray in 1991, Social Stories are used to share, with a student, relevant information including where and when a situation takes place, who is involved, what is occurring, and why (Gray, 2004). Social Stories provide explanations and appropriate behavioral options for specific situations, and may help individuals with ASD compensate for deficits in social perceptions (Gray & Garand, 1993). An emerging body of evidence has been established that examines the efficacy of Social Stories in helping children with characteristics of ASD achieve functional goals and enhance abilities. Quantitative literature reviews reveal that the overall effectiveness of Social Stories varies widely and authors of these reviews suggest that plausible explanations for this wide range in effectiveness include variability in research methodology across studies as well as variability in the implementation of Social Stories interventions (see Kokina & Kern, 2010; Leaf et al, 2015; Reynhout & Carter, 2011; Test, Richter, Knight, & Spooner, 2011 for reviews).

One aspect of Social Story interventions that has varied across investigations is presentation format. Social Story interventions have been presented in a number of ways, including; paper-

based booklet formats, computer-based formats, song-based formats, and iPad-based formats (e.g., Brownell, 2002; Chan & O'Reilly, 2008; Chan et al, 2011; Vandermeer, Milfor, Beamish, & Lang, 2013). Recent studies are beginning to examine whether or not the presentation format influences outcomes. Brownell (2002) compared the effectiveness of paper-based Social Stories and song-based Social Stories with four individuals ages 4-6 with a diagnosis of ASD. Outcomes revealed that the intervention resulted in a reduction of undesired behaviors for both conditions. However, the frequency of undesired behaviors was lower and more stable under the song-based condition. Similarly, Mancil, Hayden and Whitby (2009) compared the effects of paper-based and computer-based formats on decreasing the negative behaviors of three elementary school-aged participants with ASD. Results demonstrated a decrease in the frequency of undesired behaviors in both conditions. However, the frequency of undesired behaviors was lower when the Social Stories were presented in the computer-based format (Mancil et al., 2009). Although preliminary, the outcomes of Brownell's (2002) and Mancil et al.'s (2009) studies suggest that Social Story outcomes may be enhanced when presented in alternative formats. However, additional studies are needed to investigate the impact of mode of presentation on the effectiveness of Social Story interventions. Specifically, given the increased availability and use of tablet computers in classroom settings, research should compare outcomes when using paper-based and tablet computer-based Social Stories.

The proposed study is designed to answer the following questions:

1. Is a Social Story presented in a paper-based format more effective in decreasing undesired behaviors related to a target situation than a no-intervention baseline condition?
2. Is a Social Story presented in a tablet computer-based format more effective in decreasing undesired behaviors related to a target situation than a no-intervention baseline condition?
3. Is there a difference between the efficiency and effectiveness of paper-based format and tablet computer-based format Social Story interventions?

Method

Participants

Four early childhood aged students, Adan, Brad, Daniel, and Ethan (pseudonyms), who (a) had a diagnosis of an ASD, demonstrated characteristics of an ASD as determined by school classroom placement personnel, or demonstrated characteristics of challenging behaviors that interfered with classroom learning and participation, (b) had normal (or corrected to normal) vision and hearing, (c) had an interest in books as defined by a score of four or above on all questions on a teacher completed Preschool Book Interest 6-point Likert Scale (Kuo & Mirenda, 2003), (d) had no prior exposure to Social Stories in the classroom setting, and (e) engaged in at least two challenging behaviors that occurred during different classroom activities, and served different behavioral functions, participated in this investigation. Teachers in the identified early childhood programs nominated children who met the inclusion criteria. A letter was then sent to the parents of the nominated children to request permission for their child to participate in the study. After consent was obtained, the researchers conducted a file review to obtain demographic information and observations to complete a functional assessment of challenging behaviors. Table 1 provides

a summary of participant characteristics, each participant's average score from the Preschool Book Interest Scale, and a summary of functional assessment data collected for each participant.

Experimental Design

An adapted alternating treatment design (AATD) was used to (a) examine the effect of Social Stories as a tool to decrease undesired behaviors in early childhood special education settings, and (b) determine if the story format (paper-based book format or tablet computer-based format) influenced outcomes. When implementing an AATD, the researcher alternates the presentation of two interventions or treatment conditions with individual participants to address two different behaviors that are equally difficult for a target student to participate in or achieve, but are functionally independent of one another (McDonnell, Jameson, & Rose, 2011). For the purposes of this study, the independent variables were the paper and iPad-based Social Stories, and the dependent variable was the frequency of undesired behaviors during identified activities. Intermittent baseline probes were used to measure frequency of challenging behaviors prior to the introduction of intervention. Daily intervention probes were used to evaluate the impact of the intervention. Intermittent probes of post-intervention behaviors served as a maintenance check to determine whether experimental effects were durable over time.

Setting

This study was conducted in four different early childhood special education classrooms. Two participants (Adan and Brad) attended separate, self-contained preschool classrooms in the same private school for children with characteristics of ASD. A third participant (Daniel) attended a self-contained special education classroom in a different private school for children with characteristics of ASD. The fourth participant (Ethan) attended an inclusive preschool classroom in a public school that served children with and without disabilities.

Table 1

Participant Age, Diagnosis, Assessment Data, and Book Interest Average Score

Participant Name	Age at Start of Study	School-based Assessment Data	Book Interest Score	Target Activity	Behavior Function
Adan	4 years, 7 months (55 months)	<u>Learning Accomplishment Profile (Revised Edition)</u> Gross Motor: 38 (approx. 63 months), Fine Motor: 26 (approx. 51 months), Pre-writing: 22 (approx. 54 months), Cognitive: 14 (approx. 40 months), Language: 14 (approx. 43 months), Self Help: 35 (approx. 51 months), Personal Social: 19 (approx. 47 months)	5.25	Circle Time	Escape undesired tasks and/or activities
				Small Group	Obtain attention from staff and peers
Brad	3 years, 8 months (44 months)	<u>Early Learning Accomplishment Profile</u> Gross Motor: 85 (approx. 29 months), Fine Motor: 58 (approx. 21 months), Cognitive: 65 (approx. 16 months), Language: 25 (approx. 13 months), Self Help: 37 (approx. 25 months), Personal Social: 32 (approx. 25 months)	4.75	Small Group A	Escape undesired tasks and/or activities
				Small Group B	Obtain attention from staff and peers
Daniel	6 years, 10 months (82 months)	<u>Comprehensive Assessment of Spoken Language-Percentile rank:</u> Basic Concepts: 66%, Antonyms: 97%, Sentence Completion: 13%, Paragraph Comprehension: 50%, Pragmatic Judgment: 9%	5.75	Lunchtime	Obtain attention from staff
				Bathroom	Obtain access to desired items/activity
Ethan	4 years, 10 months (58 months)	<u>Battelle Developmental Inventory (2nd ed.)- Percentile Rank:</u> Adaptive: 61%, Personal-Social: 53%, Motor: 50%, Cognitive: 73%; Communication: not reported	5.75	Circle Time	Obtain attention from staff and peers
				Small Group	Obtain access to desired object or activity

Adan and Brad attended their preschool program for six hours a day, four days per week. Daniel attended his early childhood program for six hours a day, four days per week; and for three and a half hours, one day per week. Ethan attended his preschool program for two hours a day, three days per week. Five adults staffed Adan's classroom of eight children, five adults staffed Brad's classroom of nine children, five adults staffed Daniel's classroom of ten children, and four adults staffed Ethan's class of 11 children.

The teachers and paraeducators across the four classrooms had varying levels of education. The lead teacher in Adan's class had a master's degree in early childhood special education. The lead teacher in Brad's class had a bachelor's degree in psychology. The lead teacher in Daniel's class had a bachelor's degree in early childhood education. Finally, the lead teacher in Ethan's class had a bachelor's degree in early childhood special education. The paraeducators across each of the four classrooms had varying levels of education ranging from a high school diploma to a college bachelor's degree.

Classroom consultants also supported the staff/children in each of the participants' classrooms. A speech-language pathologist served as an itinerant classroom consultant for Adan and Brad. Speech-language pathologists and occupational therapists served as itinerant classroom consultants for Daniel and Ethan.

Interventionist

In order to control for the potential effect of differences across interventionists, the first author served as the interventionist for all participants as well as a researcher for this investigation. The interventionist was not employed by the early childhood classrooms where the study was conducted but had 8 years of experience as a school-based occupational therapist as well as a Master's degree in early childhood special education.

Materials

For each participant, two Social Stories were written. The two Social Stories addressed different undesired behaviors that served different functions and occurred in the context of different activities (see procedures) and were written using the guidelines "Social Stories 10.1" established by Gray (2010). The interventionist used data from functional behavioral assessment when writing the Social Stories. All Social Stories were examined by three professionals with advanced training in writing Social Stories (one early childhood special educator, one school-based occupational therapist, and one clinic based/school-based occupational therapist) in order to confirm that each Social Story met Gray's criteria (Gray, 2010) and provided feedback on the stories. The researchers revised the Social Stories based upon the feedback provided. After each Social Story was written, the stories were transferred into a book-like format using Keynote software (Apple, 2013). The researchers also created two video clips of typically developing early childhood aged children engaging in the desired behaviors discussed in each Social Story. These video clips were used in the iPad-based Social Story interventions. After developing, illustrating, and inserting the video clips for each Social Story using Keynote, the researchers randomly selected one story for each participant to be presented in a paper-based format and one story to be presented in an iPad-based format.

The story for each participant that was selected for the paper-based format was downloaded from the iPad on which it was created to a desktop computer, and then printed in color onto 8 ½" X 11" white paper. The researchers then inserted the printed pages into clear page protector covers and assembled the pages in a booklet format. The story that was selected for the iPad-based format included two video clips. These video clips were embedded into the relevant pages of the Social Story. An iPad tablet computer was used when presenting the iPad-based Social Story intervention to each participant.

The characteristics of the paper-based and iPad-based Social Stories that were the same were: (a) use of Gray's criteria, (b) Social Story criteria verified by three professionals, (c) font size/style/color, (d) number of sentences (i.e., plus/minus two sentences), (e) Flesh Reading Ease score between 80-100, (f) number of clip art illustrations, and (g) number of photo illustrations. The characteristics of the paper-based and iPad-based Social Stories that were different were: (a) the use of two video modeling clips in the iPad-based Social Story, and (b) turning story pages by swiping a finger across the iPad screen versus manually turning the paper-based story pages.

Procedures

Identification of target activities and related behaviors. For each participant, the researchers conducted classroom observations and discussions with classroom teachers to identify two different activities in which the participants engaged in different undesired behaviors that were thought to serve different functions. Once identified, the researchers conducted a functional behavior assessment for each activity/behavior (O'Neill et al., 1997) to identify the functions of the undesired behaviors as well as desired replacement behaviors. The undesired behaviors and desired behaviors were reviewed and evaluated for functional and procedural equivalence and the researchers compared the unrelated desired behaviors and unrelated undesired behaviors for each participant to ensure similar rate of reinforcement, quality of reinforcement, level of response effort, immediacy of reinforcement (Mace & Roberts, 1993), activity type (i.e., teacher directed, student directed, free play, other), and student engagement (i.e., active, passive, other) in order to increase believability that the treatment affected the outcomes, rather than differences between the difficulty of the desired and/or undesired behaviors (McDonnell et al., 2011). Once the researchers determined that a participant's desired and undesired behaviors were functionally independent and equally difficult, the researchers proceeded to the baseline phase of the study for that participant.

Baseline phase. Baseline data were collected on the occurrence of the specified undesired behaviors during each of the two activities. Following collection of baseline data, the researchers compared the mean rates of undesired behaviors across the two activities to ensure that the rates were comparable. The researchers then randomly assigned the paper-based Social Story to one activity and the iPad-based Social Story to the remaining activity and proceeded to the comparison phase.

Comparison phase. Each participant received daily counterbalanced presentations of the paper-based and iPad-based interventions during the comparison phase to control for potential ordering effects. The length of time between presentations of the two daily interventions was approximately 1 hour.

Reading of the Social Stories took place in a one on one interaction between the interventionist and participant in areas identified by the lead teacher as ones that would not be distracting for the participant or the other students in the classrooms. The intervention occurred immediately prior to the identified classroom activity. During both the paper-based and iPad-based interventions, the interventionist read the Social Story directly to the participant. The participant was given the opportunity to turn the pages of the story, touch the illustrations, and make comments about the story as the interventionist read the Social Story. In addition, during the iPad-based intervention, the participant was given the opportunity to view the embedded video clips. Following the reading of each Social Story, the interventionist reviewed the story with the participant to assess and increase the participants' comprehension of the concepts and circumstances presented in the story (Gray, 2010; Kokina & Kern, 2010). Upon completion of the review, the interventionist helped the participant transition directly to the identified activity.

The comparison phase continued until a participant demonstrated either a differential effect or comparable level of performance between the two interventions (McDonnell et al., 2011). Data from the comparison phase was used to determine the next phase of the investigation. If there was a comparable level of performance between the two conditions, then the participant entered a flipped intervention phase. If there was a differential effect between the two conditions, then the participant entered the most effective intervention phase (McDonnell et al., 2011).

Flipped or most effective intervention phase. If it was determined that there was a comparable level of performance between the two interventions, the interventions were flipped so that the activity that was paired with the paper-based Social Story in the comparison phase was now paired with the iPad-based Social Story intervention and the activity that was paired with the iPad-based Social Story was now paired with the paper-based Social Story.

If the comparison phase data revealed a difference between the rates of behavior when using paper-based and iPad-based Social Story interventions, then the “most effective” intervention was used across both activities. Specifically, if the paper-based format was the most effective intervention for a participant, then the pages from the Social Story that was originally delivered in the iPad-based format would be printed onto paper, inserted into clear page protector covers, and assembled into a booklet format. Conversely, if the iPad-based story was the most effective intervention for a participant, then the Social Story that was originally delivered through a paper-based format would be delivered via the iPad.

Maintenance. Following the completion of the flipped/most effective intervention phase, maintenance data were collected approximately one time per week for four weeks for each participant. During maintenance, all interventions were discontinued. Maintenance data were collected in the context of the same activities as baseline and intervention sessions.

Data Collection

Intervention strategy. Data to assess the effectiveness and efficiency of the intervention strategies were collected during baseline, comparison, flipped/most effective intervention, and maintenance phase sessions. The researchers observed each participant during the identified activities and collected data using a frequency counting method to gather information on the

occurrence of undesired behaviors. The frequency of undesired behaviors was converted to a rate of undesired behaviors per minute to allow for comparison across sessions in which the length of the activity varied slightly from day to day.

