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THE EFFECTS OF THE PROJECT APPROACH ON CHILDREN IN INCLUSIVE EARLY
CHILDHOOD CLASSROOMS

By

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DISSERTATION

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Abstract

Research on the impact of the Project Approach on young children with disabilities or children who are at-risk is limited. Mixed methods were used to study the impact of the Project Approach on the social interactions, challenging behaviors, and language development of eight focal children in two inclusive classrooms. Child participants were two children with IEPs and two children identified as at-risk from each class. Adult participants were six professionals who received high quality supports to implement the Project Approach. Adults were interviewed prior to the beginning of the study and again mid-, and post-implementation. Choice time observations were videotaped twice per week over 14 weeks to assess the impact of the Project Approach on play levels and MLU_m . Results revealed that social interactions, challenging behaviors, vocabulary, MLU_m , were positively impacted following implementation of the Project Approach. Limitations of the study and suggestions for research and practice are discussed.

For all the educators who believe in the power of project work

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Chapter 1

Introduction

Research shows that there is a “circular relationship” between social interaction and social competence (Odom, McConnell, & McEvoy, 1992). Young children learn social skills through interacting with peers. However, children who

lack the social skills to enter or maintain social interactions, including many young children with disabilities....do not possess the skill for engaging in social interaction, yet peer social interaction is the primary medium through which they will learn more advanced forms of social competence (p. 22).

Young children with mild to moderate disabilities who are enrolled in classrooms identified as providing high quality inclusion are more likely to engage in social interactions than peers in segregated settings (Guralnick, Connor, Hammond, Gottman, & Kinnish, 1996). However, despite this advantage, their attempts at social interaction also are more likely to be rejected than those of their typically developing peers (Guralnick, et al., 1996).

In order to interact with others, children must communicate. “In establishing these early play routines, language certainly helps. Indeed, throughout the preschool years, children who speak more clearly and communicate their ideas better have an easier time getting and keeping play going (Mueller, 1972)” (Shonkoff & Phillips, 2000, p. 166) than peers with limited ability to communicate. Children with disabilities have been shown to communicate less frequently and less skillfully than their typically developing peers (Kaiser, Hester, & McDuffie, 2001). When children have difficulty communicating, they may engage in challenging behaviors (Beitchman et al., 2001). According to Shonkoff and Phillips (2000), “It is quite clear that young children who have failed to master the early regulatory tasks of learning to manage interpersonal conflict and

modulate aggressive and disruptive impulses are more likely than their self-regulated peers to display early conduct problems” (p. 177). Odom, McConnell, and McEvoy (1992) stress that “analyzing the motivational elements of problem behavior is critical” (p. 311). They state that it is important to consider skills and behaviors that lead to social competence in the context of a “dynamic relation between behavior and environment” (p. 307).

Challenging behavior has been defined as “any repeated pattern of behavior, or perception of behavior, that interferes with or is at risk of interfering with optimal learning or engagement in pro-social interactions with peers and adults” (Smith & Fox, 2003, p. 5). According to the Center for Social Emotional Foundations for Early Learning (Dunlap & Liso, 2004) engagement is key to preventing challenging behavior. However, engagement is typically described in terms of environmental arrangement in the classroom, scheduling, and implementing rules. The potential motivation provided by embedding these practices in the broader context of purposeful, coherent, activities is not mentioned. Project investigations are typically extended, in-depth, first-hand, research efforts conducted by a group of children with the goal of satisfying their shared curiosity about a phenomenon or event in their environment. Project work can provide diverse learners with motivation to participate and persevere in social and academic learning activities (Beneke & Ostrosky, 2009).

The recent publication of *Early Childhood Inclusion: A Joint Position Statement of the Division for Early Childhood (DEC) and the National Association for the Education of Young Children (NAEYC)* (DEC/NAEYC, 2009) represents a shared definition and understanding of inclusion between the two leading national professional

organizations that represent educators in early childhood and early childhood special education. This position statement was designed as a blueprint to help identify key components of high quality inclusive programs and uses Universal Design as a guiding concept. The position statement explains that the defining features of inclusion are *access, participation, and support*, and states, “Social-emotional development and behaviors that facilitate participation are critical goals of high quality early childhood inclusion, along with learning and development in all other domains” (p. 2). The position statement also advises that tiered models hold promise for “helping educators organize assessments and interventions by level of intensity” (p. 2) of intervention.

Early intervention has been defined as “a process of assessment and therapy provided to children, especially those younger than age 6, to facilitate normal cognitive and emotional development and to prevent developmental disability or delay” (Houghton Mifflin, 2007). Tiered models move from low intensity interventions at the bottom level (i.e., those that impact all children in a class), to moderate intensity interventions at the secondary level (i.e., those that apply to some children in a class), to intensive/6 interventions that apply to very few children at the tertiary or top level. Systematic data collection is used to inform decisions about the intensity of intervention needed.

Hemmeter, Santos, and Ostrosky (2008) describe how a tiered model, *The Teaching Pyramid Model* can be used as a “prevention-intervention framework to promote social and emotional development, provide support for children’s appropriate behavior, and prevent and address challenging behavior” (pp. 322-323). A three-tiered model is typically used to help educators visualize the concept of *Response to Intervention* (RTI). “Two principle origins of RTI practices are Deno’s data-based program modification

model (Deno, 1985; Deno & Mirkin, 1977) and Bergan's behavioral consultation model (Bergan, 1977; Bergan & Kratochwill, 1990)" (Batsche et al., 2006, p. 7). Educators at the Frank Porter Graham Child Development Institute have developed a tiered RTI model tailored for preschool settings called *Recognition and Response* (Coleman, Buysse, & Neitzel, 2006a). Tier 1 of *Recognition and Response* includes a research-based curriculum and effective teaching strategies. Tier 2 includes targeted group interventions aimed at some children, and Tier 3 targets intensive interventions aimed at individual students.

As classroom teachers search for a universally designed Tier 1 curricula that will provide both typically developing children and children with disabilities with optimal opportunities for access, participation, and support, they may explore the possibility of learning to implement the Project Approach, a well-known addition to classroom curriculum (LeeKeenan & Edwards, 1992). The Project Approach is a multidimensional, interconnected approach to teaching based on constructivist theory of how children learn. The approach reflects a philosophy of teaching that permeates the topics of children's study and the way they are taught. The content of a project varies depending on the topic a particular group of children and teachers is interested in investigating and their abilities. The fact that it is an approach, rather than a curriculum with specific content, makes it difficult to compare the Project Approach with commercially available curricula. The content, knowledge, dispositions, and skills emphasized are likely to vary from project to project within a given classroom and also to vary from classroom to classroom. Consequently, the very responsiveness and elasticity that are claimed as the strengths of the Project Approach are likely to increase the challenge of comparing the Project

Approach across classrooms. This challenge may account, in part, for the lack of research on its implementation and effectiveness. As teachers plan for project work they anticipate what individual students know and can do, what children want to know or do, and how the children can best accomplish their investigation. Considering what children know and can do helps teachers to support children's use of multiple means of representation and expression in project work. Considering what children want to know or do and how they can best accomplish their investigation helps teachers provide children with multiple means of engagement. Consequently, the Project Approach may provide a context that supports peer communication, interaction, and increased engagement, resulting in a reduction in challenging behaviors.

According to Katz and Chard (2000) authors of *Engaging Children's Minds: The Project Approach*, "projects can include a sufficient variety of tasks to accommodate the diverse contributions from mixed groups—mixed in ability as well as in age" (p. 52). While research on the Project Approach is limited, researchers and teachers have reported that implementing the Project Approach is useful in teaching young children with disabilities (Donegan, Hong, & Trepanier-Street, 2005; Edmiaston, 1998; Scranton & Doubet, 2003). Beneke and Ostrosky (2009) conducted a qualitative analysis of pre- and post-training interviews with seven teachers and who had attended a 2-day training on the Project Approach. Interview questions focused on teachers' perceptions of how the Project Approach can help support diverse learners, including children with disabilities. Four findings emerged from the analysis: (a) participation and learning of children with diverse abilities was facilitated, (b) positive effects were noted for children's social and academic learning, which teachers attributed to motivation, (c) the availability of "real

objects” and materials in the classroom was beneficial, and (d) positive effects resulted from including children in planning. The current study represents an effort to explore these findings further by investigating the effects of implementation of project work on young children in inclusive settings. Given that the recently published DEC/NAEYC joint position statement on inclusion refers to social-emotional development and behaviors that facilitate participation as “critical goals” of high quality inclusion, the outcomes targeted in this study focused on social competence and social communication.

Chapter 2

Literature Review

This literature review includes a summary of research to examine the evidence-base related to the Project Approach. In particular, research related to the impact of the Project Approach on the following behaviors is explored: peer interaction, participation in conversation, vocabulary increases, and reductions in challenging behaviors of young children in inclusive settings. While these effects are interrelated, they are discussed separately in this review. Literature focusing on both typically developing children and children with disabilities is included. Several procedures were used to identify literature for this review. ERIC, EBSCO, Psych Info, and the Web of Science were the primary databases searched for relevant literature. These databases were searched for reports from 1990-2009, using keywords related to the four abovementioned child effects, the Project Approach, and mild to moderate disabilities. The reference lists of pertinent papers were examined to identify articles of importance, classic articles, and frequently cited authors. Searches using author names were performed to be sure the review included their most current work. Ancestral searches were conducted of articles reviewed. Unpublished dissertations, articles in non-peer-reviewed journals, or those in languages other than English were excluded from this review.

The review is organized into six sections. The background section includes the historical and theoretical framework for the Project Approach. Significant research related to the four targeted child effects (i.e., peer interaction, participation in conversation, vocabulary increases, and reductions in challenging behaviors) is then reviewed. Each effect is followed by a discussion of the key research findings and gaps in

the literature and the potential of the Project Approach to support these effects in inclusive settings. A summary of key findings and proposed directions for further study conclude the review.

Background of the Project Approach

According to Knoll (1997), the Project Approach has its roots in the Italian architectural and engineering movement of the 16th century. Teachers assigned challenging projects to advanced students, and structured competitions were held to determine whose designs were the best. These competitions spread across Europe and gradually evolved into a teaching method in which students completed assigned projects to merit progress to a higher level. The method was incorporated into the new field of engineering, and was introduced in the United States at the Massachusetts Institute of Technology (MIT) at the end of the 18th century. It also was used at the high school level at the first Manual Training School in the United States where “instruction was designed to progress systematically from elementary principles to practical applications” (Learning by Projects in Manual Training and the Industrial Arts section). At that point in the evolution of the Project Approach, it was thought that *construction followed instruction*. Manual training became popular in high schools across the United States, and was introduced into kindergartens in the 1890s.

Rise and fall of the Project Method. In his 1918 publication, *The Project Method*, William H. Kilpatrick redefined the term “project” to mean a “hearty purposeful activity in a social situation” that was initiated by the child (p. 335). He believed that the more independently conceived and implemented the project, the higher its quality. Kilpatrick believed the child’s interest should be viewed as the “unit of study,” and he

defined four phases of the Project Method: “purposing, planning, executing, and judging” (p. 334). His vision of the role of the teacher in the educational experience differed from Dewey who saw the teacher as a guide who helped the child explore in a logical, scientific way, Kilpatrick, on the other hand, believed the child’s interest should be his guide-- *instruction followed the child’s interest*. Kilpatrick and Dewey both believed that democratic principles were not just related to government, but extended into all aspects of life (Beyer, 1997). Kilpatrick believed that a child’s individuality should be nurtured, but the needs of the individual should be balanced against the needs of the group. The Project Method gradually lost popularity in the United States, but gained popularity in Europe (Knoll, 1997).

Emergence of the Project Approach. The Open Education Movement emerged in the 1960s in the United States as a result of the influence of the British Infant Schools and the *Plowden Report*, a large-scale review of primary education in England (Central Advisory Council for Education (England, 1967). While the Open Education Movement came from England, it was rooted in the philosophies of Americans, Dewey and Kilpatrick (S. Chard, personal communication, April 23, 2006). The Open Education Movement and the Project Approach share an emphasis on providing enough flexibility in the curriculum to follow the child’s interest. During the 1960s and early 1970s educators rushed to visit the “successful English informal schools” (Smith, 1997, p. 372). However, “by the mid-1970s, the social, economic, and political climate had changed, and there was less and less support for open or any other nontraditional kind of education on both sides of the Atlantic” (p. 372).

In 1989 Katz and Chard published the first edition of *Engaging Children's Minds: The project approach*. According to Chard, she and Katz wrote this book as a way of preventing “a repeat of the misunderstandings about project work of the ‘60s and ‘70s. We designed our first book to help teachers to develop the planning and implementation structures necessary for successful project work” (personal communication, 2006). Katz and Chard consider the Project Approach to be a portion of the curriculum that capitalizes on what children learn through spontaneous play as well as systematic instruction. In their model, children’s *interest in content leads to instruction*. Similar to Kilpatrick’s Project Method, in the Project Approach the “children’s ideas, questions, theories, predictions, and interests are major determinants of the experiences provided and the work accomplished” (Katz & Chard, 1989, p. 5). As in Kilpatrick’s model, the project proceeds through phases, although the Project Approach is composed of three, rather than Kilpatrick’s four phases. In Phase 1 of a project, the topic is introduced and children explore their own past experiences and current knowledge of the topic. They generate questions about the topic. In Phase 2, the children actively investigate the topic, and in Phase 3 the children summarize what has been learned and a culminating event is held. Phase 2 is typically the longest phase of a project, often lasting from 4-6 weeks. According to Katz, the overarching goal of this approach is “to help children develop the disposition to examine their own assumptions and to acknowledge others’ points of view” (personal communication, 2006). Katz and Chard consider the Project Approach to be a portion of the curriculum that capitalizes on what children learn through spontaneous play as well as systematic instruction. In their model, children’s *interest in content leads to instruction*. Similar to Kilpatrick’s Project Method, in the Project Approach the

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Gaps in the literature on the Project Approach. Very little research has been conducted on the implementation of the Project Approach, particularly with respect to the impact of the approach on children. However, studies by both Donegan et al. (2005) and Hertzog (2007) that primarily focused on teachers, also include some findings related to the impact of the Project Approach on students. Hertzog (2007) taught two first-grade teachers whose students were primarily low-income to use the Project Approach. She then studied the impact of the training on their teaching and on student behavior. Hertzog found that, while the teachers experienced external limitations imposed by the requirements of their school and self-imposed internal limitations, such as assumptions about children and beliefs about teaching, the teachers were able to successfully implement elements of the Project Approach. Hertzog noted, “during my visits to the

classroom when the children were engaged in project work, I witnessed little misbehavior” (p. 556).

Donegan, Hong, Trepanier-Street, and Finkelstein (2005) studied the experiences of student teachers whose field experiences were in inclusive early childhood settings. By examining student teachers’ journal entries and documentation panels, Donegan et al. found that children with disabilities “were frequently involved in classroom project work” (p. 40). They found that 26 of the 29 (90%) student teachers included children with disabilities in their documentation of project work, and 24 of the 29 student teachers (83%) documented their experiences with inclusion and its benefits. Donegan and her colleagues specifically noted that children with special needs can acquire social skills through interacting with peers with the guidance of a trained teacher (p. 41), Donegan et al. also noted the benefits of project work for children with language or speech delays: “Our data suggested that the small group structure of project work provided a natural opportunity for social interaction and language use” (p. 41).

As mentioned in Chapter 1, Beneke and Ostrosky (2009) interviewed teachers and administrators of inclusive prekindergarten classes. They identified four findings related to the use of the Project Approach: (a) Participation and learning of diverse learners was facilitated, (b) positive effects were noted for children’s social and academic learning, which teachers attributed to motivation, (c) the availability of “real objects” and materials in the classroom were beneficial, and (d) positive effects resulted from including children in planning.

In another study on projects, Guven and Duman (2007) sought to determine if an adaptation of project-based learning was effective for young children with mild

disabilities. Participants in the study were 7 children (4 girls and 3 boys) ages 6- and 7-year-olds who attended a self-contained special education classroom at a public elementary school that served primarily middle class children in Istanbul. The context of Guven and Duman's study was a project on the local bakery that specialized in pastries and sweets. Pre- and post-tests were used to evaluate the impact of the learning experience on children's behavior. The test required children to point to pictures that represented the correct answers to questions related to the local French bakery. Findings showed a significant gain in knowledge ($p < .05$).

There is a gap in the literature regarding the impact of the Project Approach on the learning and development of prekindergarten children with and without disabilities. Across all studies that were located, only one focused specifically on the impact of the Project Approach on children's development, and none of the research studies focused on the effects of the Project Approach on the development of prekindergarten-aged children. Findings by Hertzog (2007), Donegan et al. (2005), and Beneke and Ostrosky (2009) all indicate that the Project Approach benefited children's social development, while Donegan et al. (2005) also reported that project work resulted in positive speech and language effects. Guven and Duman's (2007) report indicates that children with disabilities can successfully participate in project work and this experience will support their learning. Beneke and Ostrosky's (2009) finding that teachers attributed children's social and academic gains to motivation provided by the project approach is important, since "preschool children's interests influence the quality of their play and social interaction" (Bowman et al., 2001, p. 110).

Child Outcomes

Participation in social interaction. “During the first eight years, the child’s social community moves from being adult-centered to peer-centered. This developmental transition presents particular challenges for children with developmental disabilities” (Kaiser, Hester, & McDuffie, 2001, p. 147). Although they are sometimes challenging, interactions with peers are important for two reasons: “(a) positive peer interactions are an important route for children’s enhanced development, and (b) peer interaction problems are a primary predictor of children’s future social competence difficulties” (Brown, Odom, & Conroy, 2001, p. 163). Interacting successfully with peers can open the door to inclusion in the social and intellectual life of the classroom. In addition, successful social relationships ultimately impact children’s academic achievement (Bowman et al., 2001). Given the potential impact of peer interactions, it is important to understand how children with disabilities and their typically developing peers interact, and to identify strategies that may increase the frequency and quality of these interactions.

In a review of research on a series of 4-6 week playgroups that included children with mild mental delays, Guralnick (1999) found that the degree to which children with disabilities were integrated in play was related to the type of play. He found that children with disabilities were most likely to be socially connected in play with typically developing peers when the type of play placed fewer social demands on the child. The three levels of social connectedness in play described by Guralnick ranged in degree of social demand from least to most complex (passive play, interactive play, and friendship). Guralnick’s research revealed that, “for interactive measures of social integration,

typically developing children interact with children with developmental delays about half as often as expected, based on the number of children available in the two groups.” He found that 80% of typically developing children preferred other typically developing children as partners in social interactions. Guralnick also found that even though interactions between children with mild delays and their typically developing peers included more disagreements, typically developing children were able to make accommodations to the developmental characteristics of their delayed peers, “particularly their cognitive and linguistic levels” (p. 75). Guralnick found that “typically developing children simply prefer other typically developing children and may ignore or avoid children with delays” (p. 77). He cautioned that the short duration of the playgroups may not reflect the social interaction patterns that might develop over a longer period of time and he noted that the ecology of the home and community influence social interaction in a manner that extends beyond the ecology of the classroom.

Unlike Guralnick, Okagaki and colleagues (1998) found that typically developing children are almost as willing to play with children with disabilities as they are to play with other typically developing peers. One explanation for this difference from Guralnick’s data may be that the children in Okagaki et al.’s study had been in school together for 5 months, while the participants in Guralnick’s study were only together for 4-6 weeks. In addition, the number of children with disabilities in Okagaki et al.’s study was small. They conducted two studies to explore children’s perceptions of peers with disabilities. The first study included 36 typically developing English-speaking children who attended one of three classrooms at an inclusive university-based early childhood program. Each of the three classrooms included three children with disabilities. Typically

developing children's views of children with disabilities were assessed using small dolls that represented children with physical and language disabilities. For example, a doll that sat in a wheelchair represented a child with physical disabilities. The *Pictorial Scale of Perceived Competence and Social Acceptance for Young Children* (Harter & Pike, 1984; adaptation by Diamond, 1994) was used to elicit children's views of the competence of children with various disabilities. Pairs of pictures represented children who either were good at or who had difficulty with a task. For instance, if the pictures showed a person who was a good runner and a person who had difficulty running, the researcher would point to a picture and say, "This boy is good at running, but this boy is not." Then the researcher would show the child the doll in the wheelchair, point to each of the pictures, and ask, "Is this doll more like this boy or this boy?" Children's willingness to play with children with and without disabilities was assessed using an adaptation of the *Social Problem-Solving Test-Revised* (Rubin, 1988). Dolls were used in this assessment to represent a hypothetical play partner with a disability. Okagaki et al. took the home ecology into account as well as the ecology of the classroom by assessing parent beliefs about socialization through questionnaires. The researchers found that children were sensitive to limitations associated with physical disabilities, but they did not perceive children with language disabilities to be less verbally competent than children without language disabilities. The children rated the social acceptance of children with and without language or physical disabilities equally and were equally willing to play with hypothetical children with or without language or physical disabilities. Observations taken during free play were coded to show whether the 36 target children (including 9 children with disabilities) were engaged with peers and whether each target child was

interacting with a typically developing child or a child with a disability. Observations revealed that children were equally willing to play with children with or without disabilities. However, the number of children with disabilities at the university center was small ($n = 9$), and all children with disabilities were not present on each observation day. Okagaki et al. conducted a second study that included 38 typically developing children from a community-based, inclusive early childhood program. Procedures and measures used in the second study were the same as those used in the first, and findings from the second study were consistent with the results of the first study.

Hestenes and Carroll (2000) also observed children in free play and used a pictorial scale and dolls to assess children's views about disabilities, but their findings differed from those of Okagaki et al. (1998). Twenty-nine preschoolers (eight with disabilities) from two different classrooms at two different sites were observed during free play. The 21 typically developing preschoolers also were interviewed, although it is not clear whether interviews took place at the beginning or end of the study. Categories of play recorded were cooperative play, social conversation, parallel play, rough activity, solitary play, onlooking, transition, or other. Sociometric ratings of typically developing children's peers also were collected. Hestenes and Carroll used the *Competency Ratings for Disabilities* (Diamond, 1994) to assess children's understanding of disabilities. Similar to Okagaki et al.'s study, children were shown dolls representing children with various disabilities and one doll with no apparent disability. They were asked to rate each doll's ability to perform tasks that involved physical ability, visual ability, and the ability to have friends. While all children engaged in all the types of play during free play observations, "typically developing children spent over half their time in cooperative

play. Children with disabilities spent about one third of their time in cooperative play and one third of their time in solitary play” (p. 238). Children with disabilities also spent more time in onlooker play than their typically developing peers. Paired sample *t tests* revealed that typically developing children were significantly less likely to interact with their peers with disabilities and children with disabilities spent significantly less time interacting with typically developing peers than was expected. Hestenes and Carroll concluded that, “children [with disabilities] were integrated into the environment, even if not included in interactions at the same level as typically developing children” (p. 241). The researchers also found that children’s overall score for understanding disability significantly predicted typically developing children’s preference to play with peers without disabilities. “Children with more understanding of disability indicated that they were more willing to play with their peers with disabilities” (pp. 241-242).

Buyse, Goldman, and Skinner (2002) examined the effects of the social setting on friendship formation among 120 children with disabilities and 213 typically developing peers. The children, who ranged in age from 19 to 77 months, were enrolled in 45 full-day inclusive classrooms that were housed in one of 18 early childhood programs. The programs were either: (a) inclusive specialized programs ($n = 9$) in which the majority of children had disabilities, or (b) inclusive child care programs ($n = 9$) in which the majority of children enrolled were typically developing. A researcher met with each classroom teacher and used a structured interview format to complete the *Playmates and Friends Questionnaire for Teachers* (Goldman, Buyse, & Carr, 1997), *ABILITIES Index* (Simeonsson & Bailey, 1988), and *Teacher’s Ratings of Social Development* (Ladd & Profilet, 1996) for each participating child. A variation of a scale developed by Bailey

and Winton (1987) called the *Benefits and Drawbacks of Early Childhood Inclusion Rating Scale* was completed by the teachers at a later time. Of the 120 children with special needs, 48 (40%) were rated as having a severe disability in at least one domain on the ABILITIES Index (Simeonsson & Bailey, 1991). Teachers in specialized programs reported an average of 1.4 friends for children with disabilities and 2.0 friends for typically developing peers. Teachers in inclusive child care program classrooms reported an average of 1.5 friends for children with disabilities and 1.7 friends for their typically developing peers. Buysse et al. found that typically developing children who attended specialized settings had significantly more friends than children with disabilities in the same settings, but no significant difference in having friends was found between children with disabilities and typically developing children in child care. Buysse et al. also found that the severity of a child's disability was not related to the number of reported friends. They concluded:

The number of children with disabilities in any given setting may be as few as one child or as many as three-quarters of the total enrollment. The critical variable does not appear to be the ratio per se, but the opportunities for children with disabilities to participate in a variety of classroom activities with their typically developing peers as a precursor to finding suitable playmates and forming friendships. (p. 515)

Buysse et al. found that both children with and without disabilities who were enrolled in childcare had more friends than peers who were placed in specialized education settings. Children with disabilities in childcare were 1.73 times more likely to have at least one friend than were children with disabilities in specialized programs, after controlling for severity of disability. With regard to social development scores, children with disabilities were reported to have lower scores than their typically developing peers. Setting was

significantly related to these scores, with slightly higher scores assigned to children in child care settings than children in specialized settings.

Research by Tsao, Odom, Buysse, Skinner, West, and Vitztum-Komanecki (2008) reveals the potential of child-initiated activities to increase children's social interaction with peers. These researchers studied the social participation of 143 preschoolers with disabilities in four inclusive preschool models: community-based, Head Start, public school, and blended. Ten disability categories were represented among the children with the highest frequencies being developmental delay ($n = 69$), speech/language disorder ($n = 34$), and autism/Pervasive Developmental Disorder ($n = 21$). An *ABILITIES Index* (Simeonsson & Bailey, 1991) was completed for each child, and an observational system, the *CASPER-III* (Tsao, Odom, & Brown, 2001), was used to assess both ecological and behavioral variables in the classrooms. Five variables comprise this assessment: activity area or activity, initiator of activity, child behavior, child social behavior, and adult behavior. Each variable consists of a set of behavioral categories. Blended classrooms combined resources across Head Start, Title 1, special education, and state early childhood funding sources. The researchers found that children with disabilities engaged in positive social interactions with both peers and adults. Tsao et al. did not find significant differences in the percentage of time children with disabilities engaged in positive social interactions with their peers or with adults, however they did find that most positive interaction was directed toward typically developing peers (6.5%) and received from typically developing peers (2.6%). In addition, no significant differences were found among program types for positive social behavior with peers. Interestingly, Tsao et al. found significantly more positive adult social interaction by children with

disabilities enrolled in blended programs compared to children with disabilities in community based, Head Start, or public school settings. Tsao et al. also reported, “in adult-initiated activities, children were more socially engaged with adults, while in child-initiated activities, social engagement occurred more with peers.” Consequently, the more children with disabilities participated in adult-initiated activities, the less likely they were to engage in social interactions with peers. These findings are consistent with earlier findings by Strain and Fox (1981) revealing that adult involvement reduces the probability of peer interaction. The researchers concluded that “the practical implication may be that if teachers are interested in promoting social engagement with peers, they might arrange activities that allow some child choice or peer mediation” (p. 138).

An eco-behavioral analysis conducted by Powell, Burchinal, File, and Kontos (2008) had similar findings to those of Tsao et al. (2008). Powell and his colleagues stated, “children’s engagement in classroom activities is a promising target of research on preschool program pathway to improved learning outcomes” (p. 108). Powell and colleagues recruited 12 teachers and 138 children from prekindergarten programs that were housed in 12 different elementary schools. Classroom observations assessed teachers’ behavior in whole group and in other classroom situations when target children were within three feet of the teacher (providing opportunity for verbal exchange). Powell et al. found that children were actively engaged when they were interacting with their peer group out of the teacher’s range. Teachers gave children many directions or instructions in large group or other settings when they were within range, such as small group and one-on-one exchanges. This type of communication by teachers led to passive

modes of child participation. Active engagement was more likely to occur when teachers offered affirmation (praise or social talk) or monitored children's behavior.

In a study that focused exclusively on at-risk children in child care, Denham and Burton (1995) studied the impact of a social emotional intervention on 70 at-risk children from 7 classrooms in suburban child care programs. They identified developmental milestones of social competence: secure attachment, ability to consciously recognize and label emotion, and ability to talk through affect-laden social problems. The intervention implemented by Denton and Burton was a 32-week multicomponent program. One component of their intervention was the implementation of *Floortime* (Greenspan, 1992), a technique that is used during play. "Teachers use this technique during play by observing the child, opening communication, continuing the communication process by following the child's lead in play, and then by helping the child to expand that play one step further through gestures and words" (p. 229). Teacher questionnaires and observations were used to rate: children's relationship with their teacher, emotional understanding, social problem solving, and an emphasis on individuation. Children who participated in the intervention were observed showing decreased anger, hostility, and sadness, as well as increased peer skill and productive involvement. Teachers perceived the children who had participated in the intervention as showing more improvement socially than their typically developing peers. "Interestingly, children who were most in need of the intervention, as evidenced by low pretest scores, benefitted most regarding peer skill, productiveness, and overall teacher-rated social competence" (p. 240).

Intersections with the Project Approach. Intervention ideas for supporting children's social interactions described here are compatible with Beneke and Ostrosky's (2009) findings that the Project Approach offers opportunities to support the social development of diverse learners. Teachers in Beneke and Ostrosky's study indicated that project work provided increased interest and motivation, and provided opportunities for children with disabilities to use their strengths. Project work provides exposure to a variety of activities in which children can engage. In addition, since many project activities are child-initiated, there are numerous opportunities for children with disabilities to initiate activities that build on their strengths and match their comfort level.

Communication

Teachers report that as they engage in project work, children communicate ideas for child-initiated activities through joint planning (Beneke & Ostrosky, 2009). The potential for communication skill development is important, given the interrelationship of communication and social skills. "Language development should be a key feature of all early childhood programs both because the preschool years hold enormous potential for language development and because language, cognitive development, and social development are integrated in complex ways and are critical for survival in society" (Bowman, Donovan, & Burns, 2001). "Children learn to use language by engaging in dialogue; limited opportunities to talk and receive feedback will limit language development" (Wasik & Bond, 2006). The Project Approach provides many opportunities for children to communicate. Input from children drives the direction of the project. For example, they talk with teachers and peers about what they have observed,

answer questions, talk about what they want to find out or construct, and how they want to go about the investigation or construction.

Children who have difficulties with verbal communication are especially vulnerable to problems with social competence. For example, “preschool children with SLI [Specific Language Impairment] exhibit a marked absence of sustained interactions, engage in disproportionately high levels of solitary play, are less-preferred classmates, become less successful at obtaining positive outcomes to social bids over time, and appear to be less interested in social play with peers” (Stanton-Chapman, Justice, Skibbe, & Grant, 2008, p. 100). Stanton-Chapman et al. conducted a study to identify specific areas of weakness and strength in the social and behavioral performance of preschoolers with SLI. Their study included 43 children with SLI and 53 children with typical language development. One measure used to examine children’s social and behavioral skills was the *Social Skills Rating System—Parent Form* (Gresham & Elliot, 1990). Children’s behavioral competencies also were measured with the *Child Behavior Checklist* (Achenbach, 1991), which was completed by parents. Stanton-Chapman et al. found that while children with SLI did not exhibit more externalizing behavior than their typically developing peers (e.g., attention problems and aggressive behaviors), they did exhibit significantly more internalizing behavior problems (e.g., withdrawal, inhibition, and anxiety). Her findings “lend further support to the notion that developmental language impairment has a strong association with young children’s social development” (p. 105). She suggests that there is a bidirectional relationship between social-communication challenges and developmental language impairment.

Several studies have revealed strategies that support the development of communication skills. These strategies are: (a) using decontextualized language, (b) encouraging children to engage in pretend play, (c) pairing children with higher functioning peers, (d) encouraging children to talk about their actions, (e) modeling and planning play sessions, (f) identifying play situations where desired communication outcomes are likely to take place, (g) asking predictive, reactive, and recall questions, (h) engaging children in sustained shared thinking, and (i) embedding language instruction into activities for pairs or groups of children.

In an in-depth longitudinal study of 74 children, Dickinson (2001) and his colleagues found that preschoolers who had more opportunities for “decontextualized language” (p. 224), or language that was used to communicate information (not to control their behavior) had greater academic success in kindergarten. Similarly, in a mixed methods study of the vocalizations of nineteen 5-year-olds engaged in block play, Cohen and Uhry (2007) found that as children shared their common understanding about the block structures they were constructing, they used communication strategies that helped them build oral language and vocabulary. For example, children used different voices in pretend play, making the sounds of cars, animals, and others’ voices. They also gave others permission to make changes to the block structure and asked others for input about block placement.

According to Guralnick’s research (1999), typically developing children communicate differently with children with disabilities. They used more directives, clarified messages more often, and relied on multiple modes of communication, particularly nonverbals. Research by Fawcett and Garton (2005) demonstrated that verbal

interaction may have an important influence on the social outcomes of children with disabilities who are partnered with typically developing partners. Fawcett and Garton studied one hundred twenty-five 6- and 7-year-olds as they engaged in a card sorting activity. Their first hypothesis was that children with lower cognitive ability would show greater cognitive gain from pre- to post-testing after working collaboratively with a peer with higher cognitive abilities than would children who worked collaboratively with a peer of similar or lower cognitive abilities, or who worked alone. Their second hypothesis was that instructing the children with lower cognitive abilities to talk and provide explanations of their reasoning while working collaboratively with a peer with higher cognitive abilities would cause these children to have better post-test results than pairs who were instructed not to talk. However, results revealed that gains were dependent on children's ability to interact verbally versus cognitive ability. Fawcett and Garton noted, "collaborating without active verbal interaction was statistically no better than working alone" (p. 165).

Craig-Unkefer and Kaiser (2002) recognized that "although play offers opportunities to develop relationships with peers, children with limited communication skills, poor social skills, or high rates of problem behavior may not be able to access the opportunities" (p. 3). They implemented a multiple baseline study of the effects of a three-component intervention on the social communication skills of 3 preschool dyads ($n = 6$) who were at risk for social communication delays. The components of the intervention were:

- (a) a play organizing session in which vocabulary, play themes, and possible strategies for social-communicative interaction were introduced and rehearsed; (b)
- a play session involving dyads of children engaging in sociodramatic play with

limited mediation by an adult; and (c) a review session in which children described their talk and play” (p. 4).

All 6 participants had low language skills and were considered at risk for early behavior problems. Following the intervention, the amount of child talk during play increased, and the researchers noted that specific increases in requests and descriptive talk were observed for five of six children. Mean Length of Utterance (MLU), total words, and number of different words used also increased for all 6 children. Craig-Unkefer and Kaiser concluded that models provided by the adult during the planning session as well as redirects during the play period appeared to have influenced the quantity and quality of peer talk” (p. 10).

Extended discussions provide another means for increasing the quantity and quality of children’s communications. Sustained shared thinking can be thought of as an ongoing discussion between the teacher and the children. Sustained shared thinking has been described as “an interaction where two or more individuals work together in an intellectual way to solve a problem, clarify a concept, evaluate activities, or extend a narrative” (Siraj-Blatchford & Sylva, 2004, p. 718). “As part of a large-scale study of early childhood programs in England, investigators conducted twelve intensive case studies of settings with positive child outcomes” (Sylva et al., 2003, p. 1). Siraj-Blatchford and colleagues concluded that these case studies had positive outcomes for young children. These researchers found that “in the settings where sustained shared thinking was most encouraged, a substantial proportion of interactions were child-initiated and they provided a better basis for learning right across the curriculum” (p. 722). Unfortunately, in an in-depth longitudinal study of 74 young children, Dickinson

and Tabors (2001) found that children and teachers in preschool classrooms spend only 17% of their time together engaged in meaningful exchanges.

In an earlier study Schwartz and Carta (1996) studied the use of best practices in language intervention within the ecology of classroom settings. They observed 59 children with identified developmental delays and their teachers in 10 inclusive and 16 self-contained classrooms and found a wide range in the use of best practices.

Observations included the number and type of language training opportunities; the amount of teacher, environmental, and peer support for communication behavior; the amount and type of teacher instruction, prompts, and feedback; and a description of the amount and type of target children's communicative behavior. Teachers were ranked as high or low implementers of best practices.

In general, children with high-implementing teachers were observed to spend more time actively engaged and more time verbalizing. Children in these classrooms appeared to spend more time in play activities and less time in transitioning. Additionally, children with high-implementing teachers were observed more often with pretend play materials and storybooks and less often with instructional materials or no materials available. (pp. 7-8).

The researchers also noted that teachers were more likely to embed language instruction for children with mild to moderate language delays into instructions for pairs or groups of children. They also were more likely to interact with children with severe disabilities individually, and not in pairs or larger groups. Therefore, "children with severe disabilities had fewer opportunities to practice social communication skills, to learn from peer models, and to engage in age-appropriate group activities, than did children with less severe disabilities" (p. 8).

Intersections with the Project Approach. Donegan (2005) noted that participation in the Project Approach benefited children with disabilities in terms of

language development. She attributed these benefits to the small group work that is an important part of project work. In the course of project work, child-initiated small groups form naturally and regularly as children research the topic and construct group representations. In addition, Beneke and Ostrosky (2009) found that teachers valued opportunities to plan *with* rather than *for* children. Participation in planning offers many opportunities for children to communicate their ideas.

The Project Approach provides ongoing opportunities to engage children in informal communication. For example, children often discuss their observations from field work, information gleaned from exploration of objects, or examination of reference materials. Children share ideas about what they should make together to represent their understanding of the topic, and they share ideas for how the representation should be constructed. As they engage in group constructions, they talk about how to coordinate their plans with other children. At the beginning of a project some of the children in the group must know enough about the topic to pose questions for research. Often these questions are about objects or things. While projects begin with aspects of a topic that are familiar to the children, the in-depth nature of the investigation expands their knowledge, and they acquire many new concepts and words. By answering children's questions and providing them with experiences that give meaning to new words, adults can enhance the richness of children's lexicons. As projects become more in-depth, children can learn vocabulary related to intricate details about the topic.

Once a few initial questions about the topic have been generated, teachers ask children to predict the answers to some of these questions. Following experiments, field work, or visits from guest experts, teachers ask children to recall and dictate their

recollections of what happened or what was learned. Due to the ongoing nature of project work, teachers regularly revisit and discuss the children's progress with the project. Participation in project work offers children with disabilities many opportunities and reasons to communicate with peers.

Acquisition of New Vocabulary

During the preschool period the ecology of the environment can influence children's growth in vocabulary (Bowman, Donovan, & Burns, 2001; Shonkoff & Phillips, 2000). Young children begin to learn language with nouns. In fact, 45% of the vocabulary of English-speaking children with vocabularies of 20-50 words consists of nouns (Caselli et al., 1995). By 36 months most children are able to ask questions related to where, what, who, how, why, which, and whose (Bloom, Merkin, & Wootten, 1982). They use this ability to acquire more vocabulary. Beals (2001) studied the conversations of preschool children during meals with their families. She found that when parents used unfamiliar words in the course of mealtime conversations, children learned those words.

Hart and Risley (1995) reported that language exposure in the early years was associated with IQ. They spent 2 ½ years recording children's spoken vocabularies as they observed in their homes. Their analysis produced two well-known books, *Meaningful Differences in the Everyday Experiences of Young American Children* (1995) and *The Social World of Children Learning to Talk* (1999). According to Hart and Risley, "New experiences add new words to the vocabulary and refine or elaborate the meaning of known words" (p. 6).

Research on vocabulary development in young children with disabilities is scant. Notari-Syverson, O'Connor, and Vadasy (1996) studied the effects of an early literacy

curriculum on 70 children who were identified as typically developing ($n = 21$), at-risk ($n = 13$), or as having disabilities ($n = 36$). The curriculum was implemented in 6-month periods over the course of two years. Participants were students in inclusive, and self-contained classrooms in public schools and Head Start centers. “Oral language activities in the study focused on facilitating children’s pragmatic and syntactic language and vocabulary, as well as ‘literate’ types of oral discourse (e.g., asking children to reconstruct past events, open-ended questioning, asking for explanations)” (p. 11). The researchers used the concept of scaffolding as a “conceptual basis for designing teaching strategies to show how teachers could facilitate the participation of children at different levels to learn different skills, and vary the presentation of strategies and intensities of support according to children’s needs” (p. 11). Measures of vocabulary were the *Peabody Picture Vocabulary Test-Revised* (Dunn & Dunn, 1981) and the *Early Literacy Checklist* (Notari-Syverson & O’Connor, 1994). Notari-Syverson et al. found that the children with disabilities improved their language skills, and showed improvement in vocabulary. While all children made gains, children with disabilities and children who were at risk made greater gains on vocabulary development than their typically developing peers.

Weizman and Snow (2001) found that exposure to new words in a meaningful context is positively associated with vocabulary development and that increased vocabulary is associated with school success. While Hart and Risley’s research compared density of exposure to vocabulary across socioeconomic class, Weizman and Snow compared differences in the amount of low frequency or *sophisticated* words children heard. Their study examined differences in lexical exposure in 53 English speaking, low-income, mother-child dyads. Beginning when the children were age 3, data were gathered

during annual home and school visits to collect observational and interview data, and elicit talk during specific tasks between mother/child at home and teacher/child at school. Achievement data also were collected annually, beginning at age 5 and continuing through 2nd grade. These researchers found large quantitative and qualitative differences in early vocabulary exposure among low-income preschoolers. For example, they found that the average 5-year-old heard 1,100 word types, but the range was anywhere from 400-1,650 word types. Weizman and Snow also found a strong relationship between early exposure to sophisticated vocabulary and later performance in school. “Density of sophisticated words heard and the density with which such words were embedded in helpful or instructive interactions, at age 5 at home, independently predicted over a third of the variance in children’s vocabulary performance in both kindergarten and 2nd grade” (p. 265).