Social validity. Data to assess the acceptability, perceived effectiveness, and perceived efficiency of the intervention strategies was collected via Goal Attainment Scaling, video ratings, and teacher completed surveys.

Goal attainment scaling. Progress made toward each participant's desired behaviors was documented, quantified, and compared using Goal Attainment Scaling (GAS; Roach & Elliot, 2005). GAS uses interviews during goal-setting and post treatment sessions to help determine indicators of a person's progress that can be challenging to assess using available standardized measures. Each lead teacher used the GAS to rate their participant's progress toward the specified goals following the final week of the study. The lead teachers did not view data or graphs related to the intervention outcomes, but they did observe at least one session of the baseline, comparison, flipped intervention, and maintenance phases of the study before providing ratings on the GAS.

Video ratings. Video of the participants engaging in the identified activities were collected during the baseline and comparison phases of the study to help assess whether or not the intervention resulted in socially important change that was noticeable to individuals who were not associated with the participants. Once all video was collected, the researchers selected representative video segments from the baseline and comparison sessions for each participant by determining the rate per minute of undesired behaviors for each video clip and then comparing that rate to the actual rate per minute of undesired behaviors for the entire observation session. One baseline phase and one comparison phase video clip for each target activity was selected for Adan, Brad and Ethan. One baseline phase and one comparison phase video was selected for one target activity for Daniel due to the fact that the bathroom area was the setting for one of Daniel's target activities.

Fourteen university students who were special education majors, were blind to the purpose of the study, and did not know the participants viewed the video segments that were presented in random order. After viewing each video segment, the university students completed a questionnaire developed by the researchers that utilized adapted Semantic Differential Scales (Osgood, Suci, & Tannebaum, 1957; Salcuni, DiRiso, Mazzeschi, & Lis, 2007) in order to measure the university students' perceptions of the study participants' behaviors. In completing the scale, raters indicated their perception of a behavior by marking a rating on a 7-point semantic scale that was defined by a pair of contrasting adjectives (Salcuni et al., 2007). For the purposes of this study, the adjective pairs on the semantic scale were *well behaved* and *poorly behaved*, *appropriate* and *inappropriate*, and *engaged* and *not engaged*.

Survey. A Likert scale survey designed by the researchers was used to examine the lead teachers' and classroom paraprofessionals' perceptions regarding: (a) the importance of the intervention strategies, (b) the usefulness of Social Stories as an instructional strategy, and (c) the format in which the Social Story was presented. The classroom teachers and paraprofessionals completed the survey for their respective participants during the final week of the study. The classroom teachers and paraprofessionals did not view data or graphs related to the intervention

outcomes prior to completing the survey, but they did observe at least one session of the baseline, comparison, flipped/most effective intervention, and maintenance phases of the study before completing the survey.

Reliability. Inter observer agreement was obtained to evaluate both procedural fidelity and dependent variable reliability across all phases of the investigation. To assess procedural fidelity, an independent observer watched and recorded the interventionist's implementation of a task-analyzed list of procedures. Procedural fidelity was collected during a minimum of 20% of both the comparison and the most effective/flipped phase sessions for all participants. Procedural fidelity was calculated by dividing the number of correct interventionist behaviors by the number of planned interventionist behaviors and multiplying the quotient by 100. Fidelity data showed that the interventionist correctly performed the planned interventions for 100% of the procedures for all participants.

To assess dependent variable reliability, an independent observer collected data related to the occurrence of the undesired behaviors during at least 20% of each of the baseline, comparison, most effective/flipped, and maintenance phase sessions for all participants. Next, the total number of target behaviors recorded per observation session across the two observers was compared and a percentage of dependent variable reliability was calculated. The mean dependent variability across participants for baseline was 98.75% (100% for Adan, 98% for Brad, 100% for Daniel, 97% for Ethan) and the mean dependent variability across participants for the comparison phase was 92.75% (89% for Adan, 94% for Brad, 88% for Daniel, 100% for Ethan). The mean dependent variable reliability for the most effective/flipped phase and the maintenance phase was 100% for all participants.

Data Analysis

Data regarding the frequency of undesired behaviors and the length (in minutes) of activities were used to compute the rate per minute of undesired behaviors for each activity. The rate per minute of undesired behaviors for each session was graphed to provide a visual representation of student behaviors across all phases of the investigation. Within-condition and between-condition visual analyses were conducted to examine data patterns related to variability, level, and trend (Lane & Gast, 2014).

In addition to within-condition and between-condition visual analysis, the researchers used the conservative dual-criterion method (CDC) to determine whether systematic changes in the behaviors occurred between different phases/conditions of the study (Fisher et al., 2003; Swoboda, Kratochwill, & Levin, 2010). The CDC method calculates a statistical-based comparison between sets of data, and has been empirically validated as a method to improve the accuracy of the visual inspection of single-case data (Swoboda et al., 2010). The CDC method was used to compare (a) the baseline to comparison phases, and (b) the baseline to the most effective/flipped intervention phases for both the paper and iPad-based conditions for each participant. In order to determine whether a systematic change existed between the paper and iPad-based interventions, the CDC method was used to compare (a) the paper-based comparison condition to the iPad-based comparison condition, and (b) the paper-based most effective/flipped condition to the iPad-based most effective/flipped condition.

It is important to note that when using the CDC method, there is an order effect that influences the outcomes based upon which set of data is entered into the first column (e.g., baseline data) and which set of data is entered into the second column (e.g., intervention data). This order effect is appropriate when comparing baseline data to intervention data. However, this order effect presents a challenge when comparing two different interventions within the same condition (e.g., iPad-based comparison phase to paper-based comparison phase). As a result, when using the CDC method to analyze data within the same condition, the calculations were conducted in both directions and an a priori decision was made that a systematic change must be identified in both directions (i.e., paper to iPad and iPad to paper) when comparing interventions within a condition (i.e., within comparison phase, within flipped phase) in order to conclude that a systematic change between the two interventions existed.

Finally, in order to determine whether outcomes facilitated changes that were effective, efficient, and meaningful, the researchers summarized the social validity data obtained from (a) the Goal Attainment Scaling, (b) the teacher and paraprofessional rated-surveys, and (c) the video analysis of the participants' baseline and comparison phase behaviors. The completed video ratings were analyzed by calculating the mean score and standard deviation for the baseline and comparison phase ratings for each participant, as well as across all participants. One-tailed paired samples t-tests were conducted between the baseline and comparison phase mean scores in order to determine if the means of the baseline scores were significantly less than the means of the comparison phase scores.

Results

Results revealed that Social Stories presented in paper-based and iPad-based formats are effective in decreasing undesired behaviors when compared to baseline conditions. Furthermore, results suggest that a measurable difference did not exist between the efficiency and the effectiveness of the paper-based and iPad-based formats. Social validity assessment data suggests that both paper-based and iPad-based Social Story interventions are appropriate and effective interventions to decrease undesired behaviors.

The following sections summarize participant outcomes for each research question. Figures 1-4 illustrate the rate per minute of undesired behaviors per session across conditions for each participant. Data were examined for variability, level, and trend (Lane & Gast, 2014). The conservative dual-criterion method (CDC) was used to determine whether systematic changes in behaviors occurred between different phases of the study, and to compare the two different interventions within the same study phases (Swoboda et al., 2010).

Effect of Paper-based Social Story Interventions

As illustrated in Figures 1-4, results revealed a decrease in rate per minute of undesired behaviors across all four participants following implementation of the paper-based Social Story intervention. The average rate per minute of undesired behaviors across all participants decreased by 72% (range=65%-82%) between the baseline and comparison phases, and by 81% (range=73%-97%) between the baseline and flipped intervention phases.

In baseline, Adan, Brad, & Ethan showed an increasing and variable trend and Daniel showed an increasing and stable trend of undesired behaviors in a contra-therapeutic direction. During the comparison phase, there was a decreasing and variable trend of undesired behaviors in a therapeutic direction for Adan, Brad and Ethan. Further, evaluations of behavior change from the baseline phase to the comparison phase for Adan, Brad, and Ethan revealed an immediate change in level, and the rate of undesired behaviors went from an increasing/accelerating trend in baseline to a decreasing/decelerating trend in the comparison phase. For Daniel, although a variable trend of undesired behaviors in a contra-therapeutic direction was noted between baseline and comparison, the absolute level change between baseline and comparison revealed a decreasing trend of undesired behaviors between the two conditions. The conservative dual-criterion (CDC) analysis indicated that systematic change occurred between the baseline and comparison phases for all participants.

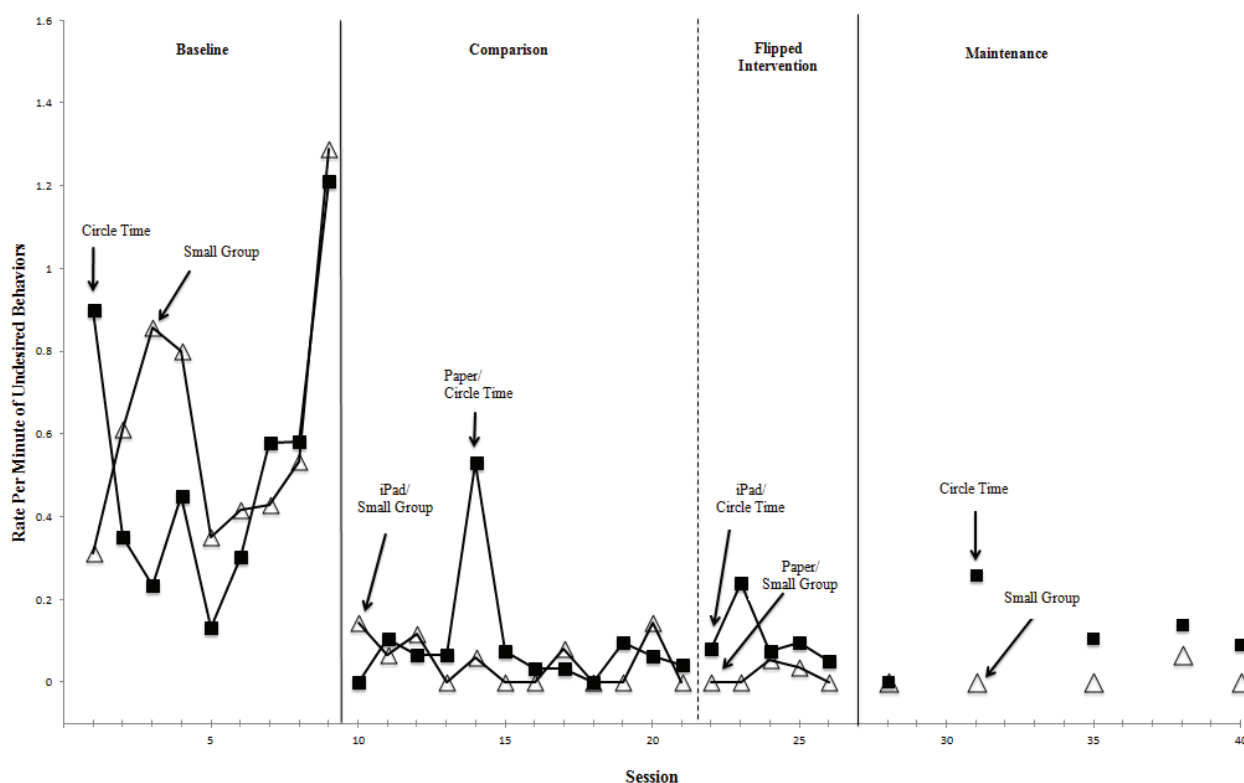


Figure 1. Line graph showing rates per minute of undesired behaviors during circle time and small group activities for Adan in baseline, comparison, flipped intervention, and maintenance phases.

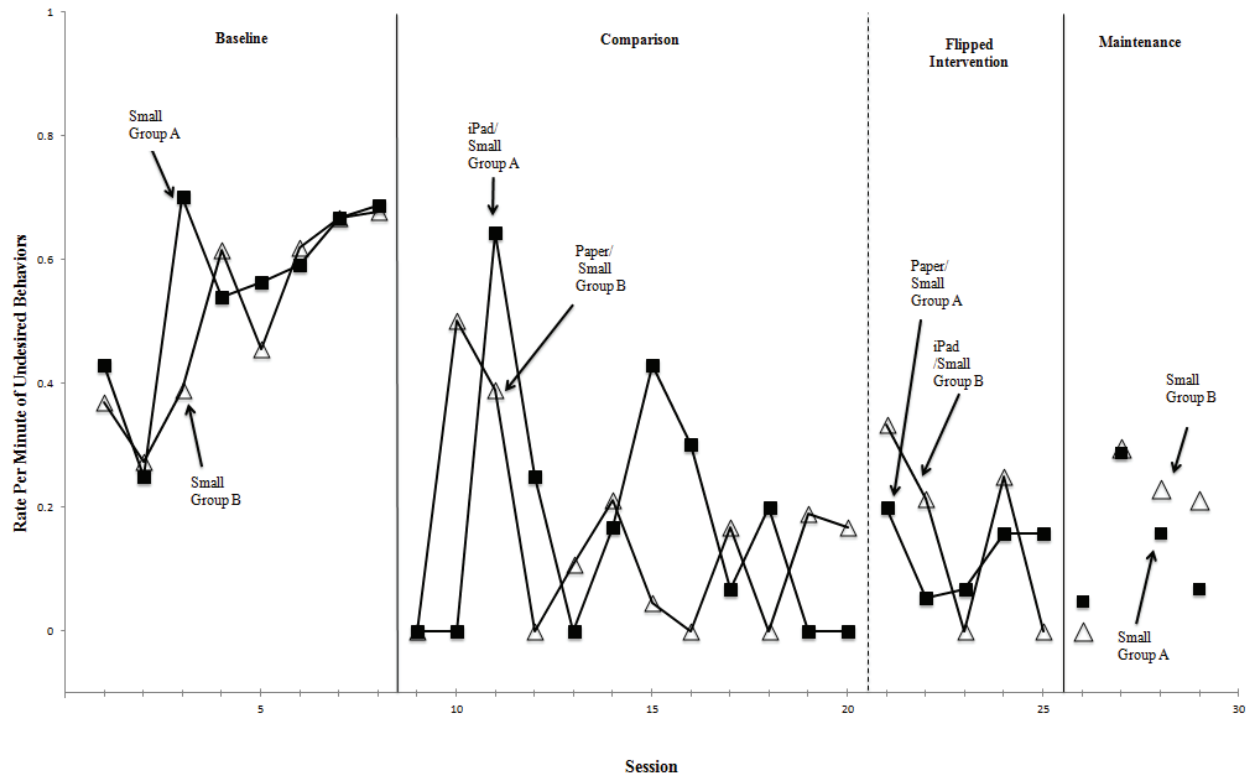


Figure 2. Line graph showing rates per minute of undesired behaviors during small group A and small group B activities for Brad in baseline, comparison, flipped intervention, and maintenance phases.