In summary, it seems likely that the practice of in-depth learning around familiar topics that are interesting to children can have positive effects on their vocabulary development. Research by Hart and Risley (1995), Weizman and Snow (2001), and Beals (1997) indicate that it is important to increase the quality and the quantity of young children’s vocabularies through meaningful interaction with significant peers and adults. Research by Notari-Syverson et al. (1996) points to the importance of teachers differentiating instruction for children at different levels and scaffolding their vocabulary development in the context of play.

Intersections with the Project Approach. The investigation of a project topic is intended to be ongoing, in-depth and to generate and follow children’s interest. The investigation begins with establishing children’s current knowledge of the topic. Project

work is intended to encourage children to develop a level of expertise about aspects of their own world. Children who are engaged in project work proceed from cursory knowledge about the topic to in-depth knowledge. New vocabulary words related to a project topic can be introduced in a meaningful way at circle time by providing concrete examples that will help make the meaning of the words clear. Vocabulary can be introduced by arranging interest areas that prompt children to discuss objects and concepts introduced at circle time. As more detailed and thorough knowledge of the topic is acquired, children acquire vocabulary to use in communicating about that knowledge. For example, in a project on cars, a group of approximately 24 children with variable attendance patterns began a list of parts needed to build a car with windows and doors, but after a few days of study, the list included more specific vocabulary such as mud flaps, brakes, and shifter (Beneke, 1998).

The in-depth nature of project work provides many opportunities for children to acquire and use new vocabulary words. As children work to satisfy their curiosity about the project topic through field trips, examination of reference materials, and visits with guest experts, they are exposed to many new words in meaningful contexts. Research has provided useful information that can help teachers of young children expand children's vocabularies through project work.

Challenging Behavior

Estimates of the prevalence of challenging behavior indicate that between 8% and 25% of young children engage in challenging behaviors that interfere with their social competence (Conroy, Brown, & Olive, 2008). In 2007 the Division for Early Childhood of the Council for Exceptional Children (DEC) developed a position statement on

challenging behavior in response to a growing trend in primary and secondary schools to remove children with behavior problems from the regular classroom (Hemmeter, 1999). The *Division for Early Childhood (DEC) Position Statement on Interventions for Challenging Behavior* (DEC, 2007) emphasizes that there are intervention approaches that can effectively address challenging behavior and support children's social competence. Difficulty with social interactions, communication skills, and limited vocabulary can contribute to challenging behaviors. The Project Approach has the potential to provide a context that reduces instances of challenging behavior by engaging children's interest, providing opportunities for adults to scaffold children's learning, encouraging dramatic play, and motivating children to participate.

Smith and Fox (2003) define challenging behavior as “any repeated pattern of behavior, or perception of behavior, that interferes with or is at risk of interfering with optimal learning or engagement in pro-social interactions with peers and adults” (p. 5). Several reviews of research have highlighted the damaging impact of these behaviors on children's futures. For example, Campbell (1995) conducted a review of the literature on challenging behavior and concluded that as many as 50% of preschool children identified as having challenging behaviors often continue to have challenging behaviors into the middle childhood years. Dunlap and his colleagues (2006) conducted an exhaustive review and synthesis of peer-reviewed research on challenging behavior and reported that there is “growing acknowledgement that early challenging behaviors can have serious long-term consequences” (p. 30). They found that challenging behaviors that appear in preschool predict many future difficulties, including incarceration, and that this pattern is more stable over time than IQ scores. Dunlap et al. estimated that between 10% to 20% of

the preschool population have significant challenging behavior. However, they found that children who have access to high quality early education environments and responsive caregiver interactions are more likely to have better social competence outcomes and fewer behavior problems. They also described these environments as being associated with greater child interest and participation.

Several factors have been identified as contributing to young children's challenging behaviors. For example, researchers have suggested that children one reason children engage in challenging behavior is that they lack language skills (Stormont, Espinosa, Knipping, & McCathren, 2003). It has been suggested that complex thinking is initially seen in the social communication between individuals engaged in joint activities (Berk, Mann, & Ogen, 2006). "Only later does it appear within the child as an autonomous capacity or skill" (Berk et al., p. 76). Research by Nietzel and Sright (2003) demonstrate the impact of joint thinking on the development of children's self-regulation. Their research highlighted the impact of children's verbalizations (about their thinking) on self-regulation. Nietzel and Sright observed 68 mother-child dyads as the child engaged in four difficult problem-solving tasks. A trained observer coded and tallied mothers' scaffolding behaviors using a system based on the work of Wood et al. (1976) and Rogoff (1990). To address children's self-regulation, children also were observed for 48 minutes in their kindergarten classrooms during teacher-directed ($n = 24$ minutes) and independent ($n = 24$ minutes) work. Observations were coded in 4-minute intervals over at least four classroom visits per child. Nietzel and Stright found that "mothers who provided more metacognitive information during scaffolded interactions had children who more frequently talked about their thinking and monitored their own progress on

their classwork” (p. 156). Children benefited when mothers provided instructions in small steps with frequent review. These children were more likely to seek support, show effort, and use self-control in the classroom when their mother’s scaffolding provided emotional support.

Emotional climate has been shown to contribute to children’s challenging behavior. Arnold, McWilliams and Arnold (1998) examined the impact of child care staff’s use of discipline on children’s behavior problems. Participants in their study were 145 children from eight classrooms with 16 caregivers (two per classroom). Videotaped observations were analyzed for laxness, overreactivity, and misbehavior. The researchers defined laxness as allowing rules to go unenforced, giving in to children’s coercive behavior, and coaxing or begging children to behave. The researchers found that laxness strongly influenced misbehavior and that children’s misbehavior influenced both teacher overreactivity and laxness.

Birch and Ladd (1998) targeted three behavioral orientations to investigate 199 kindergartener’s relationships with their teachers. These orientations or interaction styles were moving “against,” “away,” and “toward” others (p. 935). Teachers rated the children on the *Child Behavior Scale* (Ladd & Profilet, 1996). The *Student-Teacher Relationship Scale* (Pianta, Steinberg, & Rollins, 1995) was used to assess teachers’ perceptions of three features of their relationships with their students (conflict, closeness, and dependency). Children were interviewed individually, and a peer nomination measure was used. Birch and Ladd found that the behavioral orientations that children showed in kindergarten were associated with the quality of later teacher-child relationships. The researchers also reported that an antisocial behavioral orientation was

more stable over time than other orientations. The antisocial orientation was associated with higher levels of conflict and lower levels of closeness with the child's kindergarten and first grade teachers.

Jolivet, Strichter, Sibilsky, Scott, and Ridgley (2002) observed the rate and types of naturally occurring choice making opportunities and their impact on the social behavior of young children with and without disabilities. Participants were 14 four and five-year-old children ($n = 7$ with disabilities and 7 without disabilities). The children with special needs were identified as having speech and language disability or developmental delays. Each child was observed while engaged in developmentally appropriate activities for one hour on four separate days. Each observation lasted 15 minutes. Ten second intervals were used to collect data regarding (a) who orally initiated the choice making opportunity, (b) the specific type of choice making opportunity, (c) task engagement, (d) off-task behavior, (e) aggression, and (f) disruption. Findings revealed that children with disabilities were provided with more choices than children without disabilities. However, both children with and without disabilities initiated choice making at the same rate. Low rates of disruptive behaviors were observed for all children. The researchers noted that in the children who were provided with the fewest opportunities to make choices were the students who also initiated the smallest number of choices. They suggest that this may have negative implications for children with mild (or no) disabilities, who may not be provided with as many opportunities to make choices as their typically developing peers. In addition, children with and without disabilities were offered different types of choices at different frequencies. Staff offered children with

disabilities three times as many opportunities to make refusal choices compared with typically developing peers.

Also focusing on choice-making, Kern et al. (1998) reviewed 14 studies on the impact of choice making on children with disabilities. The studies were conducted between 1975 and 1996. Four of the studies included children ages four to eight. Kern and colleagues found that “all of the studies indicated that choice-making procedures resulted in behavioral improvements with some, if not all of the participants” (p. 151). For example, Cole and Levinson (2002) used an ABAB experimental design to demonstrate that providing children with choices can reduce challenging behaviors. Participants in their study were two boys ages 7 and 8 with severe developmental and behavioral abilities who were enrolled in a university laboratory school for students labeled as seriously emotionally disturbed or as having severe intellectual impairments and challenging behavior. The two participants were identified based teacher reports of high rates of uncooperative and aggressive behavior and informal observations of the occurrence of these behaviors. Three paraprofessionals who were assigned to provide one-on-one assistance to the two boys also participated in the study. Observers who were blind to the purpose of the study were trained to collect data on the occurrence or nonoccurrence of challenging behavior for each boy. Each boy received either directive prompts that labeled what he was to do next, or choice questions asking each boy what he wanted to do next. Paraprofessionals were trained to implement no-choice and choice conditions with the boys. When the paraprofessionals modified the instructional routine to include choices ($n = 7$ sessions), the chronic challenging behavior of both boys was

reduced. When the paraprofessionals removed the choice condition ($n = 9$ sessions), the challenging behaviors returned.

In a replication of Stipek's earlier work (1995), Stipek et al. (1998) contrasted the impact of classrooms that emphasized basic-skills and had a less positive social climate with classrooms that de-emphasized basic skills and had a more positive social climate. Two hundred and twenty-eight children (104 boys and 124 girls) in their last year of preschool (106 children) or in kindergarten (122 children) were randomly selected from classrooms in a variety of settings, including private, public, religious, community, and Head Start. Participants were 39% Latino, 31% African-American, 3% Asian, 26% Caucasian, and 1% from other ethnicities. Forty-two percent of the participants were from low income families. Observers rated classroom instruction and social climate on 31 measures. An experimenter worked with individual children for 20 minute sessions to assess cognitive competence, perceptions of ability, expectations for success, enjoyment of school and school-like activities, preference for challenge/risk taking, dependence, affect, persistence, and anxiety. The researchers found that as a sub-group, preschool classrooms that emphasized basic skills scored lower on items related to the social context of the classroom, especially in preschool. Preschoolers in classrooms that emphasized basic skills tended to show greater dependency, had higher levels of stress, more negative affect, greater noncompliant behavior, more discipline interactions, and made fewer academic gains than preschoolers in classrooms that emphasized a responsive, nurturing environment. Follow-up data showed that children who had been in preschools that emphasized basic skills evidenced the most anxiety in a testing situation while those who attended more nurturing and responsive classrooms scored higher on

assessments of motivation. Kindergarteners in classrooms that emphasized basic skills and had less positive social climates were more likely to perform better on assessments of basic skills, but they demonstrated less compliance and had more behavior problems. Kindergarteners in more responsive, nurturing environments were likely to score higher on assessments of problem solving and language development. Stipek and her colleagues recommend further research to investigate the impact of a basic skills oriented classroom with an emphasis on positive social climate.

Intersections with the Project Approach. Project work is child-initiated and is planned around topics that are of interest to children. Project-related activities and materials are woven into the environment. According to Beneke and Ostrosky (2009) four of seven teachers perceived the Project Approach as instrumental in reducing challenging behaviors. Opportunities abound in project work to resolve conflicts as children determine who will do what and how it will be done. As the topic of a project is negotiated, teachers can emphasize the aspects of the project topic that are likely to lead to the most productive play. Since project work is jointly planned by the teacher and the children, there are many opportunities for adults to develop positive relationships with children around high interest activities. Planning and implementing projects provide children with choices on a daily basis. For example, children may choose the topic of study, the materials to study, the representations that will be constructed, and their role in participating in the construction.

Training and Coaching Teachers

Trivette, Dunst, Hamby, and O’Herin (2009) reviewed best practices in adult learning. They synthesized 79 studies that used either randomized controlled trials or

comparison group designs. Trivette et al. found that six characteristics were associated with positive adult learner outcomes: (a) introducing information, (b) illustrating/demonstrating, (c) practicing, (d) evaluating, (e) reflection, and (f) mastery. They found that when more characteristics were used, more positive learner outcomes were realized. In addition, the learner methods and practices that most actively involved learners in acquiring, using, and evaluating new knowledge and practice had the most positive outcomes. Adult learning methods were most effective when used with a small number of learners (n = fewer than 30) and for more than 10 hours on multiple occasions.

Summary

Social communication and challenging behavior are interrelated. Based on what we know about social communication and challenging behavior, the Project Approach appears to be a potentially valuable method for supporting the development related to young children with and without disabilities. Learning to successfully communicate and interact with peers in a classroom setting can significantly contribute to the positive outcomes of young children's future social and academic success. The Project Approach provides a context that can help children achieve improved social communicative outcomes. Projects are child-initiated and provide many opportunities for children to engage in in-depth learning and sustained shared thinking. Opportunities for joint play around high interest, meaningful activities also emerge during project work. The pace of project work provides numerous opportunities for children to engage in informal conversations and for teachers to respond to children on an individual basis. Additionally, project work supports the development of strong, positive relationships, and children have regular opportunities to make choices in project work. In view of what is known

about the relationship between social communication and challenging behavior, and about the potential of the Project Approach to positively impact this relationship, it is important that research be conducted to provide investigate of this topic. Research also should explore the potential of the Project Approach to increase social communication skills, (including vocabulary, conversation skills, and peer interactions) and to reduce challenging behaviors. The current study extends the literature by addressing such gaps in the research.

Specific research questions addressed in this study were:

1. To what extent do teachers and Speech and Language Pathologists (SLPs) perceive the project approach as supporting the development of preschool children with and without IEPs?
2. To what extent does implementation of the Project Approach result in changes in social interaction for children with special needs and children identified as at risk?
3. To what extent does implementation of the Project Approach result in changes in language development for children with special needs and children identified as at risk?
4. How do teachers and SLPs perceive the supports (training, coaching, lunch meetings, implementation checklist) as being helpful with implementation of the Project Approach?

Chapter 3

Methods

Participants

Adult participants in the study were two lead teachers, two assistant teachers, and two speech-language pathologists (SLPs) who worked at the *Early Learning Center* in a small city in a Midwestern state. Child participants were four children with disabilities and four children identified as at-risk who were enrolled in two half-day inclusive prekindergarten classes at the *Early Learning Center*. The *Early Learning Center* has four classrooms that are inclusive. The 15 children in each classroom are categorized as at-risk based on ISBE selection criteria (ISBE, 2009) (see Appendix A for State At-risk eligibility criteria) ($n = 10$) or as having special needs and requiring an IEP ($n = 5$).

Child participants. Four children with IEPs in the two inclusive classrooms (2 per room) were selected to participate in this study. Likewise, four children in the two classrooms who were categorized as at-risk (2 per room) were selected to participate. The four child participants from each classroom were identified, based on recommendations from the lead teacher, as likely to benefit from the Project Approach and having a good attendance record. Children were eliminated if they were in foster care and therefore, ineligible for videotaping. Children with severe cognitive disabilities or children whose teachers reported that they were functioning below the developmental age of two years old were excluded from the study. All human subject consent procedures were followed prior to selecting participants.

Prior to the pre-intervention observations parents of the target children were asked to complete a demographic form describing their children (see Appendix B). These items included information on children's disabilities and special education or related services received, and parent education level, age, and race or ethnic group. School records were used to clarify terms used by parents and to provide additional information regarding children's educational history and diagnosis. To review child demographic data, see Table 1.

Table 1

Child Participant Demographics

Participant's (Name ^a)	Ethnicity	Child sex	Child age ^b (year, month)	Child diagnosis	Parent education level	Parent age (Mother, Father)
Jamari	African American	M	4y 5m	Delay in expressive and receptive language	No HS, GED	30-39, 30-39
Emily	Caucasian	F	3y 10m	Delay in expressive and receptive language, intelligibility of speech, attention span	HS	20-29, 20-29
Lincoln	African American	M	4y 8m	Delay in pragmatics of language	HS	20-29
Ethan	Caucasian	M	5y 1m	Delay in pragmatics of expressive language	BA,BA	30-39, 40-49
John	Caucasian	M	4y 8m	None	HS	20-29
Dayana	African American	F	4y 10m	None	AA	20-29
Jake	Caucasian	M	5y 2m	None	AA	20-29, N/A ^c
Cassandra	African American	F	4y 8m	None	N/A ^c	N/A ^c

^aPseudo names were assigned to all participants to ensure anonymity. ^bAge at the beginning of the study. ^cInformation not provided.

To more thoroughly describe each child, the ABILITIES Scale was completed on each of the 8 child participants. The *ABILITIES Index* (Simeonsson & Bailey, 1991) is an instrument designed to “describe, and provide a profile for, the functional abilities and limitations of children across nine domains: Eyes, Structural Status, Integrity of Physical Health, Audition, Behavior and Social Skills, Intellectual Function, Limbs, Intentional Communication and Tonicity” (FPG Child Development Institute, 2010). (To review a copy of the *ABILITIES Index*, see Appendix C.) An individual who is familiar with the child and his or her previous assessment history should complete the ABILITIES Index. In the present study, the lead teacher from each child’s class completed an *ABILITIES Index* for each target child. For a detailed summary of each child’s profile based on the *ABILITIES Index*, see Table 2.

Table 2

Ratings on ABILITIES INDEX

Participant's (Name ^a)	Audition (Hearing)	Behavior & Social Skills	Intellectual Functioning	Limbs (Use of hands, arms, legs)	Intentional Communica- tion	Tonicity	Integrity of Physical Health	Eyes (Vision)	Structural Status
Jamari (IEP, AM)	Normal	Mild disability: social skills	Mild disability	Suspected disability: left hand, left arm, left leg, right hand, right arm, right leg	Mild disability: understand- ing others, communicat- ing with others	Normal	Normal	Normal	Normal
Emily (IEP, AM)	Normal	Mild disability: social skills, inappropriat e behaviors	Mild disability	Suspected difficulty: left arm, right arm Mild difficulty: left hand, right hand	Mild disability: communicat- ing with others moderate disability: understand- ing others	Normal	Normal	Normal	Normal
Lincoln (IEP, PM)	Normal	Suspected disability: social skills Mildly inappropriat e behaviors	Normal	Normal	Normal	Normal	Normal	Normal	Normal

(continued)

Table 2 (continued)

Participant's (Name ^a)	Audition (Hearing)	Behavior & Social Skills	Intellectual Functioning	Limbs (Use of hands, arms, legs)	Intentional Communication	Tonicity	Integrity of Physical Health	Eyes (Vision)	Structural Status
Ethan (IEP, PM)	Normal	Mild disability: social skills, inappropriate behaviors	Normal	Normal	Normal	Normal	Normal	Normal	Normal
John (At-risk, AM)	Normal	Suspected inappropriate behaviors	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Dayana (At-risk, AM)	Normal	Mild disability in social skills	Suspected disability	Suspected difficulty: left hand, left arm, right hand, right arm	Suspected disability: understanding others, communicating with others	Normal	Normal	Normal	Normal
Jake (At-risk, PM)	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Cassandra (At-risk, PM)	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

^aPseudo names were assigned to all participants to ensure anonymity

Jamari. Jamari was a 4-year-old boy whose teacher described him as quiet and kind. He had received early intervention services for delays in cognitive, language, speech and communication, and social-emotional development. At that time he had a 45% delay in receptive language and a 59% delay in expressive language on the *Rossetti Infant Toddler Language Scale* (Rossetti, 1990). He attended a self-contained early childhood special education class as a 3-year-old and transitioned into the inclusive prekindergarten in fall, 2009. His teacher described him as very quiet and kind to others. She explained that when asked a question directly, Jamari would respond but that his responses were sometimes off-topic. She expressed concern that due to his difficulties with communication, he was reluctant to participate in group discussions. On the *ABILITIES Index* (Simeonson & Bailey, 1991) Jamari's teacher rated him as having mildly delayed social skills, intellectual functioning, and receptive and expressive communication skills. She also indicated that she suspected that Jamari had difficulty using his limbs.

Emily. Emily was a 4-year-old girl with identified special needs in speech and language. A July, 2009 evaluation using the *Preschool Language Scale* (Zimmerman, Steiner, & Pond, 2002) indicated greater than a year delay in both receptive and expressive language. When she began attending the inclusive class in Fall 2009, Emily spoke primarily in 2-4 word sentences and had a limited vocabulary. She had some difficulty answering 'wh' questions and had difficulty with phonological skills. Her teacher described Emily as having a very limited vocabulary and making noises and sounds for responses. Emily enjoyed playing with Barbie™ dolls and playing dress-up. Emily often moved from center to center without engaging in play. Her

teacher often described her as “bouncy trouncy” but noted that Emily was likely to be very excited about any new activities introduced to the class. On the *ABILITIES Index* (Simeonson & Bailey, 1991) Emily’s teacher rated her as being mildly delayed in behavior, social skills, intellectual functioning, use of limbs, and communicating with others. She also rated Emily as moderately delayed in understanding others.

Lincoln. Lincoln was a 4-year-old boy with identified special needs in pragmatics (using language to communicate and socialize). He had a difficult time sharing and playing cooperatively with his classmates and became easily upset when things did not go his way. He was likely to raise his voice and whine when frustrated and often told his peers how and what to play. On the final quarterly report from the previous school year Lincoln’s teacher commented that he was beginning to answer some questions and continued to display weak listening skills. On the *ABILITIES Index* (Simeonson & Bailey, 1991) Lincoln’s teacher rated him as having a suspected disability in social skills and engaging in mildly inappropriate behaviors.

Ethan. Ethan began receiving early intervention services at age 2 due to a moderate delay in expressive language (38%) and a mild delay in receptive language (25%) according to results from the *Preschool Language Scale-4* (Zimmerman et al., 2002). He also had delays in gross and fine motor and adaptive skills on the *Peabody Developmental Motor Scales* (Folio & Fewell, 2002). At age 2, his family reported that Ethan had less speech than he used at 18 months. In August, 2007 Ethan had no delay in comprehension, a 22% delay in expressive language, and a 13% delay in play on the *Rossetti Infant-Toddler Language Scale* (Rossetti,

1990). By Fall 2009 Ethan's sentence structure and use of words were at or above age level. However, he was still eligible for special services, because a delay in pragmatic skills limited his ability to play and interact with his classmates. At the beginning of the study in January 2010 Ethan was a 5-year-old who often played alone. During center time he would typically spend his time at the sand table, snack center, or computer. His teacher explained that he "never" chose interactive games or engaged in any cooperative play with peers. Ethan appeared to understand and communicate with others, and he was able to read fluently. On the ABILITIES Index (Simeonson & Bailey, 1991) Ethan's teacher rated him as having limited behavioral and social skills.

John. John was identified as at-risk. His teacher described him as an enjoyable 4-year-old child who loved to be the center of attention. She described him as having very low self-esteem and explained that he would become very upset when he could not master a task and would consequently cry and whine. She complained about his habit of tattling on others. On the *ABILITIES Index* (Simeonson & Bailey, 1991) she rated him as having "suspected inappropriate behaviors." She identified tattling and interrupting as the challenging behaviors that John exhibited.

Dayana. Dayana was a 4-year-old girl who was identified as at-risk. Her teacher described her as very sweet and extremely quiet. An end-of-the-year quarterly progress report prepared by the teacher from Dayana's 3-year-old prekindergarten class described her as answering simple questions with one or two words and using simple sentences of 3-4 words to express her wants and needs. However, her teacher, Sherri, described her as needing extra time to respond to

questions and directions and having difficulty writing and recognizing numbers and letters. While she was reluctant to converse with others, Dayana loved to dance and sing. On the ABILITIES Index (Simeonson & Bailey, 1991), Dayana's teacher rated her as having limited social skills and suspected disabilities in intellectual functioning, use of her arms and legs, and intentional communication.

Jake. Jake was identified as at-risk. His teacher described him as a curious child who was beginning to show interest in writing and fine motor activities. His teacher described him as liking to talk and share his knowledge. Jake's teacher rated his skills as within the normal range on all sections of the ABILITIES Index (Simeonson & Bailey, 1991).

Cassandra. Cassandra was a 4-year-old girl who was identified as at-risk. Her teacher described her as having a great imagination and a good vocabulary, and according to the final quarterly report from the previous school year, she was beginning to name letters, write her name, and listen and follow directions. Her teacher rated her as normally developing on all sections of the ABILITIES Index (Simeonson & Bailey, 1991).

Adult participants. All lead teachers had Type 04 certificates and the State's ECSE Approval to teach early childhood special education. Assistant teachers met state and district requirements to assist in inclusive public school classes. Speech and language pathologists (SLPs) met state and district requirements for providing speech and language therapy in early childhood special education classrooms. Teachers and SLPs were full-time employees at the center and worked with AM and PM classes. One AM class and one PM class were observed in this study. Lead

teachers, assistant teachers, and SLPs completed demographic forms prior to the start of the study (see Appendix D). Items on the demographic form for adults included: experience with the curricula to be covered in the Project Approach training, as well as the participants' level of education, length of employment, pertinent experience, ethnicity, and types of teaching certificate. None of the teachers or SLPs had experience implementing the Project Approach.

Table 3

Adult Participant Demographics

Name ^a	Position	Ethnicity	Age	Years in current Position	Years in similar positions	Certificate type	Highest level of education
Sherri	Lead teacher	Caucasian	49	10+	8+	Type 04, 03 early childhood special ed. approval	BA EC, El Ed
Rayna	Assistant teacher	African American	40	<2	18	None	Some college
Amanda	SLP	Caucasian	26	<2	2	Type 73	Masters in communication sciences and disorders BA
Kristie	Lead teacher	Caucasian	52	10+	4	Type 04, 03, 06 early childhood special ed. approval	BA
Jennifer	Assistant teacher	Caucasian	29	<2	18	None	Some college
Susan	SLP	Caucasian	57	10+	0	Type 73	Masters in Speech Pathology

^aPseudo names were assigned to all participants to ensure anonymity. ^cInformation not provided.

AM staff. Sherri, Rayna, and Amanda were the AM staff members. Prior to the year in which the study was conducted, Sherri had taught students in a self-contained early childhood special education class. The year in which the study was conducted was her first year to teach a class that included children identified as at-risk. It was also Sherri's first year at the *Early Learning Center*. She shared with the researcher that she was nervous, because she wanted to do a good job and things were done differently at her new school. Sherri taught a self-contained early childhood special education class in the afternoons. She indicated that she might prefer to go back to teaching self-contained early childhood special education in the future. Rayna had been assigned as the assistant teacher in Sherri's class only two weeks prior to the beginning of the study. She had previously been the assistant teacher for a self-contained early childhood special education class. Amanda was in her first year as an SLP, and the year when the study was conducted was her first year at the *Early Learning Center*.

PM staff. The afternoon staff included Kristie, Jennifer, and Susan. Prior to the year in which the study was conducted, Kristie had taught prekindergarten children identified as at-risk. This was her first year to teach a class that included children with IEPs. She had been teaching at the *Early Learning Center* for many years. In addition, her principal stated, "the other faculty follow her lead and look to her for direction in the Pre-K class setting" (A. Norris, personal communication, July 9, 2010). Kristie shared with the researcher that she was a little nervous about whether she was doing everything she could to support the students with IEPs that were included in her classroom. Jennifer, Kristie's assistant teacher, was relaxed and

easy-going. She hoped to get her early childhood teaching certificate in the future, and saw her participation in the study as a chance to learn more about teaching. Susan, the SLP for Kristie's class, had worked with Kristie for many years and respected her abilities.

Setting

The *Early Learning Center* served 412 children and was funded by the State Board of Education. Sixty-two children with IEPs were served in the eight inclusive or self-contained half-day classes. The *Early Learning Center* was selected as the site for this study, because the researcher had previously provided professional development for the center staff on the *Creative Curriculum* (Trister-Dodge, Colker, & Heroman, 2003), classroom environment, and art, and she had established a positive relationship with the administrators and staff. The principal of the center had requested that the researcher provide training for the center staff on the Project Approach and had encouraged the researcher to conduct research at her school.

Research Design

A mixed method study was employed to determine the ways in which the Project Approach impacted children with disabilities and those at risk, and to determine what supports were helpful to teachers and SLPs as they implemented the Project Approach. Teacher interviews and child observations were the primary sources of data.

Procedures

Recruitment. Prior to training on the Project Approach, lead teachers from four half-day inclusive preschool classes were recruited from the pool of individuals

who planned to attend this training. The principal held an informational meeting at the *Early Learning Center* to explain the research project to any lead teachers of inclusive classrooms who were interested in participating. During this informational session, she explained that two lead teachers would be selected to participate in the study based on self-nomination and principal recommendation. She explained that teachers who had previously attended training in the Project Approach were not eligible for participation. Teachers indicated their interest in participating by speaking with their principal. The principal made the final determination regarding which two classrooms would participate and then informed the researcher of the names of the other teachers and their contact information. Assistant teachers and SLPs who served children in the targeted classes also were recruited. The assistant teachers or speech therapists could have declined to participate, however, both assistant teachers and the two speech therapists agreed to be involved in the study.

The researcher sent the two lead teachers a consent form explaining the purpose of the research study, the voluntary nature of participation, and that participation in the study was not a required part of the *Project Approach* training (see Appendix E). The consent form outlined the sequence of teacher interviews and classroom observations that were to take place if the teacher agreed to participate. Consent forms also were collected for assistant teachers and SLPs, since they might appear in the videotaped observations interacting with children in the course of normal classroom activities. Inclusion of teachers and SLPs in this study was dependent on their willingness to participate in the interview process, to complete an *Implementation Checklist* (see Appendix F) and to be videotaped. Participants

were assured that tapes would be used only for the purpose of collecting data and would be erased at the conclusion of the research project. Participating lead teachers each received \$200 for classroom materials as an incentive. The principal provided the assistant teachers with credit for professional development hours for attendance at the Project Approach training and weekly lunch meetings.

The researcher sent the parents of all children in the two classes a consent form explaining the purpose of the research study, the voluntary nature of participation, and that participation or non-participation in the project would not affect their child's status or grades at school. The consent form described the sequence of videotaped observations in relation to the teacher's implementation of the Project Approach (see Appendix G). The teacher selected the target children from the pool of children in each class who had parental consent to participate. Criteria used to select target children were: consistent attendance and parent's provision of written consent, the child's willingness to be videotaped on a given day, designation as either at-risk or having special needs. An additional criterion for selecting children with cognitive disabilities was that they function above the developmental age of two years old. When a child without consent entered into the activities that were being videotaped, the researcher deleted or masked them from the video.

Intervention.

One-day institute. The intervention portion of this study included both training and coaching. The Project Approach is comprised of three phases (see Appendix H). The intervention began with a full-day training on the Project

Approach at the *Early Learning Center* and continued with ongoing weekly lunch meetings and in-class coaching twice weekly. The weekly lunch meetings and in-class coaching continued throughout the course of the three phases for the teachers in the targeted classrooms. Assistant teachers and SLPs also were invited to attend the lunch meetings. Lunch was provided at weekly meetings.

The researcher provided all training, and all center lead teachers and assistant teachers attended. SLPs were only able to attend the second half-day of the training, due to requirements that they attend a district-wide meeting of SLPs. The training took place in the meeting room at the *Early Learning Center*, which was equipped with large tables, adult-sized chairs, and audiovisual equipment. It comfortably seated 40. The training began at 8:00 AM and ended at 3:30 PM, with an hour break for lunch. During the training the participants had an opportunity to see a powerpoint presentation with images of two complete projects and vignettes from several other projects (see Appendix I for agenda.) Copies of the *Project Approach Implementation Checklist* were provided. Teachers were taught how to use the *Checklist* to monitor their implementation of the approach. The teachers and SLPs participated in a small group simulation of the steps in developing and implementing a project and analyzed and documented their experience. At the end of the training, teachers and SLPs completed an evaluation of the training (see Appendix J).

Weekly mentoring. Following the training, lead teachers and assistants in the two target classes were asked to attend weekly meetings with the researcher at a time and location that was convenient to them. These weekly sessions were

designed to help support high quality implementation of the Project Approach in the target classes. The meetings were held over the teachers' lunch hour, and lunch was provided. Two teachers who had experience implementing the Project Approach and were not part of the study also attended these meetings. Auditory recordings of eight meetings were made using *Garage Band*. The researcher reviewed these recordings following the meetings and, on three occasions she took notes and summarized the main points of the discussions for the teachers (see sample meeting notes in Appendix K).

Structure of mentoring meetings. The structure of the lunch meetings was based on findings from a recent synthesis of adult learning strategies and models (Trivette, Dunst, Hamby, & O'Herin, 2009). During the meetings the researcher encouraged the teachers to describe the events and activities that took place as they implemented the Project Approach during the prior week and to reflect on aspects of the implementation that went well and those that they found challenging. The researcher encouraged the teachers to brainstorm possible solutions to the challenges and asked them to plan strategies for implementing the solutions during the following week. The researcher developed graphic organizers to help teachers and SLPs understand the Project Approach (see Appendix L). Teachers were taught how to use a *Log* to monitor challenging behaviors of individual children as they participated in the project.

Fidelity of Implementation Checklist. The *Implementation Checklist* was developed by the researcher to support teacher implementation and to serve as a vehicle for teacher-to-teacher and teacher-to-coach discussion. The items on the

checklist reflect the researcher's experience as a teacher and as a trainer in the Project Approach and include input from classroom teachers who have used the Project Approach and trainers who have trained teachers in the Project Approach. The *Implementation Checklist* was designed to reflect the sequence of strategies, activities, and events that typically take place at different points in the life of a project. Therefore, teachers could use the same checklist throughout the course of the project and update it on a weekly basis. One *Implementation Checklist* was used per class of children ($n = 2$ total). Each lead teacher and the researcher jointly updated the *Implementation Checklist* for the teacher's class prior to or following weekly mentoring sessions. The researcher used notes from her classroom observations to raise questions and help her complete the *Checklist*. The results of the researcher's completed *Implementation Checklists* were analyzed to assess changes in classroom practices that resulted from implementing the Project Approach. Since the *Implementation Checklist* was not completed independently, information from the checklist could not be used to calculate reliability.

The researcher and teachers jointly reviewed relevant sections of the *Implementation Checklist* as a way of engaging the teachers in self-assessment of strengths and weaknesses in implementing the Project Approach, evaluating the effectiveness of the previous week's plans, and determining next steps in the implementation process.

Implementation of the Project Approach. Following training in the Project Approach the teachers and SLPs met with the researcher to discuss possible topics for their project. After discussing the feasibility of potential topics for their projects,

the teachers and SLPs decided to begin implementation of a project on grocery stores. They created a joint topic web that included everything they could think of that could be learned about grocery stores. They then decided to begin their project work in both classes with a circle time discussion about the grocery store.

Phase 1 activities. Teachers in both classes planned similar activities, although they were implemented differently in form and depth. Child-sized plastic grocery carts were introduced into both classrooms to provoke the children's interests in the topic of grocery stores. Children in both the morning and afternoon classes dictated things they knew about grocery stores, and their teachers recorded the dictation on a web. The focus of the web in the morning class was on foods sold at a grocery store. The focus of the web in the afternoon class included jobs and equipment in addition to foods. In addition, both groups of children dictated a list of items they thought they would likely see at the grocery store.

Both the AM and PM classes were then introduced to observational drawing through a small group teacher-directed experience. The afternoon class also received experience with observational drawing at a learning center that was introduced at circle time. In addition, the children in the PM class were given experience in field sketching by taking a trip to the school fish tank.

Another activity children participated in as part of project work was dictation. Children in both classes dictated stories that reflected their current level of knowledge about the grocery store. They also were introduced to surveying. However, the PM class was provided with many more experiences with surveying than the AM class. Both classes conducted surveys to find out where the adult staff

shopped. However, the PM class also developed survey forms that children could use to conduct individual surveys, and the teachers encouraged them to conduct independent surveys throughout the course of the project.

To further the children's interest in the topic of grocery stores, the teachers in the AM and PM classes proposed that the children build shelves to hold groceries in the dramatic play area. The children made the shelves out of cardboard boxes. They worked with one another to tape the boxes together, and they voted to determine what color the shelves would be painted. Children then painted the shelves during choice time. Child-sized cash registers, carts, shopping bags, and a desk/check-out counter also were added to the dramatic play environment to go along with the grocery store project.

As the housekeeping areas in each classroom were changing into areas for dramatic play about the grocery store, the teachers and SLPs planned a field trip to the grocery department of the local Walmart store. They made this decision because the husband of one of the assistant teachers was a manager at the store, and because they would be able to ride the city bus to reach the site. Prior to this field trip, none of the teachers or SLPs had taken their students on a field trip off campus.

To prompt discussion about the grocery department of Walmart, the teacher of the PM class made a preliminary trip to the store grocery department and took photographs of the various departments. She shared these photographs with the PM teacher, and they displayed the pictures and used them as a basis for discussion. In addition, the PM teacher and SLP made cards for a class word bank that the children could use at their writing area.

Phase 2 activities. The teachers and SLPs prepared the children for the trip to Walmart by asking them to predict what they thought they might see in the grocery department. They also asked each child to dictate a question they wanted to ask during their trip, and they recorded each child's question on a paper, so they would have a visual reminder of the questions while at the store. After a large group discussion, three areas were identified that the children would especially like to observe while at the store. Before leaving for the store, each child was asked to sign up for the area they would like to sketch while at the store.

On a foggy Monday morning, the children, teachers, and speech and language pathologists walked to the bus stop and waited for the bus. The bus ride to and from the Walmart was a salient part of the field trip, since few of the teachers and children had prior experience riding on a city bus. While the children were able to ride the bus at no charge, they were interested in observing the adults pay their bus fare.

The Walmart manager, Mr. Daryl, met the children and teachers at the door. He took them on a behind-the-scenes tour of all the grocery departments, including the bakery, refrigeration, freezer, delivery, and storage areas. The group stopped in the bakery department, and the children watched Francis, the baker, demonstrate how to squeeze frosting onto cupcakes. She then gave the children a box of cupcakes to take back to school with them. In the delivery area, the child and adult visitors were able to walk inside a semi truck that was backed up to a delivery bay. It was a big, dark space, and the children were very interested in it.

Before leaving the store, the children made observational drawings of the area they had signed up to study (bakery, trucks, or cash registers). Several children, including Lincoln, changed the focus of their field sketch, after observing a scissor-lift in operation. Following the field trip the teachers led discussions with their students to “debrief” about the trip.

Props, including a shower cap, plastic gloves, aprons, and a metal cart were added to the housekeeping area in each classroom to support children in their representational play. These props were geared toward dramatic play about the Walmart bakery department. Both teachers added center time activities to further support interest in the bakery, such as muffin tins and playdough.

As the children settled into representational play about the grocery store, the teachers in each class asked their students if they would like to construct something to represent their grocery store experience. The AM class voted to build a bus, and the PM class voted to build a semi-truck. The construction process for the two vehicles took different paths. The morning class constructed a bus by taping paper to chairs. Consequently, it was high interest, but lacked durability. A few days later the teacher brought in a large cardboard box, and she assisted the children in revising their plan.

The teachers of the PM class engaged the children in long-term planning and construction of the semi-truck, which lasted for several weeks. The cab and frame of the semi-trailer were constructed from cardboard, while the sides of the trailer were paper. Individual children designed decorations for the sides of the semi truck, and the class voted to determine which design would be used. Groups of children

then transferred larger versions of the winning designs onto the sides of the truck. Votes were also held to select a design for handles and to determine which steering wheel to use. Many design obstacles were encountered and overcome along the way.

As the PM class was constructing the semi-truck, and the AM class was constructing a second version of the bus, the school principal made arrangements to have a semi-truck visit, so that the children could gather more detailed information about semis. The teacher of the AM class then encouraged her children to change the subject of their construction from a bus to a semi-truck. The semi-truck visited twice, and children from both classes were able to closely examine the inside and outside of the truck. They took clipboards with them and made observational drawings of various parts of the truck

The AM class semi-truck evolved to the point where children could climb inside the trailer, sit in chairs and ride, while the driver sat on a chair in front of the trailer and pretended to steer. Three boxes were covered with colored paper and decorated to represent cargo, and these were also placed in the trailer. The semi-truck constructed by the afternoon class was more detailed. It included a folding trailer door, doors with handles, a control panel, keys, horn, windshield, lights, and boxes of cargo.

While the semi-truck was being constructed, representational play that connected the semi-truck with the grocery store in the dramatic play area developed in the PM class. Children would pack boxes with food, load them on the semi, drive the semi, and then unload the boxes onto the shelves in the grocery store. The teachers of the morning class wrapped cardboard boxes with colored

paper, and children drew the produce on the boxes. However, children in the morning class persisted in bringing loose grocery items from the class grocery store and loading them into the truck. This was problematic, since children and groceries were in the same space due to the fact that the cab and trailer were not separate in the AM construction.

Phase 3. The two classes found different ways to culminate their projects. Sherri invited the students from another class to visit, so that her students could explain their project to them. She and Rayna set up stations in the classroom that the visiting students could visit, to learn more about semi-trucks. Children from the AM class were responsible for helping the visiting students participate in the activity at each station. For example, children were in charge of giving visitors a tour of the semi-truck, showing others how to make trucks out of clay, and explaining their documentation of the class project.

The PM class culminated their project by displaying project documentation and their semi-truck at the school for Family Fun Night. The children and Kristie reviewed project documentation together, and discussed what they should tell parents about their project. Children decorated individual invitations for their families and took them home. Then project documentation was put up for display and the semi-truck was placed in the school's all-purpose room where the Family Fun night would take place.

Instruments and Data Collection

The sequence and type of data collected prior to and following the Project Approach Training is provided in Table 4. As is evident, data were collected before, during, and after implementation of the Project Approach.

Table 4

Data Collection Timeline

Pre-intervention	Intervention	Post-intervention
ABILITIES Index		
Interviews (prior to first observations): Lead teachers, assistant teachers, SLPs	Interviews: Lead teachers, assistant teachers, SLPs	Interviews: Lead teachers, assistant teachers, SLPs
Observations	Observations	
First 50 utterances	Last 50 utterances	
Implementation Checklist	Phase I – <i>Implementation Checklist</i> (1-19c) Phase II – <i>Implementation Checklist</i> (20a-44) Phase III – <i>Implementation Checklist</i> (45-49b)	

Teacher-focused Instruments and Data Collection.