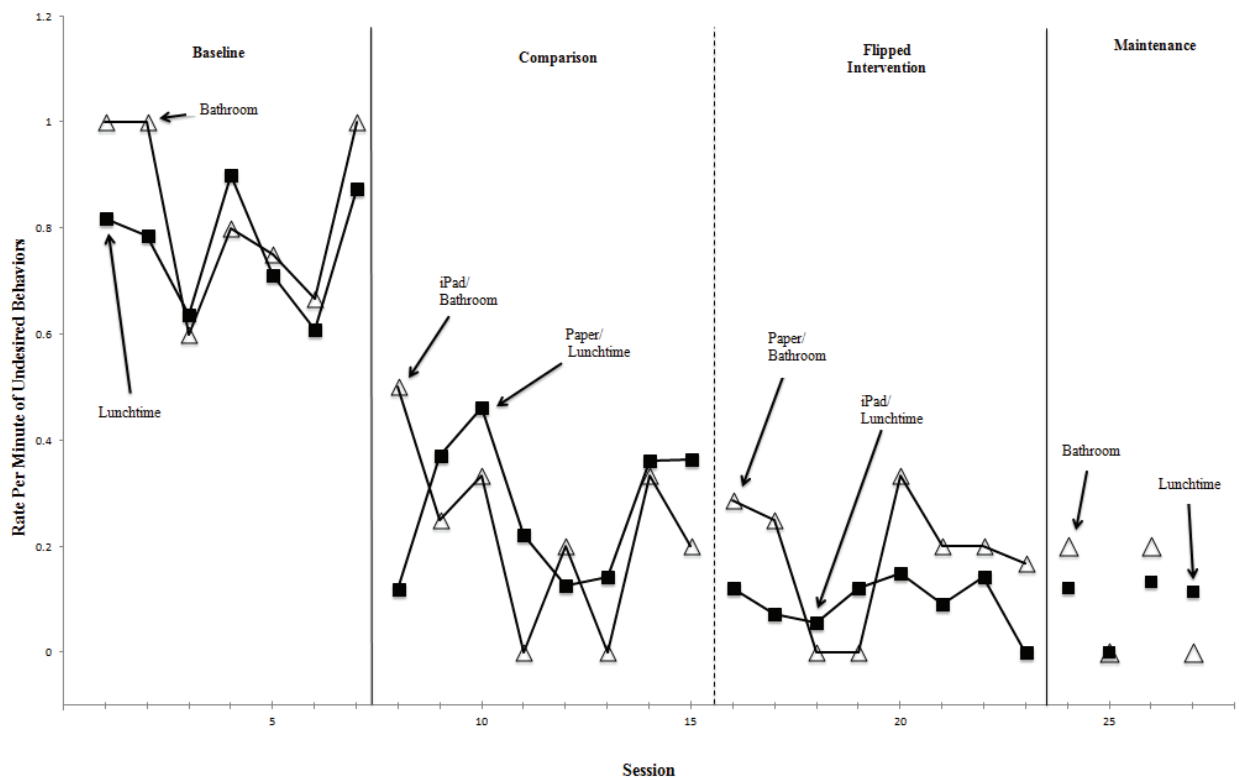


Figure 3. Line graph showing rates per minute of undesired behaviors during bathroom and lunchtime activities for Daniel in baseline, comparison, flipped intervention, and maintenance phases.

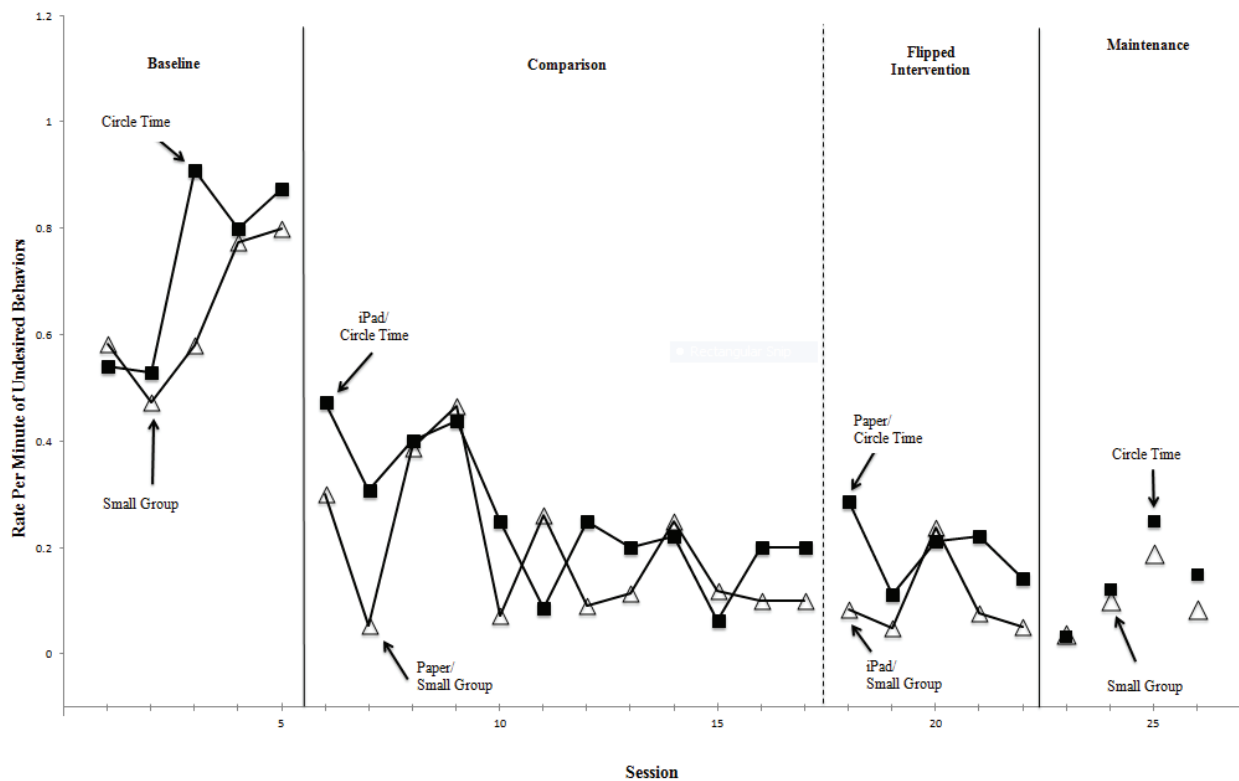


Figure 4. Line graph showing rates per minute of undesired behaviors during circle time and small group activities for Ethan in baseline, comparison, flipped intervention, and maintenance phases.

Given that a comparable level of performance was observed between the paper-based and iPad-based interventions during the comparison phase (see following sections), a flipped intervention phase (rather than a best intervention phase) was initiated for all participants. During the flipped intervention phase, all participants demonstrated a decreasing and variable trend of undesired behaviors in a therapeutic direction. Further, the CDC analysis indicated that systematic change occurred between baseline and flipped intervention phases for all participants.

During the maintenance phase of the study (a time in which participants had been exposed to both the paper-based and iPad-based interventions), the mean rate per minute of undesired behaviors for all participants was comparable to their means/ranges of undesired behaviors per minute during both their comparison and flipped intervention phases.

Effect of iPad-based Social Story Intervention

As illustrated in Figures 1-4, results revealed a decrease in rate per minute of undesired behaviors across all four participants following the implementation of the iPad-based Social Story intervention. The average rate per minute of undesired behaviors across all participants decreased by 75% (range=65%-92%) between the baseline and comparison phases, and by 81% (range=69%-88%) between the baseline and flipped intervention phases.

In baseline, Adan, Brad, and Ethan showed an increasing and variable trend of undesired behaviors in a contra-therapeutic direction and Danial showed a slightly decreasing (slope = -0.0184) and variable trend. During the comparison phase, a decreasing and variable trend of undesired behaviors in a therapeutic direction was noted for all participants. Evaluations of behavior change from the baseline phase to the comparison phase revealed an immediate change in level, and the rate of undesired behaviors went from an increasing/accelerating trend in baseline to a decreasing/decelerating trend in the comparison phase for Adan, Brad, and Ethan. For Daniel, the trend of undesired behaviors went from a slightly decreasing trend in baseline to a decreasing trend in the comparison phase and the absolute level change between both conditions for Daniel revealed a decreasing trend of undesired behaviors between the two conditions. The CDC analysis indicated that systematic change occurred between the baseline and comparison phases for all participants.

Given that a comparable level of performance was observed between the iPad-based and paper-based interventions during the comparison phase (see following sections), a flipped intervention phase was initiated for all participants. During the flipped intervention phase, all participants demonstrated a decreasing and variable trend of undesired behaviors in a therapeutic direction. Further, the CDC analysis indicated that systematic change occurred between baseline and flipped intervention phases for all participants.

During the maintenance phase of the study (a time in which all participants had been exposed to both the paper-based and iPad-based interventions), the mean rate per minute of undesired behaviors for all participants was comparable to their means/ranges of undesired behaviors per minute during both their comparison and flipped intervention phases.

Comparing the Effects of Paper-based and iPad-based Social Story Interventions

For each participant, a CDC analysis was conducted in order to assess whether there was a difference between the paper-based and iPad-based Social Story interventions during baseline, comparison, and flipped conditions. The CDC analysis for all participants indicated that systematic change did not exist between the two interventions in any of the conditions. It is notable that the CDC analysis for Daniel indicated a systematic change in one direction (comparing paper to iPad) but not in the reverse direction (comparing iPad to paper) in the flipped condition. However, as discussed previously, an a priori decision was made that a systematic change must be identified in both directions in order to conclude that a difference existed between the two interventions.

Social Validity

Social validity data was obtained through Goal Attainment Scaling (GAS), video ratings, and a survey. The following sections will summarize results.

Goal attainment scaling. The teachers' GAS ratings for each goal are provided in Table 2 and were analyzed using the GAS rating scale. As noted in Table 2, all participants achieved a GAS rating of "expected level of performance" (i.e., projected level of performance from the initiation of treatment and the behavior measurement period until the end of the behavior measurement period) or "better than expected level of performance" (i.e., somewhat more progress than expected during the treatment period) across activities.

Table 2

Goal Attainment Scaling Outcomes

Participant	Activity	Rating
Adan	Circle Time	0*
	Small Group	+1**
Brad	Small Group A	0
	Small Group B	0
Daniel	Lunchtime	+1
	Bathroom	+1
Ethan	Circle Time	0
	Small Group	0

Note. Adapted from "Goal Attainment Scaling: Applications, Theory and

Measurement" by T.J. Kiresuk, A. Smith, and J.E. Cardillo, 1994, *Goal Attainment Scaling: Applications, Theory and Measurement*. Copyright 1994 by Erlbaum.

*0 = Projected/ expected level of performance

**+1 = Better than expected level of performance

Video ratings. Based upon the responses of the 14 university students who completed the semantic differential scales for each of the video segments, mean scores and standard deviations were calculated. Table 3 summarizes the results of the video ratings for each participant as well as across all participants. As noted by Table 3, a significant difference was detected between the mean baseline score and the mean comparison phase score for each participant. Additionally, a significant difference was detected between the mean baseline scores and the mean comparison phase scores when the raw scores for all activities across all participants were combined.

Table 3
Social Validity Video Ratings

Participant	Activity	Baseline		Comparison		Significance (1-tailed)
		Mean	Standard Deviation	Mean	Standard Deviation	
Adan	Circle	37.333	6.506	81.333	6.658	0.01227*
	Small Group	28.333	1.528	72.0	13.0	0.01385*
Brad	Small Group A	25.0	4.583	88.0	3.606	0.00029*
	Small Group B	29.333	7.638	56.0	9.540	0.00217*
Daniel	Lunch- time	62.667	10.970	91.333	2.081	0.03133*
Ethan	Circle	56.333	5.132	86.667	4.933	0.00611*
	Small Group	63.0	14.799	80.667	8.144	0.02489*
All Participants	All Activities Combined	129.429	50.829	283.286	36.266	0.00035*

Note. * $p < .0$

Survey. At the conclusion of the study for each participant, the classroom lead teachers and paraprofessionals completed a survey regarding their perception of (a) the importance of the intervention strategies, (b) the usefulness of Social Stories as an instructional tool for students, and (c) the format in which the Social Story was presented. The mean result for the combined questions related to the importance of the Social Story intervention strategy across all participants for the paper-based Social Story interventions was 5.7 (range = 1-7; 1= strongly disagree, 7 = strongly agree) and 5.6 (range 1-7) for the iPad-based intervention. The majority of respondents (12 out of 16) felt that it would be easy to use the paper-based Social Story intervention and still meet the needs of the other children in the classroom. Similarly, the majority of respondents (14 out of 16) felt that it would be easy to use the iPad-based Social Story intervention and still meet the needs of the other children in the classroom. Finally, of the 16 survey respondents, 7 indicated that they did not have a preference between the two interventions. Of the respondents who had a preference between the paper-based and iPad-based interventions, 6 preferred the iPad and 3 preferred the paper.

Discussion

Results of this investigation revealed that Social Stories presented in both paper-based and iPad-based formats were effective in decreasing undesired behaviors when compared to baseline conditions and decreased rates of undesired behaviors continued during the maintenance phases of the study. The positive outcomes related to the impact of the paper-based Social Story intervention on rates of undesired behaviors add to the literature on the efficacy of paper-based Social Stories (e.g., Brownell, 2002; Chan & O'Reilly, 2008; Chan et al, 2011; Vandermeer, Milfor, Beamish, & Lang, 2013). The positive outcomes related to the impact of the iPad-based Social Story intervention on decreasing rates of undesired behaviors adds to the literature base examining the efficacy of computer and iPad based Social Stories (e.g., Chan et al., 2011; Vandermeer, Milford, Beamish, & Lang, 2013).

For all participants, results of CDC and visual analysis suggest that notable differences did not exist between the effectiveness and efficiency of the paper-based and iPad-based interventions. The results of this study do not support prior research suggesting that the effectiveness of Social Stories varies based on the story format (Brownell, 2002; Mancil et al., 2009). Plausible explanations for the difference in the results of the present study and previous studies may be due to issues related to the independent variables (e.g., variations in Social Story format) and/or differences in the experimental designs that were used across studies. Specifically, the current study used an adapted alternating treatment design (AATD) to examine the effects of two different treatments on two functionally independent, but equally difficult behaviors for each participant. In comparison, Brownell (2002) employed an ABAC/ACAB counterbalanced multiple-treatment design to examine the effects of two different treatments on one behavior, and Mancil et al. (2009) used an ABABCBC multicomponent reversal design to study the effects of two different treatments on one behavior.