Staff Interviews.

Instrument development. The questions listed in the *Interview Protocol* (see samples in Appendix M) were developed to evaluate the depth of the lead teacher, assistant teacher, and SLP's knowledge of the Project Approach and their perceptions of the impact of the Project Approach on their students. The questions on the initial Interview Protocol were adapted from past research (Beneke & Ostrosky, 2009) and from consultation with experts on the Project Approach, curricula, and young children with special needs. The protocol included questions to be asked of the teachers, assistant teachers, and SLPs pre-, mid-way, and post-implementation. Probes were used when necessary to encourage study participants to expand on their comments: sample probes are included in the protocol. The mid-way and final interview questions were revised and refined based on the results of the previous interviews and classroom observations.

The researcher piloted the interview questions with two graduate students from the Department of Special Education at the University of Illinois who had experience as teachers in early childhood classrooms. Pilot interviews were audiotaped and transcribed so the researcher could use these transcripts to make adjustments in the interview questions. Feedback from the two pilot participants was used to revise and refine the questions.

Collection of interview data. Interviews were conducted three times: (a) once in January three weeks prior to implementation of the Project Approach, (b) during Phase 2 of implementation of the Project Approach, and (c) following Phase 3 of

implementation of the Project Approach. A research assistant (RA) who was a graduate student in the Early Childhood Special Education, was familiar with the Project Approach, and would not spend time observing in the classrooms at the *Early Learning Center*, conducted all pre-, mid-, and post-intervention interviews of lead teachers, assistant teachers, and SLPs. Interviews lasted approximately 60 minutes and took place at a time and in a location that was comfortable and convenient for each study participant.

The RA was somewhat familiar with the purpose of the study. The researcher trained the RA by using the *Interview Protocol* with a volunteer teacher from another preschool class. The RA observed the pilot interview. Additionally, the researcher observed the RA as she used the protocol with a second volunteer teacher from another class. The researcher provided the RA with constructive feedback and answered questions about the process as they arose. The RA's training was complete when she had no further questions and the researcher had no further constructive feedback to offer.

The RA scheduled a time prior to the Project Approach training to conduct a face-to-face interview with each lead teacher, assistant teacher, and SLP. All interviews were audiotaped and transcribed by the researcher or a naïve graduate student. The researcher kept the RA informed about the development of the projects, so that she had adequate lead time to schedule the interviews. Data were transcribed and analyzed after the first set of interviews, and the researcher used findings from this analysis to revise questions and probes to be used in the subsequent interviews. All participants received a copy of their transcript to look

over, edit, and then return to the researcher to ensure that their comments reflected their intentions.

Recordings of lunch meetings. *Garage Band* software was used to record the dialogue among teachers, SLPs, and the coach during lunch meetings. The researcher reviewed the recordings to generate meeting notes for the participants. The researcher also used the recordings as a secondary source of data. For example, the researcher could review recordings to document the timing of events.

Anecdotal field notes and observations. Field notes were recorded either immediately following classroom observations or at the end of the day. They were used as a secondary data source to support inferences and to record the timing of events in project implementation.

Child-focused Instruments and Data Collection

Classroom videotaped observations. The researcher used a handheld camera (Sony Handycam, model HDR-CX500) with a shotgun microphone to collect video observations. A sample schedule of videotaped class observations is provided in Appendix N. On average, each child was recorded for 16.75 9-minute segments and 1.75 6-minute segments. A variety of project activities typically permeated the day in these prekindergarten classes, although the intensity and type of activities varied depending on the ebb and flow of children's interest and the phase of the project. To ensure that data representative of the range of project-related activities were collected, observations took place twice per week during the choice time component of the daily routine for each class. Observations did not include the transition time at the beginning and end of choice time. The researcher alternated

the order of child observations so that target children had an equal opportunity to be observed at different points within each routine component. If a child left the room to use the bathroom or was pulled from the room by a specialist, the researcher observed the next child in the sequence. Upon completion of that observation, the researcher checked to see if the missing child had returned to the room. If he/she had returned, she resumed observing him/her, until she had completed the total number of planned minutes of observation for that child. If a child was absent, the researcher used the predetermined sequence of observations for the day, skipping the absent child.

Choice time, the period in the class schedule when the researcher observed the children, was typically 45-60 minutes in length. During choice time, the researcher observed a child for 9 minutes and then moved to the next child in the predetermined sequence. When a child was unexpectedly removed from the classroom or the choice time was unexpectedly shortened, the researcher discarded any observations that were less than 6 minutes. The number of 6-minute observations per child ranged from 0 to 3;. The number of 9-minute observations per child ranged from 15 to 20. See Appendix O for a detailed record of the minutes recorded for each child.

Abilities Index. The *ABILITIES Index* (Simeonsson & Bailey, 1991) provided a profile of each child's functional abilities and limitations across nine major areas (see Appendix C). The Index was administered at the onset of the study to help describe the target children who were the focus of the study. Lead teachers

completed an ABILITIES Index on each participating child once *Consent Forms* were returned.

The ABILITIES Index has been found to be a reliable measure:

Cross-cultural research has been conducted to document the reliability of the ABILITIES Index for use in making disability classification decisions (Bailey et al., 1993; Simeonsson et al., 1995) with studies involving 254 children, 213 parents, 133 teachers, and 135 interdisciplinary professionals. Inter-rater agreement of 86% was found among 133 teachers and 135 specialists (total number of agreements/agreements + disagreements) with ratings of one rater within one point of those of the second rater. Correlations among raters were low to moderate with an average of .60 across raters. Lower ratings and levels of agreement were observed on less well-defined and complex categories (i.e., social skills, inappropriate behavior, intellectual functioning, communication, and health). In addition, the stability of ratings of 44 teachers on ratings conducted one-month apart yielded agreement within one point in 91% of the cases with kappas in the moderate range (.77). (Ostrosky & Favazza, 2010)

SALT. Language samples of the first and last 50 utterances by each child were transcribed from the video observations of each child. Language samples of 35-70 utterances have been shown to be accurate and reliable (Heilmann, Miller, Iglesias, Fabiano-Smith, & Digney, 2008). A graduate student in Speech and Language Pathology transcribed and coded the utterances into documents using codes designed for use with the SALT software program. The SALT software then allowed the researcher to calculate the Mean Length of Utterance (MLU_m) for each child.

Data Analysis

A data analysis table (see Appendix P) lists the research questions, data sources, and type of analyses that were used in this study. Using Miles and Huberman's (1994) guidelines for content analysis, the following steps were taken in analyzing teacher interviews.

Analyzing teacher interviews.

Becoming familiar with the interview data. Interview data were transcribed and identified using the pseudonym for the particular adult interviewed. Transcription and analysis took place upon completion of each round of interviews. Therefore, interviews for the two lead teachers and the two SLPs were analyzed three times. The assistant teacher in one classroom was not hired until the day following the first round of interviews, so one assistant teacher was interviewed two times, and the other assistant teacher was interviewed three times. Therefore, the total number of interviews was 17.

The researcher immersed herself in the data by reading and rereading all interviews a minimum of three times. This process helped her become familiar with the data. Using the research questions as a guide, the researcher reviewed the data and made notes of possible themes and wrote notes next to the section to which she was referring. These notes helped the researcher connect with the content as she reviewed the data. Comparison of coding across the three reviews of the transcripts provided an indication of internal consistency of her coding (Miles & Huberman, 1994).

Identifying units of analysis in interviews. Two of the five pre-intervention interviews (40%) were randomly selected and reviewed by the researcher and an Early Childhood Special Education faculty member. The researcher and the faculty member independently bracketed interview responses into units of analysis. Any discrepancies in coding were discussed and negotiated until consensus was reached.

Defining tentative categories for coding the interviews. The researcher read through the bracketed units looking for patterns and themes. Categories emerged as the researcher looked for commonalities across responses. Mutually exclusive categories were developed so that each unit of analysis would fit into only one category. The researcher and the early childhood special education faculty member discussed the potential themes. This “peer debriefing” as described by Brantlinger, Jiminez, Klinger, Pugach, and Richardson (2005) added credibility to the research.

Refining categories. A naïve graduate student was trained by reading Miles and Huberman’s (1994) description of codes and the process of coding, and by practicing coding interview data. The researcher and naïve coder compared and discussed all discrepancies in coding until they were resolved. The researcher and the naïve coder then coded 30% of the interview data ($n = 6$ of 17) into tentative categories. This process helped identify responses that would not fit a category and aided with refinement of the categories (see Appendix Q). The researcher then coded the remaining interview data.

Establishing category integrity. In this step of the process, a second naïve individual (an early childhood teacher in the field) coded 21.93% ($n = 200/912$) of the data. This teacher was trained in the same procedure described above. This step of category integrity was congruent with Miles and Huberman’s (1994) suggestion that initial intra- and intercoder agreement is typically no better than 70%, but should eventually be in the 90% range as there is gradual elaboration on a small set of generalizations that deal with consistencies reflected in the database (interview

data). Mean reliability was 91% (range = 0-100%) (for a detailed breakdown of reliability by theme, see Appendix R).

Analyzing video data.

Play categories adapted from Ostrosky and Favazza (2010) were used to guide coding of the video data (see Appendix S). The researcher watched the video footage several times and revised the definitions and examples from Ostrosky and Favazza's play categories until behaviors observed in all 3-minute intervals fit one of the play categories. A naïve graduate student was then trained by reading the definitions of the play categories, and then discussing them with the researcher while viewing sample observations. Play categories were further refined, based on these discussions. The naïve graduate student and the researcher then independently coded 20% of the video observations, using a recording form (see Appendix T). Over-all mean reliability was 88%, and reliability for each phase of the study ranged from 68% to 93% (see Appendix U for a detailed breakdown of observation reliability by phase, and see Appendix V for a detailed breakdown of the play levels across the phases as a percentage of the total.) Reliability for each child ranged from 72% to 100% (see Tables 5-12 for reliability per child). Overall reliability for the play codes was 88% and ranged from 75% to 92% (see Table 13).

Table 5

Results of Reliability Coding for Jamari

Phase	Agreement
Pre-intervention	6/6 = 100%
Phase 1	6/6 = 100%
Phase 2	4/6 = 67%
Phase 3	1/3 = 33%
TOTAL MEAN	17/21 = 81%

Table 6

Results of Reliability Coding for Dayana

Phase	Agreement
Pre-intervention	7/8 = 87%
Phase 1	3/3 = 100%
Phase 2	3/3 = 100%
Phase 3	2/2 = 100%
TOTAL MEAN	15/16 = 94%

Table 7

Results of Reliability Coding for John

Phase	Agreement
Pre-intervention	2/2 = 100%
Phase 1	6/6 = 100%
Phase 2	6/6 = 100%
Phase 3	0/0 = NA
TOTAL MEAN	14/14 = 100%

Table 8

Results of Reliability Coding for Emily

Phase	Agreement
Pre-intervention	5/5 = 100%
Phase 1	2/3 = 67%
Phase 2	9/9 = 100%
Phase 3	1/3 = 33%
TOTAL MEAN	17/20 = 85%

Table 9

Results of Reliability Coding for Cassandra

Phase	Agreement
Pre-intervention	5/6 = 83%
Phase 1	2/3 = 67%
Phase 2	5/5 = 100%
Phase 3	3/3 = 100%
TOTAL MEAN	15/17 = 88%

Table 10

Results of Reliability Coding for Jake

Phase	Agreement
Pre-intervention	4/4 = 100%
Phase 1	6/6 = 100%
Phase 2	7/8 = 87%
Phase 3	2/3 = 67%
TOTAL MEAN	19/21 = 90%

Table 11

Results of Reliability Coding for Ethan

Phase	Agreement
Pre-intervention	6/6 = 100%
Phase 1	3/3 = 100%
Phase 2	5/6 = 83%
Phase 3	2/3 = 67%
TOTAL MEAN	16/18 = 90%

Table 12

Results of Reliability Coding for Lincoln

Phase	Agreement
Pre-intervention	5/6 = 83%
Phase 1	2/5 = 40%
Phase 2	4/5 = 80%
Phase 3	2/2 = 100%
TOTAL MEAN	13/18 = 72%

Table 13

Results of Reliability by Code

Code	Agreement
Onlooker	12/13 = 92%
Solitary	21/24 = 87%
Parallel Play	33/35 = 94%
Associate Play	20/26 = 77%
Cooperative Play	39/43 = 91%
A-C P = Adult-Child Play	3/4 = 75%
MEAN	128/145 = 88%

Analyzing MLU_m. A graduate student in speech and language pathology transcribed the first and last 50 intelligible utterances for each focal child from

videotaped observations using SALT transcription conventions for English language samples. This is a reliable number of utterances used to analyze MLU_m (Heilmann et al., 2008). The SALT software was then used to analyze the transcriptions so that pre- and post-implementation MLU_m could be compared.

MLU_m is an established measure of syntactic complexity, with the following characteristics:

The measure correlates significantly ($r = .71$) with advancing age (Miller, 1987; Miller & Chapman, 1981). The measure calculates the number of morphemes in each utterance (*as defined by C-unit segmentation rules*) and computes an average to establish a “mean” length measure (Miller, 2010, p. 27).

Language impairment is often defined as an MLU_m one standard deviation or more below the mean for a child’s age level (Eisenberg, Fersko, & Lundgren, 2001).

Reflexivity

The researcher has spent many years teaching others to use the Project Approach, has published books and articles about the Project Approach, and has conducted research on the Project Approach. Therefore, it was impossible to maintain a value-neutral position in the interpretation of data. To reduce bias, the researcher maintained an internal dialogue throughout the research. She recorded field notes regarding salient reactions following each observation and used those notes to examine what she knows and how she came to know it, as recommended by Berg (2004). For example, she was mindful of her theoretical and pedagogical bias toward the Project Approach. She attempted to produce “reflexive knowledge: information that provides insights into the workings of the world *and* insights on how that knowledge came to be” (p. 154).

Chapter 4

Results

A mixed methods approach was used to answer the following research questions: (a) to what extent do teachers and SLPs perceive the Project Approach as supporting the development of preschool children with and without IEPs?, (b) to what extent does implementation of the Project Approach result in changes in social interaction for children with special needs and children identified as at risk?, (c) to what extent does implementation of the Project Approach result in changes in language for children with special needs and children identified as at risk?, and (d) how do teachers and SLPs perceive the supports (i.e., training, coaching, lunch meetings, *Implementation Checklist*) as being helpful with implementation of the Project Approach? Qualitative results include data from interviews with two lead teachers, two assistant teachers, and two SLPs as well as field notes. Quantitative results include statistical analyses of play levels from 14 weeks of classroom observations of eight children, and SALT language analysis. The ABILITIES Index (Simeonsson & Bailey, 1991) and demographic information provided pre-intervention descriptive information.

Knowledge and Feelings About Implementing the Project Approach

Understanding teachers' and SLP's knowledge and feelings about implementing the Project Approach provides background information on their perceptions about the usefulness of the Project Approach to support the development of preschool children with and without IEPs. Two themes related to teachers' knowledge and feelings emerged from the interview data: (a) positive

knowledge and feelings about implementation, (b) concerns about implementing the Project Approach.

Positive knowledge and feelings about implementation. The original assistant teacher in Kristie’s room resigned prior to the pre-intervention interviews, so only five participants were interviewed at the pre-intervention stage. These three teachers and two SLPs had no prior training or experience implementing the Project Approach. Sherri and Rayna, the teachers from the AM classroom, had a neutral attitude toward learning to implement the Project Approach, while the two SLPs and the Kristie, the teacher from the PM classroom were positive or excited about it (see Table 14).

Table 14

Participants’ Pre-intervention Feelings About Implementing the Project Approach

Representative Quotes	Participant
Anything that will be beneficial to the children or to me as a therapist, I have a positive attitude towards.	Amanda
I’m excited about it.	Kristie
I don’t know much of anything [about the Project Approach].	Rayna
I’m excited.	Susan
Yeah. I feel okay. Nervous, maybe.	Sherri

The two lead teachers were somewhat aware of the Project Approach, because two other lead teachers in the building had successfully implemented projects. Kristie was excited about trying the Project Approach, however, she knew

that projects were interest-based, and she was concerned that she would not be able to identify a topic that would intrigue all of her students. She worried that she would be too “concrete” and would not be creative enough to implement a project. Sherri commented that it would be interesting to see whether the children with special needs would participate actively in project work.

Jennifer was quickly employed to fill the assistant position in Kristie’s room and began work the day after the pre-intervention interviews. Consequently, 6 adult participants were interviewed mid-way through implementation. Having previously attended a workshop on the Project Approach, Jennifer had some knowledge of it. The teachers’ and SLPs’ mid-intervention feelings about implementing the approach were consistently positive ($n = 6$), and they continued to express positive perceptions in their post-intervention interviews ($n = 6$). Representative mid- and post-implementation responses are presented in Tables 15 and 16.

Table 15

Participants' Mid-intervention Feelings About Implementing the Project Approach

Representative Quotes	Participant
I'm excited about just the kids' increased knowledge of the topic that they've chosen and whether or not the teacher is going to continue with that model of teaching. I am, excited that the kids are gonna' always have this experience,	Amanda
I'm blessed. I like learning new things. Cause this is what I want to do eventually is go back to school and be a teacher. So learning these things to get the children involved and stuff like that, it's been great. I'm glad I got the opportunity to do it.	Jennifer
And it's just fun. I like it.	Kristie
We've done our shelves, we've done our sign for the store, we've done different things like that, and Friday we built a bus. And just seeing where their minds take them and what else they want to make and develop for the store-- I'm excited to see the end project.	Ray
I think it's fun.	Sherri
And I don't know enough of what is yet to come to ... Sure I'm excited, just because I like working with her [Kristie], but I don't know that there's something specific that...	Susan

Table 16

Participants' Post-intervention Feelings About Implementing the Project Approach

Representative Quotes	Participant
I think, overall, it's a fun opportunity for the kids to really dive deep into something.	Amanda
But you know, I would be ready to do another one in a heartbeat.	Jennifer
Oh, absolutely. Definitely. I can't tell you what it [the topic of our next project] would be, because we would have to wait and see what the kids seem a little bit interested in. I mean I might be able to spark something, but I definitely would try it again.	Kristie
I think the Project Approach...I learned a lot. And implementing it in class, it was fairly easy just to kind of flow into it.	Rayna
I think I just really learned a lot, and I think it was something I think I can do, but just on a smaller scale. And, I mean, it was fun.	Sherri
I have come to respect its value. I think it has added to the kids' curriculum, and it was neat to watch kids take ownership of the project.	Susan

Concerns about implementing the Project Approach. While study participants were positive about implementing the Project Approach, mid-way through implementation, interview data revealed that the two lead teachers and two assistant teachers also had concerns. Kristie was concerned about organizing documentation for display. She wanted to do a good job, "so that the parents can come in and see what we've done." Sherri shared that she sometimes became overwhelmed, because she had switched schools, and everything was new to her at the *Early Learning Center*. She expressed concern about several things, including: whether she was doing the Project Approach correctly, if the activities she was planning were interesting and exciting to the children, her desire to have the children get enough practice with academics, and whether she was providing enough repetition for her students with the most significant disabilities. She

mentioned that it was sometimes difficult to get her students to leave project work and work with her individually or in small groups at the table.

During mid-implementation interviews Sherri and Rayna expressed concern about when to bring the project to a close. Sherri stated, “Sometimes I wonder at what point we really need to stop. If we’re really gonna’ bring in new stuff all the time, is eight weeks too long?....Where you could do a [short unit].... and really get ‘em really excited.” Rayna was concerned about keeping the project going when the preschoolers had lost interest. She was concerned that the teacher had to bring in objects and work to reignite the children’s interest.

During post-implementation interviews, one lead teacher, two assistant teachers, and two SLPs expressed concerns about future project work. One lead teacher did not express any concerns. Amanda, an SLP, explained that the project went on after the teacher lost interest in implementation, “and we were still trying to finish up, so I think that’s why I became more disengaged, because I felt like the teacher was disengaged after so many weeks.” Rayna was concerned about having to “pump and prime” the children every day to get them engaged in the project. She explained that she felt like she was “beating a dead horse sometimes, because they weren’t interested and didn’t want to talk about it any more, and you had to keep it going. That was the frustrating part.” Sherri shared these same concerns.

Also during the post-implementation interview, Sherri expressed concern about teaching the academics that children would need for kindergarten. She acknowledged that if she were more skilled at implementing project work, this

might not be a concern, and she noted that if she were to do a project again, she would stop center time and have a formal time for small group. She shared:

I know they were writing things and drawing, and I understand all that. But I think I'm more where I want to have that for portfolio drawings and things like that. And the writing of their name, things like that they really have to have for kindergarten. And I worry that the way the curriculum is, I want to make sure that we have that, so they can go into kindergarten and have their names down, and have their counting and their... And if I was better with project [work], I probably could have implemented all that.

While Jennifer also shared post-implementation concerns, hers were related to managing the children's enthusiasm for the construction phase of the project.

Because at first we couldn't get anyone to help, and now everyone's involved, and then everyone wants to do what they want to do. And then everyone wanted to get in [the semi-truck construction], and then it was just like, we had to set rules. "Well, how many seats in here? Two. So that's how many people can be in here now." So then we had to set timers and stuff like that. But that was really the only thing."

She attributed many of her frustrations to being new to implementing the Project Approach. She stated, "it was just because we didn't know what we were doing."

Support for Children's Development

The first research question focused on teachers' perceptions of the potential of the Project Approach to support children's development. Data show that children's developmental changes as a result of Project work were interrelated. Teachers perceived the children's responses to the Project Approach more positively over the course of the project. Child data follow.

Anticipated child responses. Prior to implementation, four of the five teachers and SLPs were optimistic that children identified as at-risk and children with special needs would respond positively to the Project Approach (80%). See Table 17 for representative quotes about children with special needs.

Table 17

Anticipated Responses of Children With IEPs

Representative Quotes	Participants
I'm hoping that it will be a positive one [effect on students with special needs].	Amanda
I don't think that [ability] should make a difference.	Kristie
They [students with special needs] want to do what the others are doing, so I don't think it would be a big shock or a big issue with them.	Rayna
I think they'll get very excited about it.	Sherri

However, one SLP, Susan, was unsure whether children with special needs would have the comprehension to become involved in project work as quickly as the other students. She predicted that they might take an “audience or spectator approach versus maybe an active lead at first” and “maybe having a little less comprehension maybe at first, maybe not. “

While Sherri, Rayna, and Amanda believed their focal students with special needs would respond positively to the Project Approach, they expressed reservations about their students’ ability to remain engaged once the project had begun. Sherri shared, “I think they’ll [Jamari and Emily] get very excited about it. I just, for those two, I don’t know how long they’ll stay with it.”

Mid-way through the project, four of the adult participants (83%) indicated that their students were responding positively to the Project Approach. For example, Amanda shared, “I would just say overall, I think most of the kids [including the students with special needs] have been engaged and involved, and

you know it's kind of a big deal." Sherri, and Rayna were extremely positive about the impact of the project on Jamari. Sherri explained, "I see him getting over there and talking to his friends more, you know, cause he's a very quiet little boy, and he'll go over there and check people out and get bags and load his things." Similarly, Kristie and Jennifer were positive about Ethan's response to the project:

Well, huge difference I'm seeing with Ethan. He's always been a loner. He's always, not that he's doing a lot of interacting yet, but he is approaching it. He is going to the grocery store. Not a lot of communication between the children yet, but I can feel it coming, because he's going over there. He wants to be the cashier. He wants to be the customer. Whereas before, the only thing he would do... and I'm not kidding, I can't even describe this... I'm so excited, because the only thing he would do was play in the sand table by himself, go to the computer by himself, and eat snack by himself. And that's it. He's very intelligent. He's more close to Asperger's or something like that, and just in the last couple weeks, he's been moving into the grocery store. I mean, that's huge, even though he's not really talking to anybody over there yet, but he's there. And he's working the cash register, and he's gone to the rug and played with the Walmart trucks. And, I mean, that's big. So that's a huge one for Ethan.

The teachers were less positive, during the mid-way interviews, about the responses of the other two children with special needs, Emily and Lincoln. Kristie explained that Lincoln would be involved with the project for a little while, but "he doesn't stay there very long, and then he goes back to what his comfort zone is, which is to play with the cars and trucks. So him, probably not as much difference, yet, maybe a little." Emily, another child with special needs, realized less positive benefits from project work compared to Jamari and Ethan. Sherri explained that Emily would engage in project work "for a little while, but she jumps. No matter what you're doing in the classroom she will just go from thing to thing to thing to thing.... That's just her attention span for anything you're gonna' do."

By the post-implementation stage, all six adult participants agreed that all but one of the focal children, Emily, had responded well to the project. Quotes from teachers and SLPs at post-implementation are presented in Table 18.

Table 18

Participants' Post-implementation Perceptions of Children's Responses to Project Work

Representative Quotes	Participants
The project, like I said, was good at prompting them to do that [engage in interactions with peers].	Amanda
No [there were no children with special needs who did not respond to the project]	Jennifer
[There has been a] huge change in him [Lincoln] and Ethan, both, both of them.	Kristie
I thought he (Jamari) really responded well, and I see that he did get the big picture....Personally I don't think Emily really got the big picture.	Rayna
Of the four [children with IEPs in my classroom], yes. [they all got involved in the project in some way.]	Sherri
I think probably, again going back to the pragmatics, that it's probably brought some of them out a little bit more.	Susan

Interest and engagement. All adult participants attributed the children's positive responses to their interest and engagement in the project. These child behaviors are all related to adults' perceptions of how the Project Approach supported children's development. By the end of project implementation, several features of the Project Approach that contribute to interest and engagement emerged from the interview data. These features were: (a) hands-on learning, (b) the addition of authentic props and objects to the environment, (c) child-initiated

learning, and (d) the extended length of projects. Participant's perceptions of the impact of each of these features on children's development is described in the following sections.

Hands-on learning. All six adult participants commented on the benefits of hands-on learning to children's development. Jennifer, Rayna, and Susan noted the impact of the field trip to the Walmart grocery department on the children's engagement. Amanda attributed increased levels of children's engagement to the sequence of events leading up to the field trip:

I've just been surprised at their engagement about the project. And I think the way that the project played out with talking about it and them getting excited about it, and starting to think about some things that they were curious about, and then actually going to the grocery store and having an experience, I just was surprised at how they really did become engaged and curious. I guess it sort of was the... It sparked their brains to kind of wonder, "what's this about?" and "why are we doing this?"

Jennifer also indicated that observational drawing (another hands-on activity) was an effective way for children to learn. She explained that during the field trip "Lincoln saw a scissor-lift, and he was really excited about the scissor-lift and drew like an X. Cause you know, it's the one that goes up, kinda'. So he was interested in that."

Similarly, Kristie described how children learned to use surveying as an independent way of collecting information:

Well, we had been to the store. And she [Cassandra] had seen cupcakes with hearts on them. So, when we came back from the store, her first question was, "Do you like hearts." So she went around and asked everybody in the classroom do they like hearts? So then she tallied that up and marked it.... And it was very interesting, because only one person said they didn't like hearts. She knew who it was, and she was able to count and tell me how many did and how many didn't.

Clipboards and blank survey forms were available in Kristie's writing area, and many of her preschoolers engaged in independent surveying throughout the project. These hands-on activities support children's development and contributed to their increased engagement during the implementation of project work.

Addition of authentic props and objects to the environment. Each teacher and SLP also mentioned the positive impact that the addition of authentic props and objects had on the children's development, specifically their interest and engagement. In addition to describing the impact of props and objects on children who were at-risk, study participants also provided examples of the impact of these props and objects on the engagement of children with IEPs. For example, Amanda described the impact of the bakery accessories on Jamari's engagement:

Well, I walked into the classroom today, and he [Jamari] has on a baker's hat, he's pushing a cart around the classroom, he's collecting stuff to make in the kitchen. He also tends to be kind of quiet and shy, and so those are some hands-on, real-life experiences. He's being able to relate to what it's like to be a baker, so that would be a difference.

Rayna described how props benefited Emily, who had a short attention span. "I think it was kind of like if there was something to do, a prop, she'd be engaged because of the 'right now,' of being involved in the prop." Field notes reveal that following the construction of a bus in her classroom, Emily spent most of one choice time sitting on the bus pretending to talk on her cell phone or holding her baby. She engaged in pretend discussions about calling 911 with John, who also talked on the phone as he rode on the bus. Similarly, Jennifer described Lincoln's engagement with the truck: "He did get in the truck and drive. He liked driving the truck and being in the front seat and stuff like that, so he liked that." The addition of project-

related props and objects had a positive effect on the attention and engagement of children with IEPs and children identified as at-risk. While playing with props and objects, the focal children took on a variety of new roles in play (e.g., cashier, sacker, baker, custodian, bus driver) and interacted cooperatively with other children. These materials supported children's development.

Evidence of child-initiated learning. Child-initiated learning emerged as another category of factors that supported children's development, based on the comments shared by the six adult participants during interviews (see Table 19). Children became engaged in project work when their questions were valued, they were encouraged to discuss their views on developments in the project, and they were trusted to plan and make decisions about next steps in the course of the project.

Table 19

Evidence of Impact of Child-initiated Learning on Children's Interest and Engagement

Representative Quotes	Participants
They're sharing their own ideas, they're generating their own thoughts and questions and ideas about the topic of interest, so just in that aspect [they are more engaged]. I think that the teacher has been very good about giving all of them an opportunity to share thoughts and ideas about the topic.	Amanda
I think I like it because it gets the student involved and you get to learn what they want to do. And you get their outlook on it and see what they're interested in, and you see them excited about something. And like, "that was my idea," "that was my picture," "I put that on the truck." You know, stuff like that's really... it's cool to see that.	Jennifer
Well, I think a lot of it [their engagement] was that it was their plan or their idea of what they wanted to do.	Kristie
And [as an assistant teacher it is interesting] just seeing where their minds take them and what else they want to make and develop for the store. I'm excited to see the end project.	Rayna
They all really enjoyed it. I mean they jumped right in... and even, you asked about people with IEPs and the ones without... The ones without enjoyed it as much and I mean, jumped right in. They wanted to build, they wanted to paint, they wanted to do everything we were doing.	Sherri
Well, I think it is a neat avenue to watch kids come together and be able to take ownership, a little bit more than they might otherwise.	Susan

Children with IEPs and children identified as at-risk were supported in their development as the structure of project work gave them opportunities to initiate ideas, make plans, make real decisions, and follow through on their decisions.

Length of projects. The teachers in the two classes had different experiences with, and views about, the impact of the length of their projects on children's development. Kristie and Jennifer found that interest in the project persisted throughout the 11 weeks. Mid-way through implementation, Kristie exclaimed, "I've never had an activity last that long in my classroom!" In post-implementation interviews, both Kristie and Jennifer noted that the children were disappointed when the teachers removed the grocery store and semi-truck construction from their classrooms for the Open House. Kristie shared, "I think we could have kept going the rest of the year." Kristie continued to perceive her students as intensely interested in the project, and she involved them in planning the culminating event.

Phase 3 in project work typically lasts about a week and takes place immediately after the end of Phase 2. Sherri indicated that she was ready to let her students finish up soon after week 7 of implementation. Project-related activities dropped off in her classroom after week 9 of implementation, but her students' project did not come to an end until week 11. Meanwhile, Kristie's students continued to work on their semi-truck in preparation for the culminating event right up to the day before the Family Fun Night during week 11 of implementation. Perhaps, to some extent, it was the difference in the time between the end of Phase 2 and the beginning of Phase 3 activities of the two classrooms that impacted children's interest in the project and caused the two sets of teachers to have different perceptions of the impact of project work on children's development. Field notes reveal that during the second half of Phase 2 Sherri was frequently absent from the classroom, due to IEP meetings, illness, and attendance at required

professional development activities. To some extent, the perceived waning of interest during the latter part of Phase 2 may have been due to the inability of substitute teachers to support the ongoing development of children's interest in the project.

When it came to the length of the project, participating teachers also had different perceptions about the impact of the Project Approach on children's interests. Kristie perceived her students as highly engaged right up to the culmination of their class' project, while Sherri perceived her students as disinterested several weeks prior to the culminating event. This difference in perception also may be due to a difference between the two classes in opportunities for child-initiated planning and activity.

Summary: Support for development. The data reveal that prior to implementation adult participants thought that children with special needs might not react to project work as quickly or remain engaged as long as their peers. By the mid-implementation stage, teachers perceived the focal students to be engaged to different degrees. Teachers perceived project work as having a positive impact on Ethan and Jamari's social interactions, a moderate impact on Lincoln's social interactions, and a smaller impact on Emily's social interactions. However, following implementation, adult participants perceived all focal children, with the exception of Emily, as highly engaged in project work. Observational data indicate that Emily's level of play improved over the course of the project from parallel to associate play, which may indicate greater participation in project activities.

All adult participants perceived the Project Approach as having a positive impact on the children's engagement. Amanda attributed this impact to the sequence of activities and events in project work. Participants perceived hands-on activities such as drawing and surveying as helping children to independently collect and record information related to the project topic, thereby contributing to their engagement and development. All adult participants also perceived the addition of topic-related props and objects to the environment as contributing to the development of children's understanding of new play roles, especially that of children with IEPs. Teachers and SLPs also noted that opportunities to initiate and discuss plans and then follow through on their decisions had a positive impact on children's development and engagement.

Adult participants' perceptions differed regarding the impact of the length of the project on children's development. Adult participants associated with the PM class perceived the extended length of the project as supporting the development of children's interests, while adult participants associated with the AM class perceived the project as too long to sustain children's interest.

Social Interactions

The third research question focused on the impact of the Project Approach on the social interactions of children with IEPs and children identified as at-risk. Both interview and observation data reveal that the Project Approach appeared to have a positive impact on children's social interactions. Teachers and SLPs described the impact of the Project Approach on children's social interactions in terms of increased positive interactions and teamwork.

Teamwork. Prior to implementing the Project Approach, three of the five adult participants (60%) anticipated positive impacts on children's social interactions in the form of teamwork. (Note that Jennifer was not hired until the day following the pre-implementation interviews. Therefore only five adults participated in the pre-implementation interviews.) Kristie identified teamwork as a goal of project work, and Sherri predicted, "I think they'll want to team up and want to play together." Similarly, during the mid-implementation interviews two adult participants identified teamwork as a benefit of project work. Susan observed, "I think it's pulled them all together. They all are like—when they were painting the shelves, or when they were building things to look like stores—they have all worked together."

During the post-implementation interviews all but one of the six adult participants (83%) commented on the teamwork that had developed among the children as a result of implementing the Project Approach (see Table 20). The sense of community and collaboration that was created was viewed as a positive outcome of project work.

Table 20

Post-implementation Comments on Teamwork

Representative Quotes	Participants
Like coming together and coming up with ideas for the truck, and just like people coming over and being like, “let’s do it this way,” and “let’s see if this works.”	Jennifer
I think the most exciting part was the way the children worked together and it became more of a team project. It wasn’t just my truck, it was everybody’s truck, and everybody participated in some degree along the way.	Kristie
We painted shelves for our grocery store, and we had a lot of kids that were involved in it. And then, even while they were painting, one would say, “I’ll paint this one orange and you can paint this one brown,” and “I’ll do up here and you do down there.” And you could see that they were getting together and cooperating, working together.	Rayna
[Dayana got more involved during the project] because she loved the fact that it was a team and working together to build the bus.	Sherri
It’s broadened their social interactions by promoting them to be part of a greater group thing, and not have everybody off on different topics, but they were all on a similar topic.	Susan

Increased positive interactions.

Interview data. Prior to implementation of the Project Approach, the three teachers and two SLPs predicted that increased positive social interactions would occur. Mid-way through implementation, all six adult participants reported an increase in positive social interactions among their students. The teachers’ and SLP’s post-implementation perceptions were equally positive (see Table 21).

Table 21

Teacher's Post-implementation Perceptions About Social Interactions

Representative Quotes	Participants
Well, I think it's had a positive effect on their social interactions.	Amanda
Just like the areas [in the classroom] that we had, you had to be social.	Jennifer
I think the most exciting part was the way the children worked together.	Kristie
I think having the project helped them to work together and socialize and get involved and "oh no, let's do this," or "let's do that." There was more of that, because they were working on a project.	Rayna
I think it's made them more social. Made them more trying to be part of the group... "I'll help, I'll help, I'll help." So it's made them all want to be part of it.	Sherri
They're approaching peers more.	Susan

Video data. Observational data on children with IEPs and children identified as at-risk were collected twice each week for 6- to 9-minutes per session per child (see Appendix O). These data were gathered across all phases: pre-intervention, phase 1, phase 2, and phase 3 of the project. The videotaped observations were analyzed to determine the predominant level of play in 3-minute segments, and the code was recorded on a *Play Code Recording Form* (see Appendix T). Data from the videotaped observations revealed an increase in social interactions among the children with IEPs and the children identified as at-risk (see Appendix U for table of raw data). Overall, adult/child, solitary, and parallel play decreased and cooperative

play increased (see Figure 1). This pattern is even more pronounced when play levels of children with IEPs are separated from those of children identified as at-risk (see Figures 2 and 3). Pre-implementation, cooperative play was observed more frequently than all other types of play for children identified as at-risk, but it was observed in fewer intervals than onlooker, associative, and parallel play for children with IEPs. By the end of implementation, cooperative play was observed during the largest percentage of intervals for children with IEPs as well as children identified as at-risk.

In view of the teachers' differences in perceptions regarding the relationship of the length of the project to children's interests, the data of the AM and PM class were compared to determine if the perceived differences in interests were reflected in children's play. Data reveal that the amount of cooperative play increased over the course of Phase 2 in both the morning and afternoon classes (see Figure 4 and 5). However, the frequency of cooperative play peaked in Phase 2 and began to decline slightly during Phase 3 of the project in the morning class, but continued to increase in Phase 3 of the project in the afternoon class. The frequency of other types of play declined between Phases 2 and Phase 3 in the PM class. The continued increase in cooperative play during Phase 2 and 3 in the PM class is particularly apparent. On the other hand, parallel, associative, and cooperative play increased slightly or remained relatively stable between Phase 2 and Phase 3 in the AM class.

Interestingly, Solitary play rose during Phase 2 and declined during Phase 3 of project work for all groups. This may reflect the time individual children spent

creating constructions for the car, such as the map and dashboard created by Jake, or the windshield created by Cassandra.

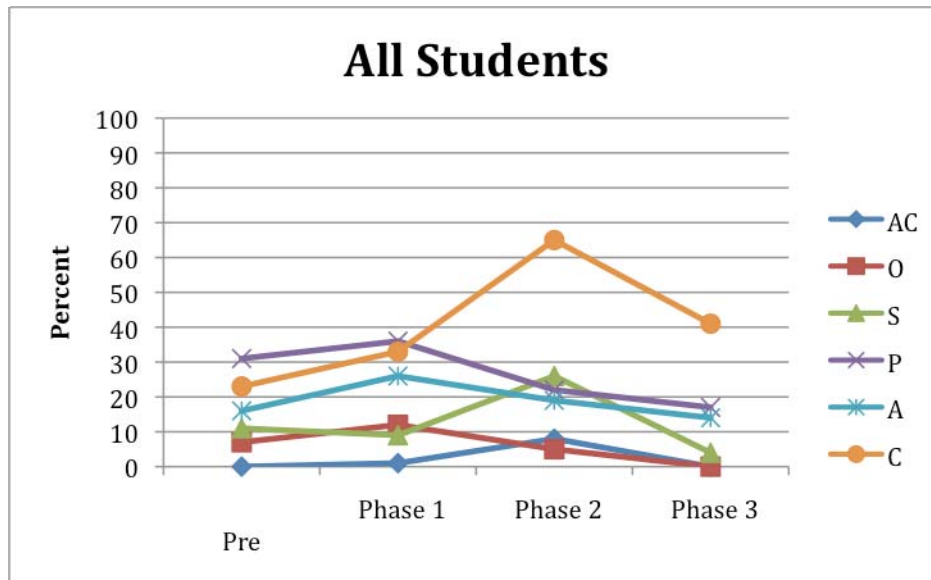


Figure 1. Changes in play levels among all eight students during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C) play during phases of the Project Approach.