Social Validity

This study used Goal Attainment Scaling (GAS), video ratings, and surveys to obtain social validity data. Obtaining data from more than one source and using more than one system of measurement was important in order to convincingly examine the social value of the intervention and its outcome (McDonnell & Tuesday Heathfield, 2011). The outcomes of the GAS, video ratings, and teacher/paraprofessional completed surveys provided strong support for the use of both paper-based and iPad-based Social Story interventions in early childhood classrooms. These results are similar to results from previous studies that have reported high social validity among educators with regard to Social Story interventions (e.g., Chan & O'Reilly, 2008; Ozdemir, 2008; Reynout & Carter, 2009).

Limitations

Given the wide range of abilities among young children who exhibit characteristics of ASD, as well as variability among early childhood classroom settings, it cannot be assumed that the results of this study would be replicated across other students and settings. Furthermore, data related to the rates of undesired behaviors were specific to each of the participant's target activities, and information related to the generalization of behaviors to other settings was not collected. The application and generalizability of the current investigation could be increased

through replications that utilize the present study methods with a wider range of participants, situations, interventionists, and settings.

Variability was noted in all phases of the investigation, and is a limitation of this study. Although the researchers controlled for several extraneous variables in order to decrease variability, future researchers may control for additional variables such as (a) ensuring that the same teacher is present for the target activities across time, and (b) ensuring that the sub-activities within activities (e.g., small group and circle) are consistent across time.

Another limitation of this study is that the investigator served as both the interventionist and data collector, and was aware of the purposes of the study. The investigator was used as the interventionist rather than a classroom teacher or paraprofessional in order to ensure consistency in the delivery of the intervention across participants. Although procedural fidelity and interobserver agreement measures helped control for potential researcher biases in this investigation, future studies could utilize different interventionists and/or independent data collectors who were blind to the purposes of the study.

Implications for Further Research

Recent systematic reviews and meta-analyses of Social Story research have revealed that variability exists with regard to the effectiveness of Social Story interventions (Kokina & Kern, 2010, Reynhout & Carter, 2011; Test, Richter, Knight, & Spooner, 2011). Given that Social Stories can be viewed as an intervention package that incorporates the use of several different strategies, it is likely that the varied effectiveness noted among Social Stories interventions will continue to persist if researchers do not investigate which strategy(ies) is/are contributing to positive outcomes. Specific strategies embedded within Social Story intervention packages may include; priming, behavioral momentum, prompting teachers/interventionists to focus on target behaviors, prompting students to focus on desired behaviors, visual supports, differential reinforcement, and shared book reading (see Johnston & Thompson, 2015). Future research examining the impact of one (or more) of these strategies on the effectiveness of Social Story interventions is warranted.

Implications for Practice

It is interesting to note that the social validity of Social Stories among educators is high (Reynhout & Carter, 2009). Given the high social validity among educators, it seems plausible to assume that practitioners will continue to utilize Social Story interventions. As a result, it is important for practitioners to increase the likelihood of effective and efficient results by considering issues related to patterns of change, format, and use of FBA data.

The results of the current study are in agreement with results from a meta-analysis conducted by Kokina and Kern (2010), suggesting that, if a Social Story is going to have an effect, the effect will likely occur rapidly following the introduction of the intervention. Thus, based on the results of this study and prior research, if an effect does not occur relatively quickly following the implementation of a Social Story intervention, a practitioner should consider an alternative intervention.

Results of the present study suggest that Social Story format (paper-based vs. iPad-based) does not have a measureable influence on behavioral outcomes. However, results of the present study's social validity survey questionnaire revealed that out of the sixteen respondents, 7 respondents did not have a preference for one format over another, 3 respondents preferred the paper-based format, and 6 respondents preferred the iPad-based format. These results suggest that, although behavioral outcomes may not vary across formats, interventionist preference may vary. Given this, practitioners should consider interventionist preference when choosing Social Story format.

Although Gray (2010) does not recommend a specific method for collecting information related to target situations and related behaviors, she does describe processes that are similar to the procedures of a functional behavioral assessment (FBA). The current study effectively utilized FBA strategies developed by O'Neill et al. (1997). Given the evidence provided in the present study, as well as existing evidence that supports the use of FBA in developing behavioral interventions (e.g., Horner et al., 2002), practitioners should utilize FBA data when developing Social Story interventions.

Conclusion

In conclusion, the results of this investigation revealed that both paper-based and iPad-based Social Story interventions were effective in decreasing rates of undesired behaviors. Furthermore, evidence suggested that the format of a Social Story did not make a significant difference in behavioral outcomes for the participants. In light of the fact that Social Story interventions are best conceptualized as an intervention package, future research should investigate which component(s) of Social Story interventions are contributing to their effectiveness. This, in turn, will inform the practices of interventionists who endeavor to utilize evidence-based practices.

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About the Authors

Robyn M. Thompson, Ph.D., is an assistant professor and program director for the Occupational Therapy Assistant Program at Salt Lake Community College in Salt Lake City, UT. Robyn's research and scholarly interests include early childhood special education and supporting children with motor needs in inclusive settings.

Susan S. Johnston, Ph.D. is a Professor in the Department of Special Education at the University of Utah. Susan's research and scholarly interests include augmentative and alternative communication, early language and literacy intervention, and early childhood special education. She has published articles and has delivered state, national, and international presentations in these areas.

Preparing Early Childhood Educators for Blending Practices in Inclusive Classrooms

Mary Donegan-Ritter, Ph. D.
University of Northern Iowa

Frank Kohler, Ph. D.
University of Northern Iowa

Abstract

Preparing early childhood teachers for inclusion requires the blending of high quality developmentally appropriate practices with environmental adaptations and individualized instructional practices. This article describes how a field experience was redesigned to incorporate evidence based practices in teaming and collaboration, environment and instruction. A STEM learning center was the context for this case study on a preservice teacher and preschool child with special needs. Changes to the physical, social and temporal environment set the stage for promoting communication goals and led to increased child engagement and language use. Implications and recommendations for how to structure unified early childhood/early childhood special education teacher preparation programs for blended practices are discussed.

Preparing Early Childhood Educators for Blending Practices in Inclusive Classrooms

High quality early childhood programs, comprised of developmentally appropriate materials, activities and interactions, are the foundation for learning and development for all young children (Sandall & Schwartz, 2008). Inclusive early childhood programs and services are defined by the features of access, participation and supports (DEC/NAEYC, 2009). Access requires teachers to remove barriers and provide a wide variety of ways for children to take part in activities. Participation is more likely when teachers use instructional approaches that promote engagement in play and learning activities. Supports take many forms including ongoing professional development and communication and collaboration between professionals and families. All these components are needed in order for young children with special needs to benefit from inclusion.

Since the 1990's many states have developed unified early childhood education (ECE) and early childhood special education (ECSE) certification requirements to prepare teachers for inclusive services. Unified programs are designed to ensure early childhood teachers can work effectively with all children (Lim & Able-Boone, 2005). These early childhood teacher preparation programs include curricula guided by state certification requirements and professional associations including National Association for the Education of Young Children (NAEYC) and Division for Early Childhood of the Council for Exceptional Children (DEC) (Stayton, 2015). Supervised field experiences in inclusive settings with children with diverse abilities are an invaluable part of the preparation experience. Through coursework and field experiences that infuse diversity, early childhood (EC) preservice teachers develop knowledge and skills in planning developmentally appropriate curriculum and making modifications and adaptations to increase opportunities for each child's meaningful participation.

A challenge for unified teacher education programs is how best to design field experiences requirements so that preservice teachers are prepared to work with children with diverse needs in a variety of settings. Specialized instruction within inclusive environments is often necessary in order to meet the unique needs of young children with disabilities (DEC/NAEYC, 2009; Division for Early Childhood, 2014). Preservice teachers can benefit from field experiences that model emerging practices such as peer coaching, professional learning communities, and school based data teams to ensure that teachers receive ongoing support that is specific to their needs and provided from individuals with different areas of expertise (Vescio, Ross, & Adams, 2008).

The purpose of this article is to describe how a unified early childhood teacher education program incorporated evidence based Division for Early Childhood recommended practices (DEC-RP) to enhance a field experience in an inclusive preschool classroom. This article describes a case study in which a preservice teacher implemented practices related to environment and instruction and teaming and collaboration when designing a STEM (science, technology, engineering and math) learning center in an inclusive preschool. The effects of using selected DEC-RP on the preservice teacher's use of language facilitation strategies and the target child's engagement and interactions are shared. The final section provides recommendations for early childhood/ early childhood special education teacher preparation programs when considering how to incorporate evidence-based practices in coursework and field experiences.

DEC Recommended Practices

Preservice teachers in early childhood special education benefit from field experiences that demonstrate the use of evidence based practices to provide high quality services to children and families. Professional organizations support teacher preparation programs by translating research into practice and by disseminating information on evidence-based practices. In 2014 the Division for Early Childhood of the Council for Exceptional Children revised their recommended practices (DEC-RP) to support young children with special needs. In this study the DEC-RP were studied and selected practices on environment, instruction, and teaming and collaboration were intentionally incorporated into a field experience in an inclusive preschool classroom. Table 1 lists the recommended practices that were targeted for this field experience.

Table 1.

Division for Early Childhood Recommended Practices (DEC-RP) incorporated into a Unified Teacher Education Program Field Experience

Environment

- E1. Practitioners provide services and support in natural and inclusive environments during daily routines and activities to promote the child's access to and participation in learning experiences.
- E2. Practitioners consider Universal Design for Learning principles to create accessible environments.
- E3. Practitioners work with the family and other adults to modify and adapt the physical, social, and temporal environments to promote each child's access to and participation in learning experiences.

Instruction

INS1. Practitioners, with the family, identify each child's strengths, preferences, and interests to engage the child in active learning.

INS2. Practitioners, with the family, identify skills to target for instruction that help a child become adaptive, competent, socially connected, and engaged and that promote learning in natural and inclusive environments.

INS3. Practitioners gather and use data to inform decisions about individualized instruction.

INS4. Practitioners plan for and provide the level of support, accommodations, and adaptations needed for the child to access, participate, and learn within and across activities and routines.

INS5. Practitioners embed instruction within and across routines, activities, and environments to provide contextually relevant learning opportunities.

INS6. Practitioners use systematic instructional strategies with fidelity to teach skills and to promote child engagement and learning.

Teaming and Collaboration

TC1. Practitioners representing multiple disciplines and families work together as a team to plan and implement supports and services to meet the unique needs of each child and family.

TC2. Practitioners and families work together as a team to systematically and regularly exchange expertise, knowledge, and information to build team capacity and jointly solve problems, plan, and implement interventions.

Context of the Study: Early Childhood STEM Learning Center

Developmentally appropriate and integrated curriculum provides a context that engages and encourages the meaningful participation of all young children. In our unified teacher education program preservice teachers are placed in diverse preschool classroom the semester before student teaching. They are expected to design and implement a physical science STEM learning center in which they demonstrate both teacher led and child initiated learning. The preservice teacher is expected to support child inquiry by taking on the role of a facilitator who organizes the environment, observes children's interests closely, asks questions and poses problems to engage children and further their theory building (Chaille & Britain, 2003). Physical science activities (i.e., water dynamics, ramps and pathways, air dynamics...) are ideal for diverse learners because children can interact directly with objects and materials and immediately observe how they respond (Hoisington, Chalufour, Winokur & Clark-Chiarelli, 2014; Donegan-Ritter, 2015; Zan & Geiken, 2010). Physical science activities allow young children to engage in science concepts, and have experiences with force and motion which fosters a beginning understanding of how the world works. In this study the preservice teacher planned and implemented a ramps and pathways learning center (Counsell et al., 2015; DeVries & Sales, 2010; Zan & Geiken, 2010) that provided ample opportunity for young children to engage in hands on physics investigations.

Blending Practices

Blended practices (Grisham-Brown, Hemmeter, & Pretti-Frontczak, 2005; Pretti-Frontczak, Grisham-Brown, & Sullivan, 2014) refers to combining the use of evidence based, recommended practices for children with special needs (Division for Early Childhood, 2014) within the context of high quality early childhood curriculum. In this article a STEM learning center was the high quality curriculum that was planned to reflect the principles of Universal Design for Learning (UDL). The Framework for Response to Intervention, developed by DEC, NAEYC and NHSA (2014), is a multi-tiered system of support that our early childhood teacher preparation program used to design the preschool field experience. The following is a discussion of how each of the three tiers, high quality curriculum with UDL, adaptations to the environment, and individualized instruction, are essential for meeting the needs of children with special needs in inclusive settings.

Tier 1 high quality curriculum with UDL. High quality developmentally appropriate curriculum is the starting point, critical for children's successful outcomes, but it is also not enough to engage all children. Using the principles of universal design for learning (UDL) early childhood teachers design the social environment and deliver instruction so that young children with the widest range of abilities can participate according to their individual strengths (Conn-Powers, Cross, Traub, & Hunter-Pishgahi, 2006). In inclusive classrooms this requires teachers pre-planning or pre-thinking about the activity and the abilities and needs of all possible learners in order to provide multiple means of representation, expression and engagement (Center for Applied Special Technology, 2011). UDL is a process by which curricula is more accessible to all children by intentionally designing learning activities from the beginning to address individual differences (CAST, 2011). As teachers plan learning activities, the UDL framework provides them with multiple options to present content, gather feedback and recruit interest in the planned activities.

Tier 2 adaptations and modifications. Because children with disabilities spend less time actively engaged with adults, peers and materials than children without disabilities (McWilliam & Bailey, 1995), adaptations or changes are often needed to support their meaningful participation. Preservice teachers need to be intentional about arousing particular children's attention, curiosity and motivation to participate in classroom activities. An important way to promote engagement is to identify children's strengths, interests, and preferences and to use those child preferences to plan classroom and community activities that encourage communication and interaction (Hancock & Kaiser, 2006; Division for Early Childhood, 2014).

In order for children with special needs to have access and participate in learning centers and other activities, environmental adaptations have to be made. Adaptations to the physical, social and temporal environment are needed so that instructional strategies can be planned and implemented. According to DEC-RP (2014), physical environment includes space, equipment and materials; social environment encompasses interactions with peers and family members; and the temporal environment includes for how long and when routines and activities take place. Tier 2 involves monitoring children's ongoing interests and preferences and then modifying various features of the environment to foster children's engagement and learning.