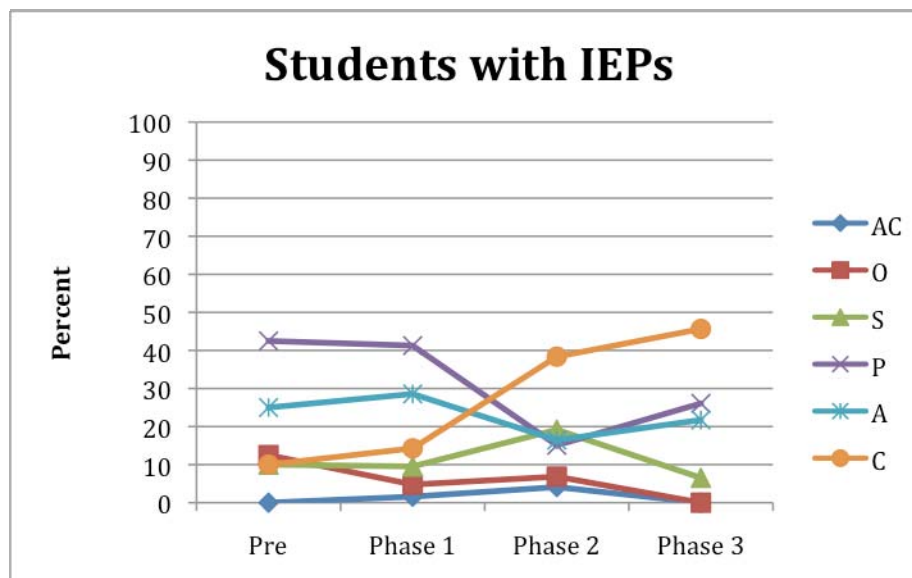


Figure 2. Changes in play levels among the four students with IEPs during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

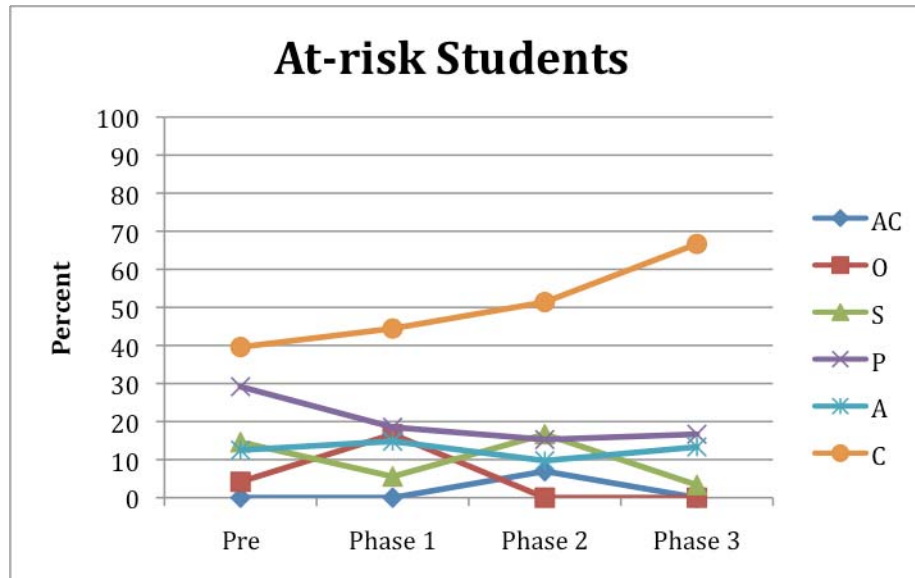


Figure 3. Changes in play levels among the four students identified as at-risk during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

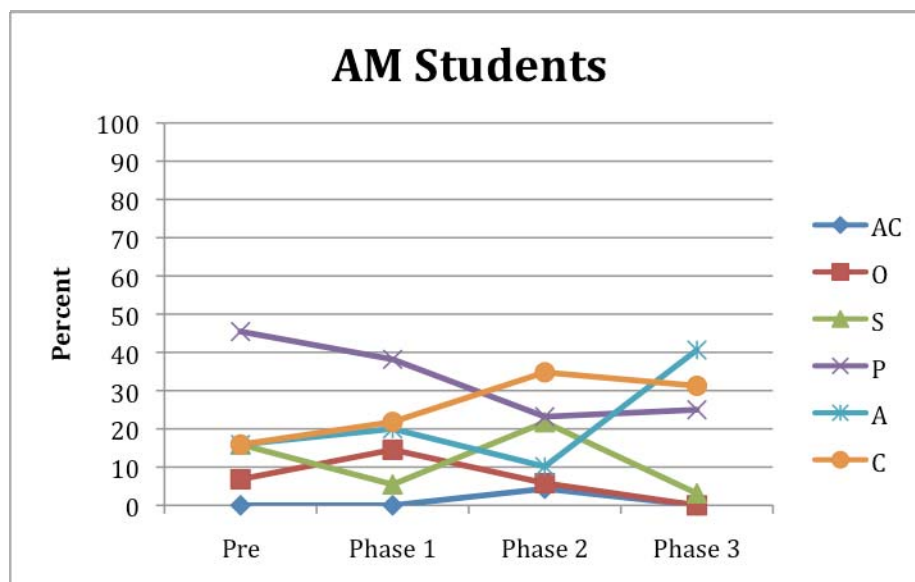


Figure 4. Changes in play levels among the four AM students during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

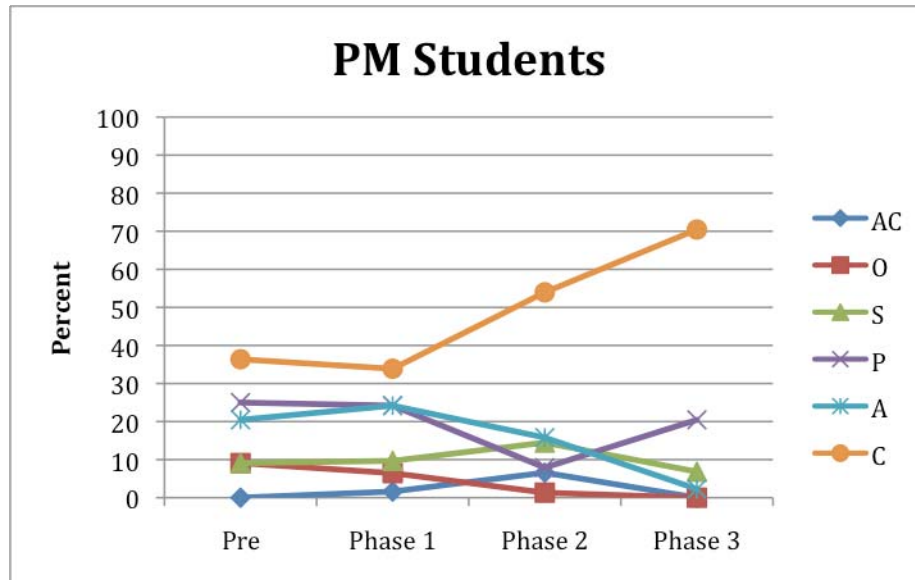


Figure 5. Changes in play levels among the four PM students during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

Comparison of play levels of individual children across the three phases reveals a change for several of the children, particularly those with IEPs. Parallel play was the predominant type of play for Emily prior to implementation of the Project Approach. Over the course of the project, Emily's parallel play declined and remained stable, while her associative play increased (see Figure 6).

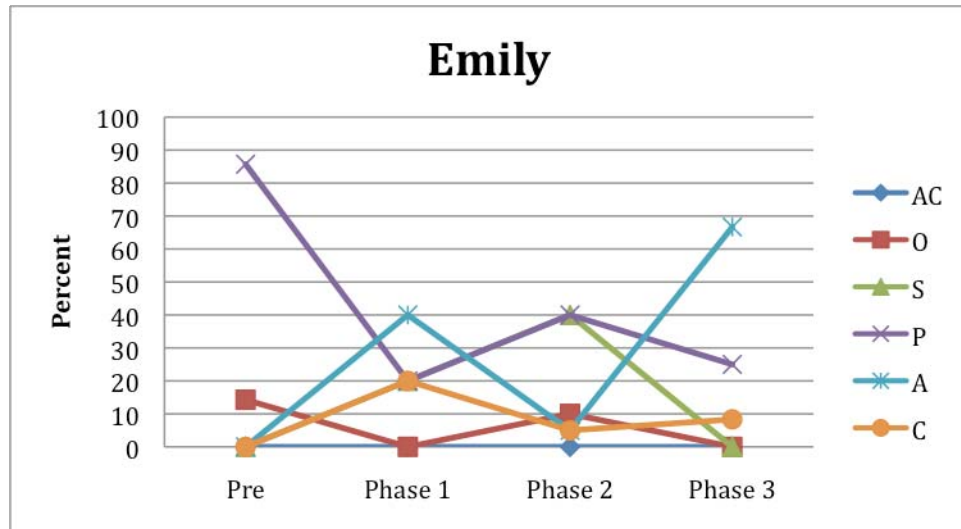


Figure 6. Changes in play level for Emily, a child with an IEP, during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

Ethan primarily engaged in parallel and onlooker play pre-implementation, and he never engaged in cooperative play. During phase 2, his level of parallel play plummeted, and his participation in cooperative play peaked. By the end of the project, his parallel play was on the rise and cooperative play was on the decline. His participation in onlooker play declined steadily throughout all phases of the project (see Figure 7).

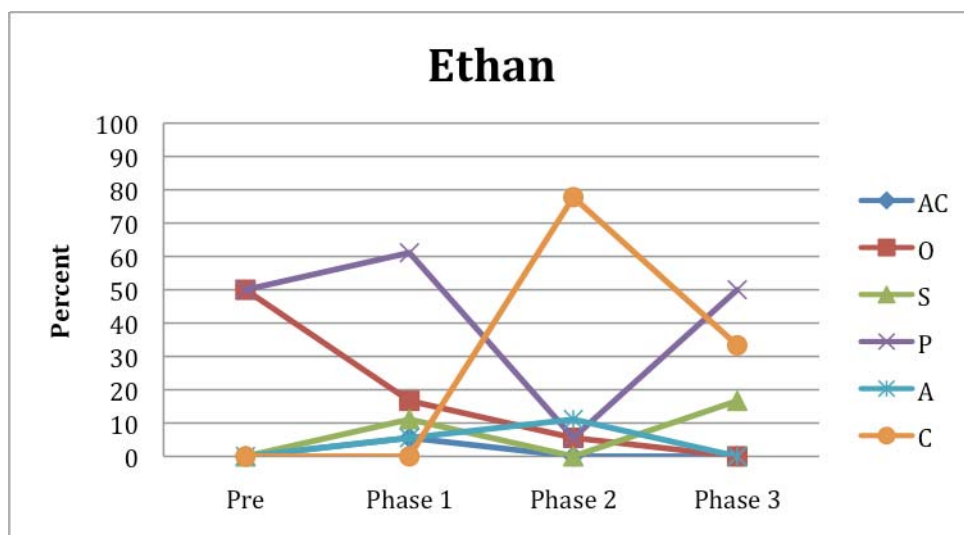


Figure 7. Changes in play level for Ethan, a child with an IEP, during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

Pre-implementation, parallel play was the predominant type of play for Jamari, and it rose during phase 1. However, during phase 2 parallel play decreased and cooperative play rose. Jamari's participation in cooperative play continued to increase throughout phase 3 (see Figure 8).

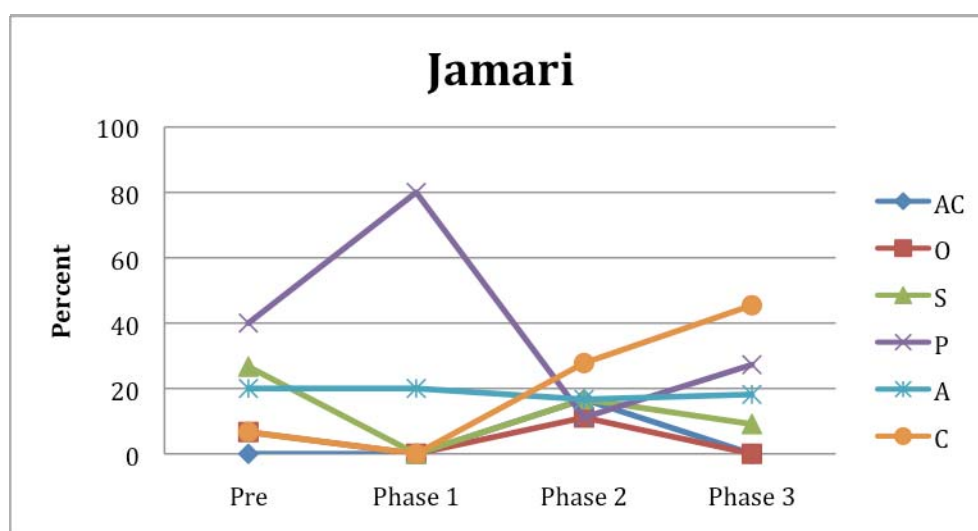


Figure 8. Changes in play level for Jamari, a child with an IEP, during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

Lincoln's participation in associative play decreased steadily from pre-implementation through phase 3, while his participation in cooperative play increased dramatically. Visual inspection of a graph of his play levels across the three phases reveals that Lincoln's associative play declined in relation to the increase in cooperative play (see Figure 9).

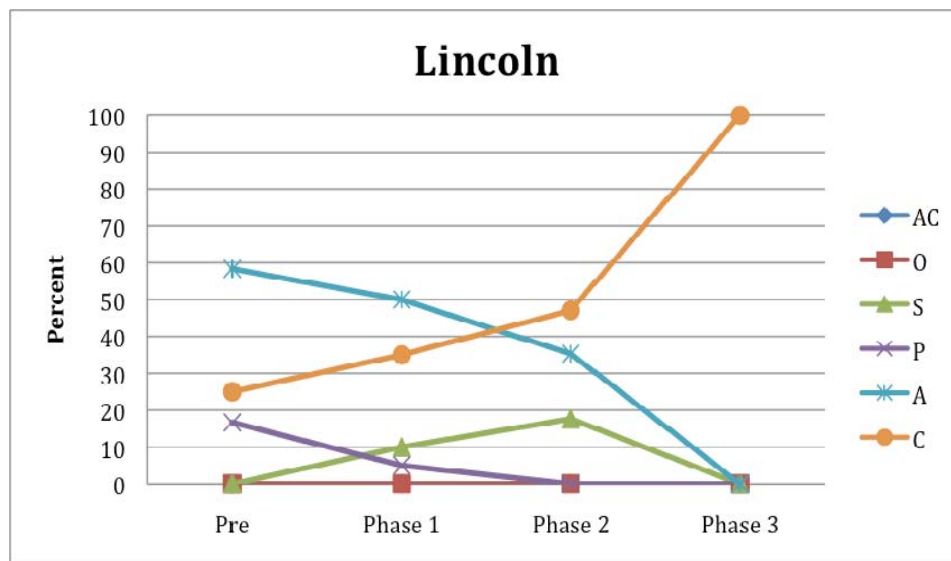


Figure 9. Changes in play level for Lincoln, a child with an IEP, during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

Cassandra's participation in cooperative play increased dramatically in phase 1, dipped during phase 2, but rose and trended upward during phase 3. Parallel play, which was the most prevalent level of parallel play during pre-implementation, declined in phase 1 but gradually began to rise through phases 2 and 3. All other types of play declined during phase 3 (see Figure 10).

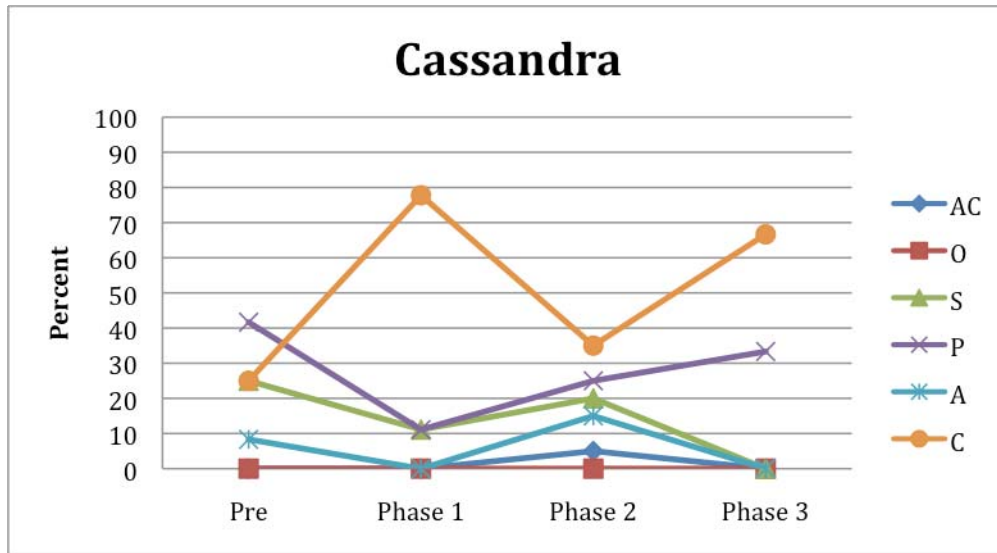


Figure 10. Changes in play level for Cassandra, a child identified as at-risk, during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

Dayanna primarily participated in parallel play during pre-implementation. During phases 1 and 2 her participation in cooperative play rose, while her participation in parallel play declined. Her participation in cooperative play began to decline in phase 3, and her participation in associative play began to rise. However, although her cooperative play was declining during phase 3, her associative play was increasing. Dayanna's level of onlooker play peaked during phase 1, declined to a level that did not register during phase 2, and it remained at that level throughout phase 3.

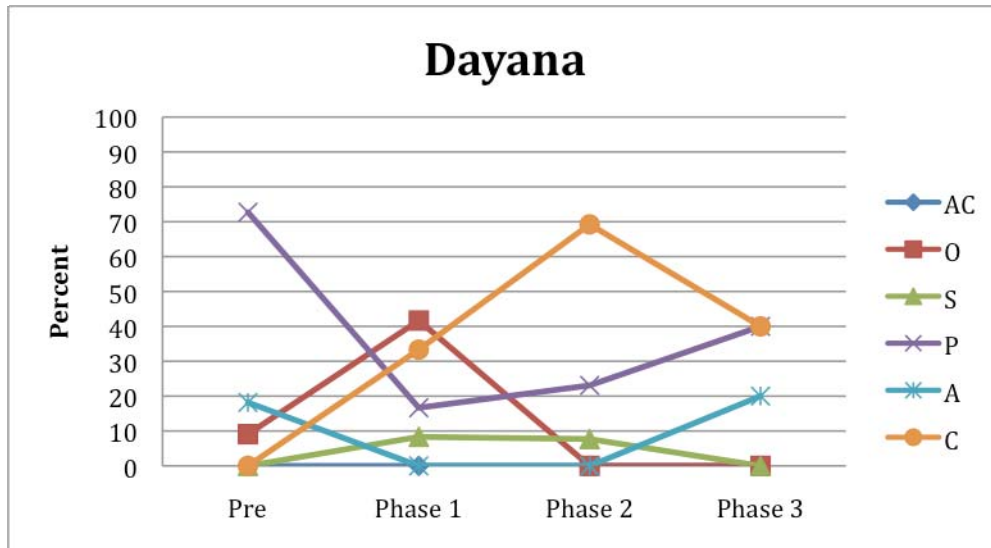


Figure 11. Changes in play level for Dayanna, a child identified as at-risk, during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

Both Jake and John experienced a decline in cooperative play during phase 1 and an increase in cooperative play during phase 2. However, John's participation in cooperative play leveled off during phase 3, while Jake's participation in cooperative play continued to rise. As John's level of cooperative play leveled off, John's level of associative play rose.

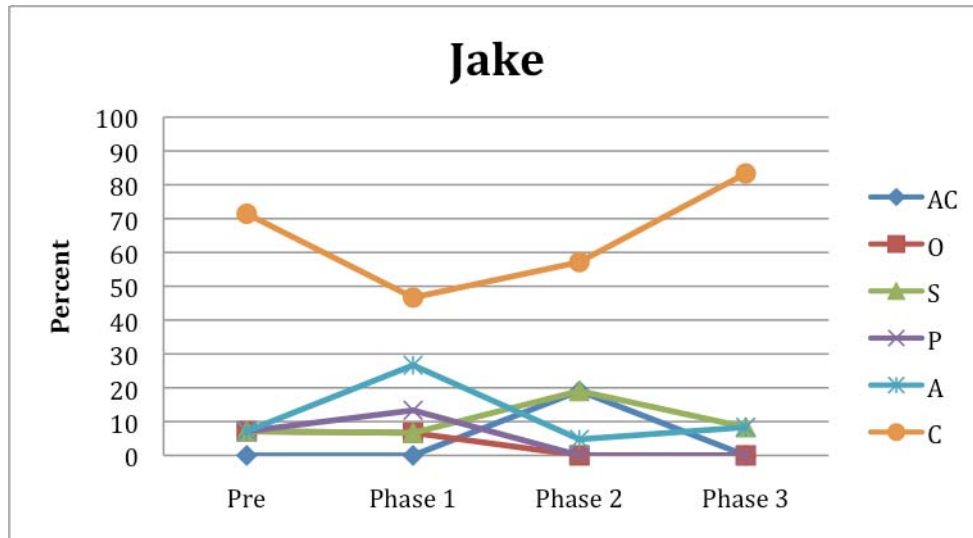


Figure 12. Changes in play level for Jake, a child identified as at-risk, during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

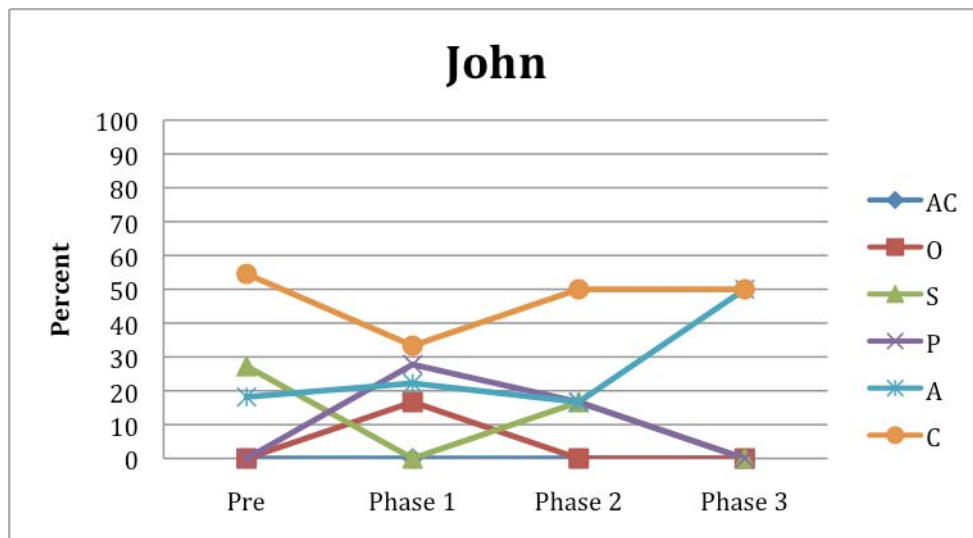


Figure 13. Changes in play level for John, a child identified as at-risk, during all phases of the study. Key: Adult/Child (AC), Onlooker (O), Solitary (S), Parallel (P), Associative (A), and Cooperative (C).