Tier 3 individualized interventions. The goals on the individual education plan (IEP), developed by the family and a multidisciplinary team, create a need for intentional planning to select and address the goals with ongoing data collection for monitoring of progress. Embedded instruction, considered an evidence based practice in early childhood settings, is individualized and intentional teaching that takes place during child initiated activities when a child is engaged in a chosen activity that presents an opportunity to teach a target skill (Daugherty, Grisham-Brown & Hemmeter, 2001; Grisham-Brown, Pretti-Frontzak, Hawkins, & Winchell, 2009; Grisham-Brown, Schuster, Hemmeter & Collins, 2000).

Planning for embedding IEP goals for children requires a collaborative planning process in which a team reviews the IEP and selects target goals. According to DEC (2014), group facilitation strategies are used to enhance team functioning so that all viewpoints are shared. Tier 3 involves this highest level of collaborative planning to ensure that children's IEP goals are addressed across a wide range of school activities and routines.

Case Study: Sue and Theo

In this case study about Sue and Theo, practices in each tier, high quality universally designed curriculum, adaptations to the environment, and individualized instructional interactions, were blended through collaborative teaming so that Sue, a preservice teacher, could increase a child's meaningful participation in a STEM learning center.

Sue, the Preservice Teacher

With little to no previous experience working with children with special needs, and in her last semester of coursework before full time student teaching, Sue is an early childhood major whose unified endorsement, "Teacher Prekindergarten through Third Grade – Including Special Education" means she is expected to work effectively with children who are typically developing and children who have special needs. She needs to be able to plan and implement both adult directed and child initiated learning experiences. In her future inclusive classroom, she will have to individualize instruction and learn to collect classroom data according to an IEP.

Sue was placed in an inclusive publicly funded preschool classroom for her 10 week, 40 hour supervised field experience (two hours, twice a week). As part of the course requirement, Sue planned integrated curriculum for a STEM learning center based on ramps and pathways for an hour twice a week. While facilitating the learning center, Sue provided varying lengths of wooden cove moldings and an assortment of objects that roll and slide for children to experiment with how objects move on inclined surfaces.

Theo, the Target Child

One of the students, Theo, was age 4.11 at the start of this study. A happy, outgoing and determined boy, he enjoyed songs, dancing to music, looking at books, coloring on the easel and playing with cars and trucks. He had multiple needs that were addressed on his IEP including behavior concerns, communication delays, and physical motor impairments. He experienced a stroke as an infant that limited the use of his left leg and arm (left hemiplegia). In the area of expressive communication, he was able to produce 1-2 word utterances for labeling. He repeated

words but had difficulty expressing his wants and needs and feelings to others. His priority IEP communication goal was to use three word utterances to make requests and gain attention.

Before the Collaborative Planning Intervention

Sue is frustrated that, although Theo seems interested in the ramps and pathways learning center that she planned, he is only staying at the ramps center for a very short time. He uses ramps other children build, but hasn't built ramps on his own yet. He can't use marbles without putting them in his mouth. Sue has introduced other items like small balls and plastic eggs in order to get him interested. Sue would like him to stay at the ramps center for longer periods. She thinks it would be great if he could build his own ramp set.

Preservice teachers like Sue, who had limited experience working with children with special needs, need support in order to promote meaningful participation and address IEP goals. For this study, support came in the form of a team composed of speech and language therapy graduate students and an early childhood special education faculty member who worked together with Sue to promote IEP communication goals for Theo.

Data Collection

The speech and language therapy graduate students worked as research assistants with the first author. They videotaped classroom observations of Sue interacting with Theo on three separate occasions for 45 minutes during center time as she facilitated children's explorations and interactions with materials in the ramps learning center. Theo and the other children moved freely around the classroom. The videotapes allowed any and all interactions between Sue and Theo and peers in the learning center to be transcribed and subsequently coded. Videotaped observations of EC student teacher- child interactions during the learning center were conducted before the collaborative planning meeting and two times following the coaching meeting. Data was collected from videotapes to inform team decisions about how to embed IEP goal instruction during the STEM learning center.

Data Analysis

The interactions that took place between the preservice teacher and the target child and other peers who were present were transcribed and analyzed to determine how long Theo was engaged in the learning center and the extent to which Sue used language facilitation strategies to support Theo's social communication. Sue's use of language facilitation strategies were monitored using a frequency count. The type of target child's social communication (i.e., nonverbal, vocal, verbal) and type of language facilitation technique (question, parallel talk, repetition, expansion) were coded. In addition, the duration of the Theo's engagement at the learning center was measured.

Collaborative Planning Intervention

Following the first videotaped observation Sue met with the graduate students in speech and language therapy and a faculty member with expertise in ECSE to share observations, review the IEP, select a priority IEP communication goal and develop a plan for addressing the IEP goal during the STEM learning center. After sharing observations the team realized that Sue's interactions with Theo were impacted by the limited amount of time Theo engaged with ramps in the busy classroom at the popular ramps center. Table 2 shows that during the first observation

Sue rarely used specific strategies to facilitate language and Theo did not engage in any social exchanges with peers in the ramps center. He had difficulty moving the two and three foot long, one inch wide cove molding into the desired position and he could not readily pick up the marbles that were used in the learning center. The presence of at least four or five peers coming and going resulted in Sue being distracted from supporting his efforts to use the materials.

The team concluded that barriers existed in the learning center environment which included the type of materials and presence of too many peers at the same time. Theo had difficulty safely carrying the long narrow cove molding used for ramps. Waving the ramps in air was a safety concern. In addition, the concentration of so many peers prevented Sue from supporting his engagement in the physical science learning center. When Theo did not have Sue's attention he walked away.

The team brainstormed and selected several environmental adaptations to the physical, social and temporal environment to increase his engagement. Adaptations to the physical environment were a) use larger objects including cars and balls, b) use bigger and lighter ramps (i.e., plastic rain gutters), and c) move the ramps and pathway center to a quieter, less traffic area. Adaptations to the social environment included a) select one patient peer to play with him at first, and b) gradually increase number of peers. A temporal adaptation was to invite him to come to the ramps center upon arrival so there are fewer peers and distractions.

The IEP for Theo was reviewed. His strengths, preferences and delays in physical motor skills and expressive language were considered. The goals that the team, including his family, developed for the year were discussed. A priority goal that could be addressed during the ramps learning center was identified: Theo will produce 2-3 word utterances in the classroom to gain attention, make requests and communicate wants and needs.

The speech and language pathology graduate students shared information on responsive interaction strategies (Weitzman & Greenberg, 2002) which are part of Learning Language and Loving It program (Girolametto, Weitzman, Lefebvre & Greenberg, 2007). The specific language facilitation strategies that Sue could use with Theo were: a) withhold something he wants, then prompt him to make requests; b) repeat what he says and expand on it; and c) use parallel speech (i.e., talk about what he is doing).

Following the Collaborative Planning

On two subsequent field experience days Sue was videotaped interacting with Theo in the classroom. Sue arranged the social environment so that there was only one peer present with Theo in the ramps and pathways learning center. At the suggestion of the team she used light-weight, six inch wide plastic gutters for ramps and larger plastic cars and textured rubber balls for easier manipulation of materials. As shown in Table 2, the combined use of environmental adaptations and language facilitation strategies resulted in positive gains in length of engagement. Theo's length of engagement increased over the course of the field experience from 2:30 minutes at the start to over five minutes after collaborative planning. This longer engagement and the collaborative team planning enabled Sue to use more language facilitation strategies, an increase from using one strategy at the start to using 8 and 11 strategies following collaborative planning.

Table 2

Interactions between Sue and Theo during Ramps and Pathways Learning Center

Observation #/ Learning Center	Duration of target child engagement in learning center	Frequency of EC teacher use of language facilitation	Frequency and type of child interaction
1) Ramps and Pathways (5 peers present)	2:30	1	1 No response 0 peer interactions
Collaborative Team Meeting			
2) Ramps and Pathways (1 peer present)	5:05	8	3 nonverbal 3 verbal 2 peer interactions
3) Ramps and Pathways (3 peers present)	5:50	11	4 nonverbal 4 verbal 3 peer interactions

The following recounts how Sue changed the social and physical environment and used language facilitation strategies after the collaborative planning meeting:

Sue set up two 6 inch wide, two foot long plastic gutters, large cars and balls in the ramps center. At the start of center time Sue invited Theo and one peer, Mike, to the ramps center.

Sue: Come on in. Would you like to use a car or a ball (holds one in each hand)?

Theo: (starts to reach for ball)

Sue: Can you tell me?

Theo: Ball

Sue: Ball. Would you like to use orange ball? What do you want to do with the orange ball?

What's Mike doing? Look at that go!

Theo: Hey, Mike watch (approaches plastic gutter with orange ball)

Sue: Mike, can you watch your friend Theo?

Theo: (puts ball on ramp)

Sue: Look at that, He's rolling it down. Do you think this ball will roll differently? (hands him different texture ball)

Mike: If you do this the ball will hit the box

Sue: Did it hit the box?

Sue: Theo, would you like to try the car?

(Theo takes green car from Sue and puts it on the gutter)

Sue: Is it a green car?

Theo: crash

Sara: Did the car crash into the box? Do you want to try it again?

Mike: It knocked it off. It goes speeder.

(Theo does the same thing as Mike)

Sue: Wooah Theo! You made the box roll over!

Discussion

This case study illustrates the impact of blending evidence based practices related to arranging the environment, embedding instruction and team collaboration on enhancing a young child's meaningful participation in an inclusive classroom. To support Theo's participation adaptations were made to the physical environment (i.e., moving the space and replacing materials), the social environment (i.e., reducing the number of peers and selecting specific peers to interact with him) and the temporal environment (i.e., adjusting the schedule and length of activities). According to Catalino and Meyers (2015), environment, which cannot be separated from other topic areas, serves to either facilitate or inhibit opportunities for children to have access to classroom activities. In order to engage Theo in classroom activities Sue needed to arrange the environment to support his engagement. As a result of collaborative planning, materials were replaced (i.e., one inch cove molding was replaced by 6 inch wide plastic gutters and the marble were replaced by plastic cars that fit his hands and were of high interest). The learning center was moved from a high traffic area to a quiet corner. The social environment was adapted by reducing the number of children present when Theo was at the learning center. In addition, specific peers who he liked and who shared common interests were present. And finally, the schedule was changed so that he could go to the ramps center when he first arrived because it was less crowded.

Theo's IEP goal was addressed by Sue using embedded instruction, the use of short systematic instructional interactions within the context of a STEM learning center. According to Horn, Lieber, Li, Sandall, and Schwartz, (2000) learning opportunities should be possible in nearly all classroom activities to help young children develop meaningful skills. By incorporating DEC-RP, a preservice teacher was given the support through collaborative planning, to arrange the environment and then embed instruction of an IEP language goal.

It is rare that undergraduate students have an opportunity to collaborate with professionals from other disciplines. (Horn, Hyson & Winton, 2013; Odom, Buyssee & Soukakou, 2011). Although EC preservice teachers report positive views toward collaboration, they do not often have formal opportunities to collaborate with professionals from other disciplines (Frankel, Hutchinson, Burbidge & Minnes, 2014). Improving the ability to function as a member of a professional community during early childhood teacher education holds promise to increase problem solving opportunities and ultimately improve teacher retention (Anderson, 2013). The following section provides recommendations for how teacher preparation programs can prepare early childhood teachers to support children with disabilities within inclusive learning environments.

Recommendations for Preparing Early Childhood Teachers for Inclusion

Personnel preparation programs are under increasing requirements to ensure that teachers are prepared to implement practices that are based on research evidence and produce positive outcomes for students. In fact, recent federal legislation requires that teacher education programs collect performance based measures to indicate whether their graduates are ready to succeed in the classroom (U.S. Department of Education, 2014). While the case of Sue and Theo is promising, research indicates that many preparation programs fall sort of preparing teachers to apply practices that are based on professional association standards (Chang, Early & Winton,

2005; Stayton, Smith, Dietrich & Bruder, 2012). Preparing teachers to implement DEC-RPs that produce positive outcomes for young children will require changes in several aspects of teacher preparation programs. Four specific methods that were illuminated in Sue's case study are described next.

1. Incorporate resources supporting the use of DEC recommended practices throughout unified teacher preparation coursework and practicum experiences. This first recommendation is consistent with both current policy and practice within early childhood teacher education. The accessibility of websites such as the IRIS Learning Center and Technical Assistance Center for Social and Emotional Interventions allow early childhood preservice programs to increase their emphasis on DEC-RPs, such as modifying the schedule and space for classroom activities, and well as the materials, number of peers, and forms of teacher support. Moreover, teachers in preparation should have multiple opportunities to apply and learn these practices within the context of structured field experiences. Sue's example illustrated the opportunity to receive hands on experience teaching Theo and learning to implement environmental practices to support his participation in a routine activity and address specific IEP goals related to language and communication. Moreover, Sue had the opportunity to collaborate with a team that included graduate students in speech and language therapy and a faculty member in ECSE. The team also participated in high quality collaboration by observing the video of Sue and Theo, reviewing Theo's IEP, identifying and removing environmental barriers, selecting a communication goal, and developing a plan for addressing the IEP goal during the STEM learning center. This case study illustrates the need for teacher educators to be intentional about incorporating recommended practices in specific elements of their programs.

2. Foster Ongoing Collaboration and Partnerships to Support Teacher Preparation. A number of individuals have recommended interdisciplinary collaboration in teacher preparation over the past 20 years (Miller & Stayton, 2006; Winton, 2000). Despite these recommendations, research indicates that collaborative approaches to personnel preparation has been the exception rather than the rule, as many programs encompass fragmented efforts from university faculty, staff, and cooperating teachers (Bruder & Dunst, 2005; Mellin & Winton, 2003). However, preparing early childhood teachers to collaborate with others has become even more important over the past ten years with the establishment of Response to Intervention, professional learning communities, and school-wide data teams.

This case study illustrates how an undergraduate preservice teacher engaged in team meetings with graduate students in speech and language pathology and an ECSE faculty member. This collaboration was structured around key activities or processes such as examining a child's IEP and selecting goals to focus on, viewing sessions from the classroom and recommending practices to implement, and using data to make informed decisions. Such processes are essential components of school based professional learning communities and data teams and are recommended by professional associations such as the Council for Exceptional Children. Despite the obvious importance, there are a number of significant barriers to incorporating interdisciplinary teaming and collaboration into personnel preparation programs. These include divergent beliefs or orientations that different professionals have on early intervention and the longstanding tendency for academic departments to operate independently of one another. An integral element of high quality early childhood preparation programs is ensuring that preservice

teachers have opportunities to collaborate and partner with families from diverse backgrounds, teachers who work in a variety of community settings and professionals from different disciplines (Lim & Able-Boone, 2005).

3. Focus on preservice teachers' ability to produce measurable improvements in children's engagement, language, and other developmental skills. As noted earlier, a primary goal of preparation programs is to prepare teachers to implement practices that are supported by research and recommended by professional organizations. The rationale for implementing these practices is to produce improvements in children's learning, developmental progress, and success in school activities. Sue's case study illustrated how preservice teachers can focus on producing improvements in children's learning and related outcomes. First, Sue and her team identified skills/goals that would be appropriate to address within the context of the STEM activity. Based on observations and examination of the IEP, the team focused on improving Theo's ability to use materials (ramps) appropriately and engage in positive interaction/communication with his peers. The team then examined videos of Sue attempting to support Theo's appropriate participation in a routine classroom activity. A simple recording system was developed to code the duration of time that Theo was engaged in the activity, the number of language facilitation strategies that Sue utilized, and the frequency of social overtures that Theo directed to his peers. The team examined and considered these data to identify environmental practices that Sue could implement to support desired outcomes for Theo. Moreover, the team utilized videos and data from subsequent sessions to determine the overall effectiveness of their efforts and make modifications such as decreasing the number of peers in the activity with Theo. This ongoing focus on monitoring and addressing discrete measures is essential for teachers to implement practices that have positive outcomes for children. The videotape and data enabled the team to be precise in their focus and evaluation of success.

4. Provide ongoing supports for preservice teachers' implementation of high quality practices. A fourth component that is necessary for preparing teachers to implement high quality practices is the ongoing provision of coaching, feedback, and support (Scheeler, Ruhl, & McAfee, 2004). Sue's team of graduate students in speech and language pathology and a faculty member in ECSE provided Sue with support in the form of encouragement, suggestions, and feedback. The use of videotaping ensured that the team was able to observe Theo's performance, take note of the practices that Sue implemented, and collect specific data for both of these measures. Moreover, the interdisciplinary nature of the team ensured that Sue benefitted from individuals with expertise in special education and speech and language pathology. As an active participant on the team, Sue was also able to share her perceptions and contribute to the group's decision about the practices to implement with Theo.

Both Sue and Theo benefitted from using evidence based practices related to the environment, instruction and teaming and collaboration. Sue describes the language and social benefits for Theo:

I think he benefitted not only by increasing his language but also his social skills with the kids. That was great to see and he was getting so excited about coming to the ramps and pathways center. When I first started he would come in briefly but he wasn't really engaged and then once we started doing smaller group and really focusing on the

materials and interesting him in what was going on he loved it. Every morning he would come up to me and say "Sue, Sue. Ramp, ramps." It was really awesome.

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About the Authors

Mary Donegan-Ritter, Ph.D., an Associate Professor at the University of Northern Iowa teaches undergraduate and graduate courses in early childhood, special education and elementary education. Her research interests include the professional development of early childhood teachers in inclusive preschool programs, supporting social interactions and preschool STEM education.

Frank W. Kohler, Ph.D. is a Professor in the Department of Special Education at the University of Northern Iowa. His research interests include positive behavioral support, interventions for young children with autism and related disabilities, and teacher collaboration and coaching.

Pre-Service Teachers Assisting the Transition of the Student with Autism from School to Adulthood

**Jeanne Hager Burth, Ed.D.
University of Pittsburgh at Greensburg**

Abstract

Pre-service teachers, both Early Childhood Education majors and Secondary Education majors, were challenged through an assignment to plan and develop kits for learners with Autism Spectrum Disorder (ASD) to use in preparation for transitioning from school-age to work or independent or group home living. This Project-Based Learning (PBL) experience added relevance to the assignment and assisted pre-service teachers in understanding of the need for transitions. The goal of the study was to assess the pre-service teachers' learning and understanding of the need for transitions for the students with exceptionalities by connecting learning to action with a PBL assignment. Since the assignment was authentic and would be used by students with ASD, pre-service teachers found more relevance and meaning to their learning than they may have with a traditional assignment. Also, by participating in this project, pre-service teachers deepened their understanding of the student with ASD and became more confident in their own abilities to teach students with ASD. The practicing teachers, who are preparing students with ASD to transition from school to work or independent living, perceived the transition projects as desirable tools for teaching transition skills.

Key Words

Autism Spectrum Disorder, Project-Based Learning, Authentic Assignment, Transitions, Pre-service Teacher Training

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Background

It is well documented that when schools meaningfully connect learning to an authentic experience, the students' academic achievement improves. Problem-Based Learning (PBL) is a dynamic classroom approach in which students actively explore real-world problems and challenges and acquire a deeper knowledge (Edutopia, 2016). In its most developed forms, it includes a clear focus on learning through civic engagement and participation in service projects of obvious relevance to the local school or community (Clark, 2008). Civic engagement promotes civic knowledge, responsibility, and participation in actions in support of the stewardship of community needs, and the resolution of issues of public concern.

As students in PBL become actively engaged in studying and responsibly addressing relevant local issues, the results have included higher levels of learner engagement, and a renewed sense of value for the spirit of stewardship of the community. This is a values-driven approach,

designed to advance educational goals by connecting learning to action, while also providing for a need in the community. . Generally, research on PBL has found that students who engage in this approach benefit from gains in factual learning that are equivalent or superior to those of students who engage in traditional forms of instruction (Thomas, 2000).

In PBL, similar to project-based learning, students learn through the process of solving a problem. PBL asks students to exhibit not only mastery of content, but also the ability to use content knowledge for problem-solving, analysis, communication with others, ethical reasoning, or other learning outcomes and to apply content knowledge in a “real-world” situation. Students integrate their content knowledge in order to analyze a new situation, problem, or event, and then apply their knowledge in order to address “real-world” issues or problems. Students and communities gain when the projects which are identified address real community needs.

PBL curricula often emphasize learning how to listen to other points of view, critical thinking skills, consensus building, and group goal setting and problem-solving (Clark, 2008). Project-based approaches include strong civic engagement opportunities and build concrete citizenship skills, such as the capacity to analyze and communicate information for creative problem-solving and the ability to create and facilitate effective dialogues (Clark, 2008). Clark (2008) further emphasizes that understanding the significance of what they are learning and doing, inspires students to work harder in their classes, and for their community.

These project-based assignments yield artifacts that demonstrate student achievement levels. Recognizing that learning can be demonstrated visually, graphically, orally, digitally, and through performance, project-based assignments do not focus exclusively on text-based evidence to demonstrate levels of learning. To help ensure that the assignment is both effective and meaningful, one must consider the importance of linkage between the assignment and the project. Learning experiences and associated assignments must allow students to demonstrate their understanding.

Through the use of a PBL assignment, pre-service teachers gained a deeper understanding of the need for transitions for students with exceptionalities. Through the assignment, the pre-service teachers also demonstrated their knowledge of the challenges that are faced by students and adults who have exceptionalities.

Need for the Project

Autism spectrum disorder (ASD) is a group of developmental disabilities that can cause significant social, communication and behavioral challenges. The learning, thinking, and problem-solving capabilities of people with ASD can range from gifted to severely challenged. Some people with ASD need a great deal of help in their daily lives; others need less. This is one of the reasons that autism is considered a spectrum.

People with ASD often have complications with social, emotional, and communication skills. Many people with ASD also have different ways of learning, paying attention, or reacting to things. Signs of ASD begin during early childhood and normally last throughout a person’s life. Some examples include avoiding eye contact, having trouble understanding the feelings of

others, repeating phrases or actions, and having problems adapting to something new or a change in routine.

There are many challenges for a young adult identified with ASD when the young adult leaves the school system. Whether an individual is seeking financial support, personal fulfillment, social opportunities, or some combination of these, adult life may be filled with obstacles.

According to the Federal special education law, Individuals with Disabilities Education Act (IDEA), requires that school districts help students with disabilities make the transition from school to work and to life as an adult. Although IDEA mandates services and programs while the young adult is in school, there are no federally mandated programs or services for individuals once they leave the school system (Individuals with Disabilities Education Act, 2004). National data indicates that the majority of adults with autism are unemployed or underemployed (Butterworth, 2012).

When leaving the autistic support school (typically at age 21) to transition to adulthood, young adults who are identified as having Autism Spectrum Disorder (ASD) are challenged by forfeiting the familiar school routines and activities and the required support of the school system. Public schools are charged with the task of finding children with disabilities and providing services. But in the adult world, the responsibility to self-advocate, to apply for services and ask for what is needed, lies with the individual.

Researchers suggest that young adults with autism spectrum disorders have worse employment outcomes in the first few years after high school than do peers who have other types of disabilities. Also, just over half (53.4 percent) of the young adults on the autism spectrum who were surveyed had ever worked for pay outside the home within the first eight years after leaving high school (Roux et al., 2013).

Other researchers find that adults on the autism spectrum were less likely to have ever lived independently since leaving high school, compared to their peers with other disabilities. More young adults with autism lived with their parents or guardians, and for longer periods of time, than did individuals with emotional disturbance, learning disability or intellectual disability. They also had the highest rates of living in a supervised living arrangement (Anderson, Shattuck, Cooper, Roux, & Wagner, 2014). Similarly, Duncan (2013) found that only half of the diploma-bound students with ASD with average and above intelligence had deficits in daily living skills. The majority of persons with ASD continue to depend on their families for support into their adult years (Billstedt, Gillberg, & Gillberg, 2011).

There is growing evidence that the formal transition process, which public schools are supposed to facilitate as mandated by IDEA, is not working well for students with disabilities. For example, one group of researchers (Hetherington et al., 2010) conducted in-depth interviews with a small number of transitioning teens, as well as focus groups with their parents, and found families to be extremely dissatisfied with the reality of the process. The students, who are supposed to be at the center of transition planning, played a minimal role, if any, while parents felt communication with the school was inadequate; that faulty assumptions were made about their children; and that there was a tendency to funnel them into traditional adult service

programs whether these were appropriate or not. The researchers concluded that adolescents' and their parents' perceptions of the transition planning process did not consist of best practices and mandates (Hetherington et al., 2010).

The Project

The “Transitioning the Student with Autism from School to Adulthood” project proposed the two goals of (a) proposing school to work transitional experiences for exceptional learners, and (b) providing experiences for pre-service teachers to develop curriculum for exceptional learners. Pre-service teachers, both Early Childhood Education majors and Secondary Education majors, were challenged to plan and develop kits for the learners with Autism Spectrum Disorder (ASD) to use in preparation for transitioning from school-age to work or independent or group home living. The kits included functional life skills, such as the following:

- Money activities, for example banking, writing checks, balancing checkbooks, and the like
- Flash cards for money and time
- Time and elapsed time activities
- Self-Advocacy activities
- Health and hygiene information and practice activities
- Functional reading, such as bus schedules, ads and coupons, reading medication bottles, menus, and the like
- Emotion intelligence activities
- Social interaction activities
- Sequencing and cause and effect activities
- Use of maps activities

The assignment is given as part of a course for undergraduate students (pre-service teachers) who are learning about students with disabilities in the classroom. This PBL assignment allows pre-service teachers to apply their knowledge gained through coursework, regarding ASD and task analysis, to create a kit which can be used by persons with ASD to practice skills of independent living or work skills. Kits should have included a rationale, step-by-step instructions for the task, a video (if applicable), practice opportunities, and all the resources necessary to practice. For example, a kit that teaches a student with ASD how to pack a lunch box for work would include a rationale, step-by-step instructions, and items that may be used for practicing, like a lunch box and plastic food, utensils, sandwich bags, and the like.

These kits were peer-reviewed to allow students to gain further understanding and make necessary changes. The final review or assessment by the professor was through a given rubric. Once corrections were made, the completed kits were donated to a classroom with learners with ASD who are transitioning from school to work or independent living.

Research Questions

The research questions follow:

Research Question One: By participating in a PBL assignment using an authentic project, one that will be used by students with ASD, do students find more relevance and meaning to their learning than they may have with a traditional assignment?

Research Question Two: By participating in an authentic project, one that will be used by students with ASD, will students increase their understanding of the need for transition training for students with ASD?

Research Question Three: By participating in this PBL project, will students deepen their understanding of the student with Autism Spectrum Disorder?

Research Question Four: How does the practicing teacher, who is preparing students with ASD to transition from school to work or independent living, perceive the transition projects?

Methodology

Qualitative information was gathered to evaluate the success of the project. Focus groups were held to collect responses from pre-service teachers participating in the project. Responses regarded perceptions about finding more relevance and meaning to learning by participating in a PBL assignment. The assignment was authentic in nature due to the fact that the kits were donated to a school. Due to the authenticity of the assignment, multiple questions in the focus group sought to learn whether pre-service teachers thought the assignment was more valuable to their learning than typical reading/writing assignments. Other focus questions explored the pre-service teachers' understanding of the need for transition training for students with ASD. Further, the questions and discussions helped to discover if the pre-service teachers deepened their understanding of ASD by considering the stereotypical differences of the student with ASD when planning the project.

Qualitative information was gathered from school personnel from autistic support schools, who received the completed kits for use with their students. After reviewing the kits, the school personnel answered questions prompting open-ended responses regarding the impact that the transition kits may have on their students.

Participants

Pre-service teachers (Early Childhood and Secondary Education majors) who were enrolled in the course, Exceptional Learners in the Classroom II, were assigned the project-based assignment as part of their coursework. The course focuses on low-incidence disabilities, or those disabilities that are not often found in regular education classrooms. These junior year students were enrolled in the course the summer of 2015 and fall of 2015. There were twenty-two pre-service teachers participating. The participants were invited to share thoughts and comments through small focus groups regarding perceptions and learning.

Two teachers from two separate ASD support schools with students who are transitioning from school to work (ages 14 through 21) were invited to participate in the study. The participating teachers were suggested by the director of the National Human Services Schools (NHS), and then recruited by the researcher. The teachers received the transition kits that were generated by

the pre-service teachers and were asked to review the kits and then participate in a questionnaire regarding the impact the kits may have on their students.

Findings

By participating in an authentic project, one that will be used by students with ASD, pre-service teachers were able to find more relevance and meaning to their learning than they may have with a traditional assignment. Every participating pre-service teacher responded positively to the question, “Did knowing that the transition kits would be donated to a school when they were complete influence your own learning?” Comments indicated that pre-service teachers found “value to our work, knowing that the kits would actually be used and not just something that was corrected and returned to us.” One noted, “This is going to be used by someone. It will be helpful to someone, allowing that person to learn something that they could not do before.” Another stated that the assignment invoked both excitement and fear. It was exciting to apply the knowledge that we accrued in classes, but it was scary because it was real, which meant it had to be done well.

A list of ideas for the transitions kits was generated by teachers from two participating schools for autistic support. Pre-service teachers selected an idea from the list or explored their own idea with approval from the researcher/professor.

One girl designed a project on how to fill out a job application. She expressed her excitement because her project, “may get someone a job someday.” Another concurred, “I hate busy work, and this is not busy work by any means. This is going to help someone succeed.”

By participating in an authentic project, one that will be used by students with ASD, pre-service teachers increased their understanding of the need for transition training for students with ASD. Students admitted to not realizing that when persons with ASD leave schooling, they may be on their own. One confessed that he or she never thought about someone with ASD being independent. Admitting that it was stereotypical, the student acknowledged that he/she thought that there would always be someone there to help an individual with ASD. The student disclosed, “Knowing that I am going to be on my own very soon is scary to me. I can’t imagine how someone with ASD must feel.” Another pre-service teacher discussed the importance of realizing why it was important to learn certain skills, so the rationale for doing the project became important, for example learning to iron a shirt is an important skill to prepare for an interview because the first impression of the candidate at the interview is the personal appearance.

In some cases, the project changed the pre-service teachers’ views on what persons with ASD *can* do. One student remarked, “I never realized what people with ASD need to do. Why would someone with ASD need to tie a tie? It’s not like he would have a job, which was a terrible thing for me to say. My whole thought process has change 180 degrees. I now think that they can do a lot in society.” Another student stated that the project brought into perspective the idea that persons with ASD need to learn how to do things for themselves. By doing the project, “We learned that they are capable, and we can show them things that we do every day to make it easier.”

By participating in this project, students deepened their understanding of the individual with Autism Spectrum Disorder. Several pre-student teachers remarked that by participating in this project, they realized the abilities of the persons with ASD rather than the disabilities. When planning for the project, one student realized, “They do have the ability to do this. It is just that we have to show them.” One student shared, “Before doing this project, I never really had any experience with someone with ASD. I have seen students who have been diagnosed in the field, but I have never really had too much interaction with them. After this project, my confidence of how to reach these individuals has changed. I feel increasingly more comfortable and confident to be able to teach them.” A secondary education student recognized, “I can do this, and I should do this because I may be working with students of any level. Wanting to be a high school teacher someday, I need to help my own students think beyond high school. I can do things like transition kits to help my students be prepared.”

Some of the most noteworthy observations when planning the projects were identifying a topic, the need for detail and breaking skills into very small tasks, and the narrowing of a topic of a basic skill into an even smaller task, if needed. For example, one student project was how to do laundry. The student noted that she does laundry all the time, so she thought her project would be easy to explain. As she developed the assignment, she learned there were so many subtasks to the task of doing laundry, such as sorting, choosing the correct detergents and other products, choosing the settings on the washer and dryer, using the dryer, folding, and putting away the clean items. The same student added that she also included things like, “the washer may be loud, and that is okay,” as she planned for the hypersensitivity of persons with ASD. Another student’s project was how to fill out a job application. In her planning, she included going to a business and picking up an application. She noted, “I put you just have to ask for the application, and then I realized they don’t always know how to communicate with other people with whom they are not familiar, so I included a script to practice asking for an application. That was important for mine.” Another student finished his kit on how to iron a shirt and then realized he neglected to inform the user NOT to touch the iron.

Using literal language when developing the kits was also important. One student, who planned a transition kit for how to order food at a fast food restaurant, included a statement about not “cutting in line.” She changed the wording so it would not be misconceived as using scissors when standing in line. Another student planned a kit on how to read a bus schedule. In her product, one statement said that she had “to blow the schedule up.” It was reworded so that it did not sound like the schedule was exploding.

Pre-service teachers included many different methods when developing the transition kits. The following were found to be useful in designing the kits: rationales, task analysis (detailed step-by-step instructions), samples, games, podcasts, scenarios, visuals, practice activities, scripts, answer keys, and social stories. Several comments indicated that their own learning increased in the areas of differentiating instruction, giving clear instructions, and exploring what the needs of the individual are. One secondary pre-service teacher noted that he is currently pre-student teaching in a pre-calculus class. He indicated that he knows his content so well that it is hard to realize that his students don’t know something. He recalled a lesson on factoring, when he became frustrated when his students could not grasp the concept. Because of the detail needed in

this transition project, he stated that it taught him how to break tasks down even more, seeing that he could have disaggregated the factoring concept further.

In addition, pre-service teachers see other uses for the transition kits. They indicated that the kits would be appropriate at many different age levels and for many individuals with other types of disabilities, for example cognitive disorders, developmental delays, and traumatic brain injury, where the individual may need to re-learn a skill. It was also mentioned that the kits may be useful for an individual from a different culture or an English Language Learner (ELL). Students even admitted that they learned from their own projects, like how to tie a tie and the proper ways to do laundry and load a dishwasher.

In addition to the pre-service teacher, the practicing teachers, who are preparing students with ASD to transition from school to work or independent living, also perceive the transition projects as valuable. The kits were donated to two schools for autism support. Comments from the practicing teachers confirmed that the transition kits are useful for teaching their students to transition from school to adulthood. One teacher noted that many students are not able to drive, so the How to Take the Bus kit is useful for teaching the students how to read a bus schedule and the behavioral expectations for riding public transportation. The Reading an Analog Clock kit not only teaches how to tell time, but also gives practice for common times during the day, like mealtimes and leaving for work. Similarly, the How to Balance a Checkbook kit assists students in learning to balance a checkbook register, which will hopefully prevent a student from overdrafting an account.

One kit, which teachers identified as helping students to develop interests, is Using an Index. The kit gives practice activities for items like recipe books. How to Tie a Tie and Filling Out a Job Application were two kits acknowledged for post-secondary or career planning. The Filling Out a Job Application kit also assists students in how to disclose information about their disabilities, if needed.

Teachers accredited several kits as helpful in developing skills related to independent living: Setting a Table, Doing Laundry, Ironing, and Loading a Dishwasher. Other kits help students learn about health and welfare, like Brushing Teeth and Shaving. The Dressing for the Weather kit teaches students about the hidden curriculum for what they should wear when the weather is cold or hot. Teachers noted that the students were enjoying using the kits to practice daily life skills.

Conclusions

The “Transitioning the Student with Autism from School to Work” project successfully fulfilled the goals of transitional experiences for exceptional learners, and provided experiences for pre-service teachers to develop curriculum for exceptional learners. By participating in a PBL assignment, the pre-service teachers gained more understanding of the student with ASD and the need for transition training for students with exceptionalities.

Further, pre-service teachers found more relevance and meaning to their learning than they may have with a traditional assignment and increased their understanding of the need for transition

training for students with ASD. Also, by participating in this project, pre-service teachers deepened their understanding of the student with ASD and became more confident in their own abilities to teach students with ASD.

The practicing teachers, who are preparing students with ASD to transition from school to work or independent living, perceived the transition projects as desirable tools for teaching transition skills.

Further studies may wish to explore the use of the transition kits with persons who have other types of disabilities, such as emotional or behavioral disorders, cognitive disabilities, or traumatic brain injuries. In addition, research, regarding the use of the transition kits in group homes for adults with disabilities, may shed more light on the assessment of the kits for persons with disabilities. The participant group of this study was relatively small. The study would need to be done on a larger scale to be conclusive in its findings.

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About the Author

Jeanne Hager Burth, Ed.D. is a dedicated educator and child advocate who has been working in the field of education for 34 years. Currently holding the positions of Assistant Professor and Director of Field Placement and Teacher Certification at University of Pittsburgh at Greensburg, she has also served in the roles of Principal, Professor of Educational Studies, Professor of Literacy Studies, Teacher in grades 1, 2, and 3, Learning Support, and Gifted Education. She also served as the Western PA Director for the PA Multi-region STEM Math and Science Partnership Grant for six years.

***Pre-service Teacher Self-Efficacy for Teaching Students with Disabilities:
What Knowledge Matters?***

Brooke Browarnik

Sherry Mee Bell

R. Steve McCallum

Kelly Smyth

Melissa Martin

University of Tennessee

Abstract

The relation between items assessing knowledge about educating students with disabilities and the Tschannen-Moran and Hoy's Teachers' Sense of Efficacy Scale (TSES; 2001) was explored for 140 preservice, general education teachers using biserial correlation coefficients and a multiple regression equation. From the data collected, 8 correlations were found to be significant using Connor's (n.d.) criteria and the stepwise multiple regression model identified 3 significant predictors of teacher efficacy. Of the items that entered into the multiple regression, the first item assessed the definition of RtI, the second understanding of intellectual disability, and the third collaborative teaching. These 3 items accounted for approximately 8.6% of the variance in the teacher sense of efficacy score; and, thus, may be important contributors to teacher self-efficacy.

Key words: Teacher self-efficacy; preservice teachers; general education; special education

***Pre-service Teacher Self-Efficacy for Teaching Students with Disabilities:
What Knowledge Matters?***

An educator's performance in the classroom is impacted by a variety of factors; among them are teacher self-efficacy and knowledge (Austin, 2013; McCoy, 2012). This paper examines the relations between these two constructs; specifically, the relation of knowledge about teaching students with disabilities to teacher self-efficacy and describe their relevance to preservice teachers.

Teacher Self-Efficacy and Performance

Teacher self-efficacy, defined as a teacher's belief in his/her ability to help students learn in a given situation (Skaalvik & Skaalvik, 2007), is a subcategory of self-efficacy – a concept which was first utilized by Bandura (2006) to refer to beliefs in one's capabilities to perform the action(s) required to produce given results. According to some experts (e.g., Woolfolk & Hoy, 1990), two constructs comprise teacher self-efficacy: 1) teaching self-efficacy and 2) personal

efficacy. Teaching self-efficacy is defined as the belief that teachers can affect the learning of students, while personal efficacy is teachers' confidence in their own teaching. The former construct refers to the extent to which teachers believe they are limited by external factors, and the latter construct refers to the extent to which teachers believe they are limited by internal factors.

Strong teacher self-efficacy has been found to be an important characteristic of successful teachers in some studies (e.g., Thomas, 2013). Teachers with higher reported levels of self-efficacy provide their students with more feedback and instruction than teachers with lower levels of reported self-efficacy (Caprara, Barbaranelli, Steca, & Malone, 2006; Gibson & Demo, 1984). Educators with high levels of teacher self-efficacy set loftier goals for their student and met performance goals more often than their peers (Rose, 1995), and teachers with high self-efficacy problem solve more frequently than teachers with low self-efficacy (Lee, Patterson, & Vega, 2011). In addition, teachers are less likely to experience "burnout" (i.e., an increased feeling of emotional exhaustion) if they have high levels of self-efficacy (Hastings & Brown, 2002; Skaalvik & Skaalvik, 2007). Duffin, French, and Patrick (2012) reported a relation between teacher efficacy and a variety of variables that contribute to positive outcomes for teachers and students. Moreover, teachers with high levels of self-efficacy are perceived as more competent than teachers with low levels of self-efficacy (Holzberger, Philipp, & Kunter, 2013).

Teacher Self-Efficacy and Knowledge

Research suggesting a link between teacher self-efficacy and knowledge about disabilities has shown data where in-service teachers tend to believe that they are better able to help students learn if they are well-informed about disabilities (Brown, Welsh, Hill, & Cipko, 2008; Brownell & Pajares, 1999; Conners, 2008; Cook, 2002; Dielmann, 2006; Hoover, 2010; Kim, 2011; Leader-Janssen & Rankin-Erickson, 2013; Lee, Patterson, & Vega, 2011; Peebles & Mendaglio, 2014; Walls, 2008). This relation may be due to the federal special education law of the United States, the Education for All Handicapped Children's Act (PL 94-142, 1975). PL 94-142 stipulated that students with disabilities be educated in the least restrictive environment (LRE) that can reasonably meet their needs. With subsequent reauthorization of the special education law, renamed the Individuals with Disabilities Education Act (IDEA; 1990; 1997; 2004), school officials have increasingly become obligated to place students in LREs and, therefore, have assigned an increasing number of students to general education classrooms for at least some portion of the school day. According to the 2001 Study of Personnel Needs in Special Education (SPeNSE), 96% of general educators have taught students with disabilities. The U.S. Department of Education (2015) provides support for this finding; the Department reported that 61.1% of all students with disabilities receive instruction in a general education classroom for most (80% or more) of the school day. Consequently, teachers are increasingly expected to competently instruct general education and special education students. And, apparently this climate of emphasis on inclusion and collaboration between general educators and special educators requires all teachers to be knowledgeable about disabilities in order to develop a sense of teacher efficacy and, thus, perform competently in the classroom. For example, Hoover (2010) concluded that general education teachers' sense of efficacy decreased as a result of a lack of knowledge about teaching students with learning disabilities. Conners (2008) concluded that 30 "expert" middle school special education teachers in a large suburban school district believed knowledge about disabilities leads to a high sense of teacher self-efficacy. Similarly, Dielmann

(2006) reported that elementary school teachers tended to report a high degree of teacher self-efficacy and willingness to work with children with Attention-Deficient/Hyperactivity Disorder when they were knowledgeable about disabilities. Further, general education teachers reported that their levels of teacher self-efficacy were high after receiving instruction in educating students with disabilities. Although these results were found primarily for general education teachers, some studies have generated similar results for special education teachers. In addition, Lee, Patterson, and Vega (2011) found a positive relation between teacher self-efficacy and perceived content knowledge and skills

In contrast to the findings of studies that have established a link between knowledge and teacher self-efficacy, Fives (2004) found that self-efficacy and demonstrated knowledge were negatively correlated among experienced teachers. In addition, Frank and Vaden (2013) found teacher self-efficacy was not associated with RtI knowledge and skills.

Preservice Teachers' Self-Efficacy and Knowledge

Researchers have found some evidence that *preservice* teachers have higher self-efficacy when they have knowledge about disabilities. For instance, Cook (2002) found that teacher self-efficacy is perceived by undergraduate, preservice general educators to be associated with knowledge about disabilities; preservice teachers believed that they were better able to help students learn if they were well-informed about disabilities. Similarly, preservice teachers in early childhood teacher education preparation tracks with more knowledge about disabilities had greater levels of teaching self-efficacy than peers with minimal knowledge (Walls, 2008). In addition, preservice educators indicated higher levels of teacher self-efficacy when teacher preparation programs included instruction in educating students with disabilities (Brown, Welsh, Hill, & Cipko, 2008). Kim (2011) found that self-efficacy was positively related to meta-cognitive knowledge among preservice teachers. Furthermore, survey results suggest that the self-efficacy of preservice teachers increased after completing an inclusion course and field experience (Peebles & Mendaglio, 2014). Finally, preservice teachers enrolled in a reading course reported overall higher levels of self-efficacy for teaching reading than did participants enrolled in other education courses (Leader-Janssen & Rankin-Erickson, 2013), suggesting that knowledge for teaching reading increased self-efficacy.

On the other hand, Bowlin (2012) found that preservice teachers' self-efficacy did not correlate significantly with their knowledge of legal issues, disability characteristics, and instructional strategies. Shillingford and Karlin (2014) found similar results; they found that undergraduate general education and special education preservice teachers' knowledge of emotional and behavioral disorders was not correlated with teacher self-efficacy. Finally, knowledge of teaching students with disabilities did not correlate significantly with teacher self-efficacy among students enrolled in a graduate-level introductory special education class (Martinez, 2003).

Summary

Although much of the literature supports a positive relation between teacher self-efficacy and knowledge, the literature is inconclusive. Perhaps the positive relation has been inconsistent because knowledge of certain content may relate to self-efficacy more than knowledge of other content. Consequently, we examined the impact of knowledge about educating students with disabilities on teacher self-efficacy among *preservice* teachers at an item level. It is important to

explore these relations because our current educational climate emphasizes inclusion and collaboration between general educators and special educators, requiring all teachers to be prepared to teach students with disabilities in order to perform competently in the classroom.

Research Questions

The research questions that guided this study were as follows:

1. Of the 30 items [from three broad categories—a) legal issues, b) disability awareness, and c) instructional strategies] designed to assess knowledge of teaching students with disabilities, which items, if any, are significantly correlated with teacher self-efficacy for pre-service general education students?
2. Of the 30 knowledge items that significantly correlate with teacher self-efficacy, which items, if any, significantly predict teacher self-efficacy within a multiple regression context, and to what extent?
3. Of the 30 knowledge items significantly correlated with teacher self-efficacy, what is the mean teacher self-efficacy score for those who answered the item correctly versus those who answered incorrectly?

Method

The aforementioned research questions were examined by giving participants measures of 1) self-efficacy and 2) knowledge of teaching students with disabilities. The participants and measures used are described in detail below.

Participants

Participants were 140 general education, preservice teachers between the ages of 20 and 53 ($M = 23.17$, $SD = 4.95$) from an introductory special education course at a large southeastern university. The preservice teachers were recruited from this course because it is a requirement for all teacher education students pursuing a licensure in teaching. The areas of preparation were as follows: Early Childhood: 5.7% ($n = 8$); Elementary: 47.9% ($n = 67$); Middle Grades: 41.4% ($n = 7$), Secondary: 41.4% ($n = 58$); 20.7% ($n = 29$) identified as males, 79.3% ($n = 111$) as females. The racial breakdown was 2.1% African American, 94.3% Caucasian, .7% Hispanic, .7% Native Indian, .7% Asian American, and .7% Motswana. Most of the participants (52.9%) reported having no prior experience teaching students with disabilities. Anonymity was preserved by assigning each participating preservice teacher a number during the assessment and all other university IRB guidelines were observed. In addition, arrangements for data storage and consent for participation were confirmed prior to data collection.

Instruments

Participants responded to a survey that incorporated demographic information, knowledge questions (i.e., law, disability characteristics, and teaching strategies) and the short version of Tschannen-Moran and Hoy's Teachers' Sense of Efficacy Scale (TSES; 2001). The knowledge measure consisted of 30 multiple choice questions taken from the test bank of Mastropieri and Scruggs' *The inclusive classroom: Strategies for effective differentiated instruction, 4th ed*

(2010). The 30 items were chosen based upon review by Bowlin (2012). In some cases, the questions and answer options were slightly modified by Bowlin and a professor in special education with expertise in test construction to ensure adherence to sound test construction principles (e.g., to ensure that the correct response would not be the longest; to avoid responses such as “A and B”; to ensure that all options were plausible, etc.) (Payne, 2003). Initially, internal consistency for the 30 item Knowledge scale ($\alpha = 0.47$) for this sample is lower than recommended by most experts, even for research purposes (Salvia, Ysseldyke, & Bolt, 2013). However, the focus of this study is not on the entire scale but rather at the item level.

Self-efficacy was measured with the Teachers’ Sense of Efficacy Scale (TSES) Short Version. This measure consists of 12 items that measure respondents’ beliefs in their capability to make a difference in student learning and to effectively reach students who are challenging to teach or unmotivated. Each of the 12 items is scored on a scale from 1 (None) to 9 (A great deal) with the middle item (5) being (Some influence). In a series of three studies, Tschannen-Moran and Hoy (2001) found that the TSES has adequate reliability. Reliability estimates for the measure’s three subscales – efficacy for instructional strategies, efficacy for classroom management, and efficacy for student engagement – were .91, .90, and .87, respectively. Construct validity was established as well; the TSES correlated significantly with two items measuring self-efficacy developed by the RAND Corporation ($r = .18$ and $.52, p < 0.01$). TSES scores also correlated significantly with the personal teaching efficacy ($r = .61, p < .01$) factor of Hoy and Woolfolk’s (1993) adaptation of Gibson and Dembo’s (1984) Teacher Efficacy Scale (TES). For this sample, the alpha coefficient for the TSES = .92.

Results

Biserial correlation coefficients were calculated between individual knowledge items and the Teacher Sense of Efficacy Scale. Correlations ranged from .00 to .20. Although these values are modest, they are to be expected given the nature of data (i.e., coefficients based on single items). Eight of the biserial correlations were significant using Connor’s (n.d.) criteria for retaining or rejecting test items based on biserial correlations.

To further determine the most relevant items, a stepwise multiple regression analysis of the aforementioned eight questions with the TSES score as the criterion variable was conducted. According to the multiple regression model, the three most powerful knowledge items explained 8.6% of the variation in teacher efficacy ($F(3,139) = 5.344, p = .002, R^2 = .086$; see Table 1, p. 10).

Table 1

Stepwise Multiple Regression Analysis of the Significant Impact of Knowledge Items on Teacher Sense of Efficacy Scale

Knowledge Item	R^2	Std β	F	p
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Knowledge about RtI	.044	.209	6.319	.013
Collaborative teaching	.078	.186	5.824	.004
Definition of intellectual disabilities	.105	.165	5.344	.002

Note. $N = 140$

The three items with the most predictive power assessed knowledge about response to intervention (RtI; $\beta = .705, p = .005$), the definition of intellectual disabilities ($\beta = .547, p = .029$), and collaborative teaching ($\beta = .433, p = .044$; see Table 2, p. 11). The remaining five items (that did not add significantly to the multiple regression prediction) addressed provisions of the Individuals with Disabilities Education Act (IDEA; $\beta = .155, p = .058$), knowledge of nondiscriminatory assessment ($\beta = .113, p = .168$), examples of high incidence disabilities ($\beta = .107, p = .194$), examples of low incidence disabilities ($\beta = -.135, p = .101$), and the definition of a functional assessment (A-B-C) chart ($\beta = .099, p = .227$). These results suggest that certain types of knowledge impact teacher efficacy more powerfully than other types.

Though only eight of the 30 original items assessing knowledge of disabilities correlated significantly with the TSES score, participants who passed the item as a group generally scored higher on the TSES than those who incorrectly answered the items. Mean TSES scores for those who answered correctly versus incorrectly each of the eight knowledge items are presented in Table 3 (p. 12).

Table 2

*Three Knowledge Items and their Correlations with the Teacher Sense of Efficacy Scale (TSES) Score**

Item	TSES
Working jointly with others and sharing in goal setting, problem solving, and goal achievement are all hallmarks of what process?	.156
In response to the passage of the 2004 amendments of IDEA federal funds were provided for early intervention services to students who were experiencing difficulty in school but who had not been referred for special education. These services are delivered in three tiers and are part of what procedures?	.209
Which of the following is the currently accepted term for what used to be referred to as 'mental retardation'?	.173

Note. All correlations significant at $p < .01$. $N = 140$

Table 3

Mean Teacher Sense of Efficacy Scale (TSES) for Participants who Passed and Did Not Pass the Item

Content Knowledge Item	Mean TSES Score for Participants Passing Item	Mean TSES Score for Participants Not Passing Item
Collaborative Teaching	8.1214	7.7121
RtI	8.1256	7.4896
Intellectual Disability	8.1193	7.5938
IDEA	8.1178	7.5476
Nondiscriminatory Assessment	8.1048	7.5625
High Incidence Disabilities	8.1497	7.8854
Low Incidence Disabilities	7.9707	8.2222
Functional Assessment Charts	8.1122	7.6548

Note. $N = 140$

Discussion

In this study, 8 of 30 items from a knowledge of teaching students with disabilities scale correlated significantly with self-reported teacher efficacy. Three of those items entered significantly into a multiple-regression equation, items related to the ability to accurately define intellectual disabilities, knowledge of the RtI model, and knowledge of provisions of the Individuals with Disabilities Education Act. So, teacher self-efficacy appears to be related to some elements of teaching knowledge and not to other elements when self-efficacy is characterized as the belief that teachers can positively affect the learning of students with learning and behavioral disabilities (Bowlin, 2012; Woolfolk & Hoy, 1990).

Much of the literature reflects a link between teacher self-efficacy and knowledge about disabilities; for example, some have shown that in-service teachers believe that they are better able to help students learn if they are well-informed about disabilities (Conners, 2008; Cook, 2002; Dielmann, 2006; Hoover, 2010; Walls, 2008). In contrast, others have failed to establish a link between knowledge and self-efficacy. For example, Fives (2004) found negative relations between teacher efficacy and demonstrated knowledge. Similarly, Frank and Vaden (2013) found no association between self-efficacy and RtI skills. Bowlin (2012) found that preservice

teachers' self-efficacy did not correlate significantly with their knowledge of legal issues, disability characteristics, and instructional strategies when molar measures were used to operationalize these constructs. Given these disparate findings, practitioners are justified in having questions about this link, even though it is intuitively appealing. It is our belief that confusion can be reduced by taking a more molecular approach to investigating the relation. That is, rather than addressing the relation by evaluating the concordance rates between or among global scores, our approach relied on evaluating the magnitude of the power of individual knowledge items to predict teacher self-efficacy. This strategy changes the nature of the original question from, "*what is the relation between teacher knowledge and teacher self-efficacy?*" to "*which aspects of teacher knowledge are most related to teacher self-efficacy?*"

As indicated above, data has shown that teacher self-efficacy is *most* influenced by the ability to accurately define intellectual disabilities, the RtI model, and knowledge of provisions of the IDEA. Other areas of knowledge that seem to be significantly related to self-efficacy include: knowledge of provisions of the Individuals with Disabilities Education Act, findings from the 1970 Diana v. State Board of Education court case, definition of the least restrictive environment, examples of high incidence disabilities, areas of difficulty for students with severe and multiple disabilities, and the definition of a functional assessment (A-B-C) chart. These results are consistent with some of the research demonstrating a relation between teacher and preservice teacher self-efficacy and the belief that they need to be well informed about disabilities (e.g., Conners, 2008; Cook, 2002; Dielmann, 2006; Hoover, 2010; Walls, 2008). Apparently, teachers' self-efficacy is tied to their knowledge of the guidelines and strategies in place to address those with disabilities (the RtI process, knowledge of disability categories, functional assessment) and, to a lesser though still important extent, to general teaching strategies (i.e., collaborative teaching). Interestingly, no items about legal requirements in special education were in the final three that predicted most strongly teacher self-efficacy.

Limitations and Direction for Future Research

In this study, knowledge was assessed using multiple choice items from a well-respected and widely used introductory special education textbook (Mastropieri & Scruggs, 2010), with items selected to represent three categories -- knowledge of disabilities, of legal and policy issues, and of effective teaching strategies. Results are somewhat disconcerting in that, in general, knowledge and self-efficacy are not strongly related; and, further, of 30 knowledge items, only eight correlated significantly with teacher self-efficacy. A few conclusions are possible and warrant further exploration through research. First, it is possible that the relation between teacher self-efficacy and knowledge is not straightforward or linear. Teachers who have an in depth knowledge of special education students might actually have decreased self-efficacy (i.e., they "know what they know," and their circumscribed domain of self-knowledge makes them more cautious in estimating their abilities to meet the needs of students).

Second, it is possible that multiple choice questions typical in textbook test banks may not optimally represent and/or assess the knowledge that matters most in building teacher self-efficacy for working with students. Given that multiple choice tests are a common method for assessing knowledge acquisition in college classes, further research is needed to determine which knowledge matters and the best means of assessing it using this evaluation strategy, as well as

exploration of other assessments (e.g., essay or short answer items, role playing, third-party informant ratings of teaching).

Another possible explanation for the weak relation between self-efficacy and molar operationalizations of knowledge relates to the type of knowledge acquired in the classroom. Preservice teachers obtain content knowledge through coursework, but pedagogical knowledge is best acquired through field experiences (Grossman & Richert, 1988; Tuchman & Isaacs, 2011). Perhaps a dearth of pedagogical knowledge can explain the weak relation between self-efficacy and molar operationalizations of knowledge among the participants of the present study.

Future researchers should also address the several limitations which characterize this study. For example, generalizability is limited. Participants were primarily Caucasian, pre-service teachers attending a large university in the Southeastern United States with little teaching experience. Such individuals may not be representative of teachers across the country; therefore, future researchers should obtain participants from a variety of racial and ethnic background with various levels of teaching experience. Another limitation of the present study is our operationalizations of the constructs of “knowledge” and “self-efficacy” represent limited characterizations of the terms; there are many other definitions based on other types of measures (e.g., observation, student outcomes). Future researchers should determine the relation between knowledge and self-efficacy using other operationalizations and measures.

Significance and Implications

The results of this study are significant in that they provide preliminary evidence about specific types of knowledge that predict teacher self-efficacy for preservice teachers in general education fields to teach students with challenging behaviors and learning difficulties. Though the identified items accounted for a relatively small amount of variance in the self-efficacy score, participants who answered the three identified items correctly invariably earned higher means on the teacher self-efficacy score than those who answered incorrectly. Results should be useful for those who prepare general educators to teach students with disabilities.

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About the Authors

Brooke Browarnik is a doctoral candidate in School Psychology at the University of Tennessee.

Sherry Mee Bell is a professor and head of the Theory and Practice in Teacher Education Department at the University of Tennessee.

R. Steve McCallum is a School Psychology professor at the University of Tennessee.

Kelly Smyth is a doctoral candidate in School Psychology at the University of Tennessee.

Melissa Martin is a doctoral candidate at the University of Tennessee.

Tamara Bowlin earned her Doctorate in Education at the University of Tennessee.

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