Social interactions of children with IEPs. Teachers and SLPs were particularly excited about changes in the social interactions of children with IEPs (Ethan, Jamari, and Lincoln). By the end of Phase 2, Ethan, who had previously spent

choice time at the computer, snack, or sand table, was engaging frequently in dramatic play in the class grocery store and on the semi-truck. Jennifer felt that from Ethan's point of view the many nonthreatening, naturally occurring opportunities for social interaction helped support this change:

Just like the areas we had, you had to be social. Like in the grocery store...you could go in there and just get a cart and push it around, but for the most part, a lot of kids wanted to go in there and be the checkout person. And even if you did push it around, you wanted to go through the checkout and get your stuff and bag it up, so you had to come in contact with somebody, and I think maybe that opened him up a little bit. It didn't make him as scared... and kind of like, "well this was okay," you know, "this was fun." So maybe that was it. And then with the truck, you had to work with somebody, you know, with taping, and someone holding [the pieces that needed to be taped].

Jamari was shy and was most likely to engage in solitary or onlooker play at the beginning of the project. Amanda explained how the continuity of the project lent coherence to the play environment and supported Jamari's social interactions:

Overall, I think he did a great job with participating. That was a big thing. There were many times that I saw him dressed up like the baker, and loading boxes into the truck, and I think for him, just feeling like part of the group was good, and sort of feeling like he understood everything that was going on. I think Jamari sometimes has some trouble processing information at the same rate as the other children. So I think he kind of got to a comfort level for him. He knew what was going on. He understood the store. He got to experience that, and so it wasn't just something new kind of thrown at him for a couple days and then it was done. It was something that... it was their project, so they were all doing it together, and he had a good understanding of it, so I think he grew more confident. And just talking about the grocery store and Walmart and the truck... so his confidence grew and when a kid is more confident, that, I think, overall helps everything.

At the beginning of the study Lincoln was argumentative and would whine when he did not get his way. Kristie had hoped to pair Lincoln with Jake as a peer buddy. She was excited to find that this relationship developed naturally during the course of the project:

I didn't have to intervene, and they were developing their own [peer buddy relationship]. And even now he'll [Lincoln will] say, "Jake, look at this" kinda' thing. So that interaction has kept going, has continued to develop. I didn't have to intervene with that. I don't even know how that really got started....Who knows! They did that on their own.

Emily was the only child with an IEP that the adult participants did not identify as developing increased social interactions.

Challenging behaviors. Before they received training on the Project Approach, three of the adult participants predicted that implementing the Project Approach would result in reduced instances of challenging behaviors, because the focal children would be more engaged. Sherri, on the other hand, predicted that implementing the Project Approach would increase the challenging behaviors of one of her non-focal students: "I think he'll be excited and not intentionally naughty, but will be pushing kids out of the way so he can get his turn or want to dominate it." Descriptions of the focal children with challenging behaviors follow.

AM class. Sherri shared, "I have a lot of challenging behaviors in my room, truthfully." She identified two of the focal children, John and Emily, as having challenging behaviors. In addition, while Dayana's limited verbal participation and passivity was a challenging behavior mentioned by Sherri and Rayna, both teachers hoped project work would increase Dayana's participation.

Sherri, Rayna, and Amanda perceived the Project Approach as having a positive impact on John and Dayana, but they were not nearly as positive about the impact of the Project Approach on Emily's challenging behavior. Their descriptions of the impact of project work on John, Dayana, and Emily, follow.

John. John was identified as at-risk. Sherri and Rayna described him as having trouble sharing his space, tattling, and being bossy. Following implementation, the teachers and SLP who worked with him explained how they thought the Project Approach had resulted in positive changes in John’s challenging behaviors (see Table 22).

Table 22

Impact of Project Work on John’s Challenging Behaviors

Representative Quotes	Participants
He’s sort of quick to answer and shout out answers. So I think the Project Approach has been good for him to include other peers and to work together with others.	Amanda
Being involved in something took the focus off tattling a lot. He still would tattle, but I think he had things to engage in, and not standing around looking at who’s doing what, who’s doing this, or whatever.	Rayna
I think he’s trying really hard to do the right thing and not tattle quite as much.	Sherri

Dayana. Dayana also was identified as at-risk. She was described as “mild-mannered,” “quiet,” and “having some processing issues;” however, she was not eligible for speech and language services. By the time implementation was completed her teachers noted that her verbal participation had increased dramatically (see Table 23 for the comments).

Table 23

Impact of Project Work on Dayana's Challenging Behaviors

Representative Quotes	Participants
I will say it made her more talkative. She started to talk more during the Project Approach....If something really struck her, like someone said something about what their mom buys at the store, she'll raiser her hand and she'll say, "Oh yeah, my mom buys..." And that's something new for her, because she really doesn't offer information. You have to really prompt her.	Rayna
Dayana is just very quiet, and it's made her talk more. She can answer a question. She will, because it's more obvious to her. I think she has processing issues, so when she's talked about it a lot, she doesn't have to think so hard.	Sherri

Emily. Emily, a child with an IEP, was identified as a child with challenging behavior due to her "busyness" and willfulness. The adults who worked with her did not think the Project Approach had a significant impact on her challenging behaviors (see Table 24).

Table 24

Impact of Project Work on Emily's Challenging Behaviors

Representative Quotes	Participants
I really don't think it helped her either, because Emily can get in a snit and get in her moods, and doesn't want to do anything, and fold her arms, and things like that. She can sometimes be contrary to what's going on. You know, do things her way. I don't see that, that changed very much.	Amanda
I don't think Emily was very engaged toward the end of the project at all, involved, or really had a clue as to what was going on.	Rayna
It kept her interested for a while, and that was good. You know, she still bounced through it all and got silly and everything, but then she'd settle down and try and do something for the truck, and try and be a part of the group. Truthfully, she could only do it for so long, no matter what.	Sherri

PM class. Unlike Sherri, Kristie stated that she did not have many children with challenging behaviors in her class. She identified Lincoln and Ethan, two children with IEPs, as having challenging behaviors. Descriptions of the impact of the Project Approach on Kristie's focal students with challenging behaviors follow.

Lincoln. Lincoln, a child with an IEP, was identified as having challenging behaviors because of his willfulness, non-compliance, talking in a loud voice, and whining. By the time the project was completed, the adults who worked with Lincoln described the positive impact of the Project Approach on his challenging behaviors (see Table 25).

Table 25

Impact of Project Work on Lincoln's Challenging Behaviors

Representative Quotes	Participants
He has...the noises have stopped. The listening, and doing what we ask, and not having to come and get him, and the copying behaviors. I haven't seen those either. So, he's really gotten a lot better since this project started.	Jennifer
Oh my gosh, I even said yesterday, he came in and gave me a big old hug and high five and I said, "Lincoln, great day!" I mean that's been happening a lot, so I'm real excited about that.	Kristie
No, not really [hasn't seen challenging behaviors in Lincoln].	Susan

Ethan. Ethan, a child with an IEP, exhibited the following challenging behaviors before implementation: avoidance of peer interactions, anxiety about things being out of order, and anxiety about peers not following rules. He also displayed intolerance for the unknown, such as unexpected loud noises, and he had difficulty with transitions. While he continued to have a negative reaction to loud noises, Ethan's teachers agreed that the Project Approach had a positive impact on Ethan's challenging behaviors related to interacting with peers (see Table 26).

Table 26

Impact of Project Work on Ethan's Challenging Behaviors

Representative Quotes	Participants
I think it was more of that we need one of their ideas for things, and he likes giving his ideas. But yeah, he likes to help, too, so he was over there [helping construct the semi-truck].	Jennifer
Huge differences in Ethan. I mean, he actually wanted to be part of the group. He worked in the team. I mean, I might have to offer a suggestion, like, "Why don't you hold the tape while someone else tears" or something like that, but he was willing to do it. So, I saw real growth with him.	Kristie
No. Not really [I haven't seen challenging behaviors in Ethan].	Susan

Impact on Child Language Development

The third research question focused on the impact of the Project Approach on children's language development. Interview data from teachers and SLPs indicate that the Project Approach had a positive impact on children's vocabulary development. Data from the Systematic Analysis of Language Transcripts (SALT) software (Miller & Chapman, 1990) indicate that the Project Approach had a positive impact on the mean length of children's utterances (MLU_m). Each of these data sources is addressed below.

Vocabulary. Prior to commencement of the project, all five teachers and SLPs thought that the Project Approach would have a positive impact on children's language. (As noted earlier, only one assistant teacher was employed at the time of the pre-intervention interviews.) For example, Kristie predicted "some of the special needs children might need to hear those words and use those words more often, so

that they will remember them.” Meanwhile, Sherri predicted the Project Approach would impact the vocabulary of children with special needs in the same way it affects typically developing children.

During interviews that occurred mid-way through project implementation, teachers and SLPs reflected on the opportunities that project work afforded for children to learn new vocabulary. They pointed out many opportunities for children to attach specific words to objects, places, and experiences (see Table 27).

Table 27

Mid-implementation Views on the Impact of the Project Approach on Vocabulary

Representative Quotes	Participants
I think vocabulary's been one of the best aspects of the Project Approach, because it's given more opportunity to build on vocabulary that they know, but then throw in some more words, and then be able to relate to learning a new fruit or vegetable. You know, they have a good idea of what fruits and vegetables are, but then there's all kinds of fun and interesting different kinds of fruits and vegetables. Or, like I said, people that work in the grocery store. Who's the butcher and what does he do, the baker, and all of those were new words, new vocabulary words to a lot of the children.	Amanda
Some of the kids didn't even know you call it a grocery store. It might just be a store to them. So now they're saying <i>grocery store</i> and things like that, where they didn't even know what it was called before. They could explain it, but they didn't know the exact vocabulary for it.	Jennifer
We saw it at Walmart, and we took a picture of it, and Lincoln's drawing it, and I'm like, "Ooh! That's good vocabulary." So, we write the words down, we have pictures to go with them, and they're starting to use the words. You know, <i>cashier, customer, receipts, checks, debit card</i> .	Kristie
They learn new words, because we talked about butcher and the baker, and I think they learn the new words....Hey, you know, that was a plus—learning new departments of the grocery store.	Rayna
I've been bringing in different tools from the kitchen and different items that they're getting to use and see. And especially on our trip they got to see different things that they used at the Wal-Mart store that they've never seen before. And so I think that did increase their vocabulary.	Sherri
Oh, I think it's [the Project Approach] widened it [vocabulary] some. I think they've had different words, different probably learned more about specific things within their theme that they're doing.	Susan

Post-implementation, all adult participants indicated that the Project Approach had a positive impact on children's vocabulary development. One SLP, Amanda, suggested:

To have a project where they're talking about the vocabulary, they're talking about the words, and seeing it, and making it, I think the vocabulary's sticking. It's kind of being pushed into their memory a little bit better....We've had some time to really cover the topic, and then get into more of, talking about more of their personal experience with the vocabulary, rather than just learning the picture and looking at the word.

Susan, the other SLP, noted that "they've learned new vocabulary about trucks, the parts of a truck....just reinforcing attribute words of things that they helped make, observation of people who drive the truck, who load the truck, who unload the truck, what kind of products, all of that."

Mean length of utterance. For purposes of reliability, MLU_m was determined for the first and last 35, 40, and 50 utterances for each child (see Figures 14-17). In general, the results show an increase in MLU_m for all children with IEPs and for some children identified as at-risk (see Figure 18). Increase in MLU_m across a 12-week period for similar aged typically developing children is between .30 and .31 (see Table 28). Examination of the focal children's first and last 50 utterances reveals that the MLU_m of five of the 8 focal children increased by more than .31 across pre-intervention and project implementation, with increases ranging from .26 to 1.84 (see Table 29). However, while focal students' MLU_m increased, several of them were still below the expected range (see Table 30).

The three children whose MLU_m did not increase were the three children identified as very verbal by their teachers (Cassandra, John, and Jake). As might be expected, given the observations by teachers and SLPs that Emily did not experience

a significant positive impact from the project, the difference between her pre- and post-implementation MLU_m was smaller than that of any of the other children with IEPs. While Jamari made gains, his final MLU_m was well below the lower end of the range for typically developing children. Of the children with IEPs, Lincoln made the biggest gains in MLU_m . Among the children with IEPs, only Ethan's post-implementation utterances fell within the range of typically developing children's MLU_m (see Table 30). This data triangulates with interview data indicating that engaging in project work resulted in children's increased verbalizations.

Cassandra, John, and Jake, three very verbal children, were within the range for typically developing children's MLU_m . The change in MLU_m for Dayana is of interest, since her teacher identified lack of verbalization as a challenging behavior for her. She made the biggest gains of any of the focal children (1.82). The SALT MLU_m data triangulates with her teachers' observations that engaging in project work resulted in increases in her verbalizations.

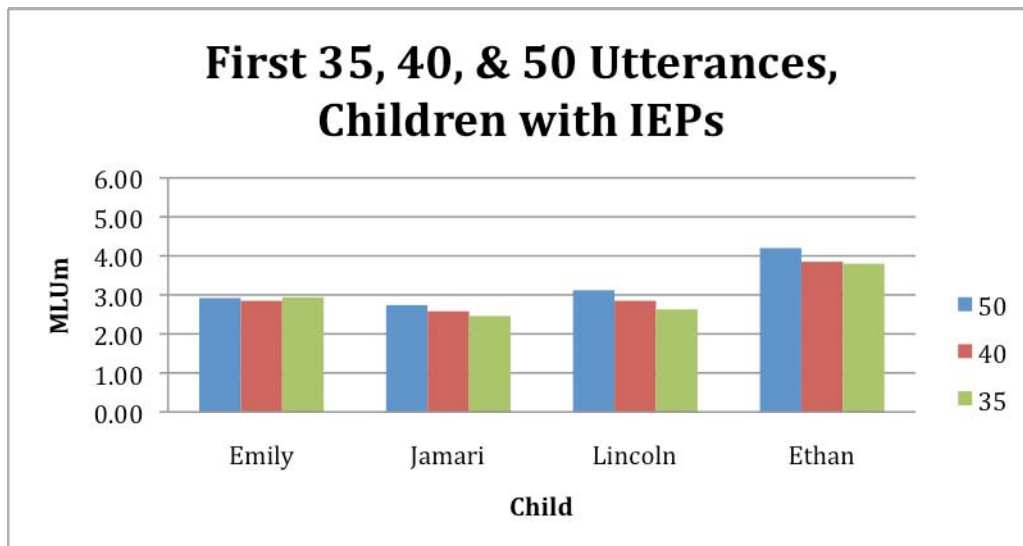


Figure 14. Pre-intervention MLU_m among children with IEPs.

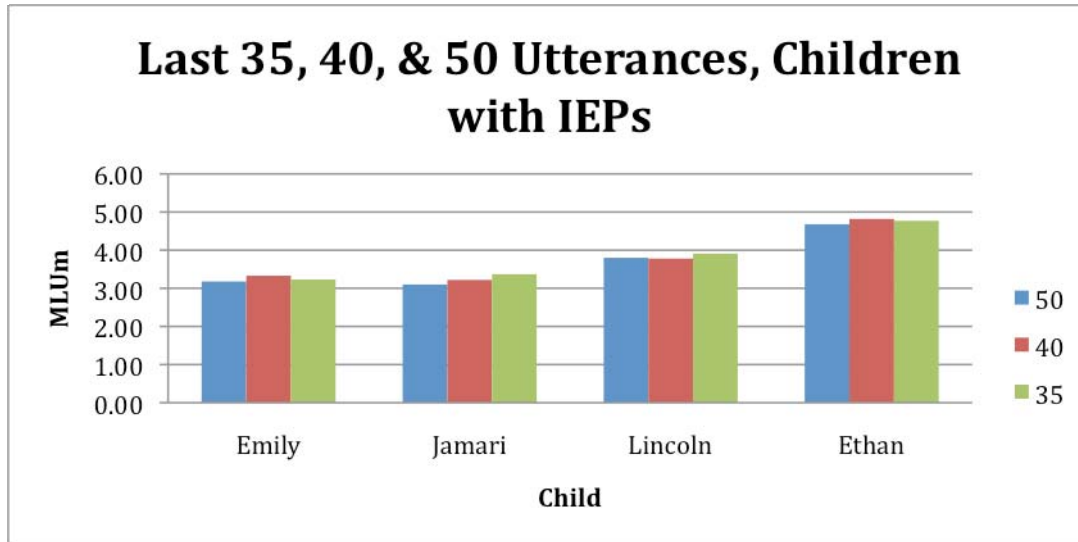


Figure 15. Final MLU_m among children with IEPs.

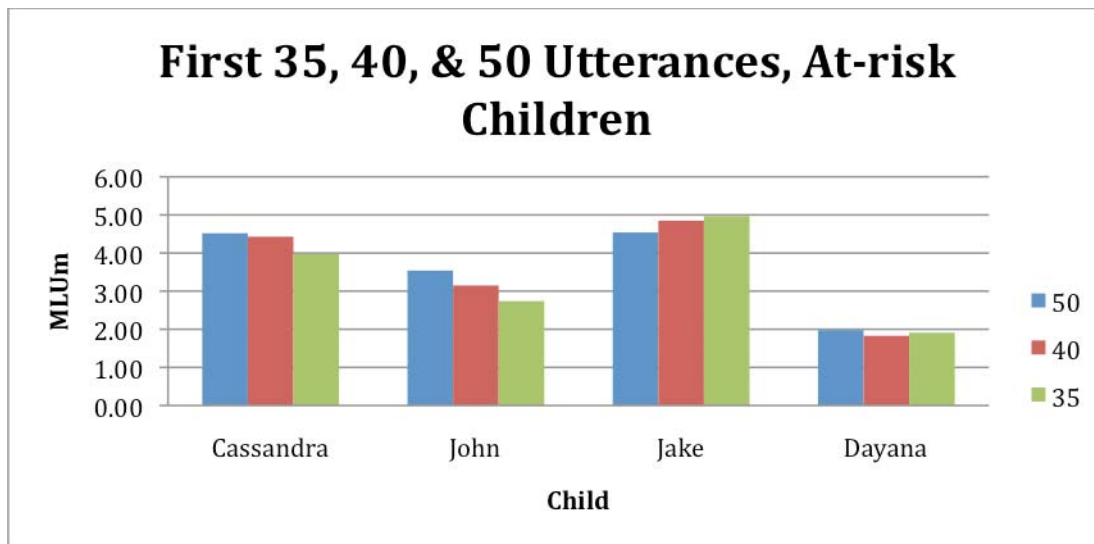


Figure 16. Pre-intervention MLU_m among children identified as at-risk.

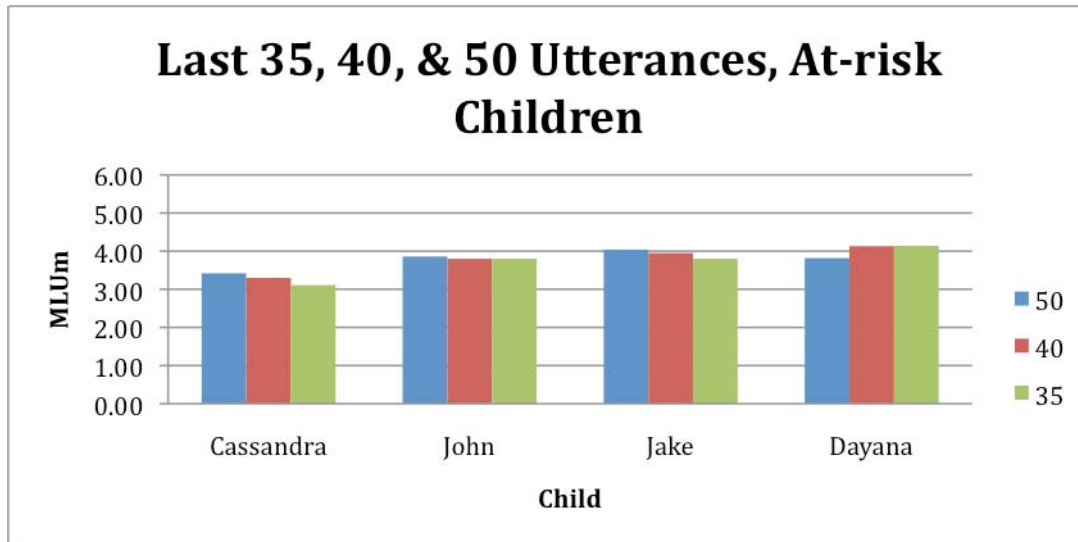


Figure 17. Final MLU_m among children identified as at-risk

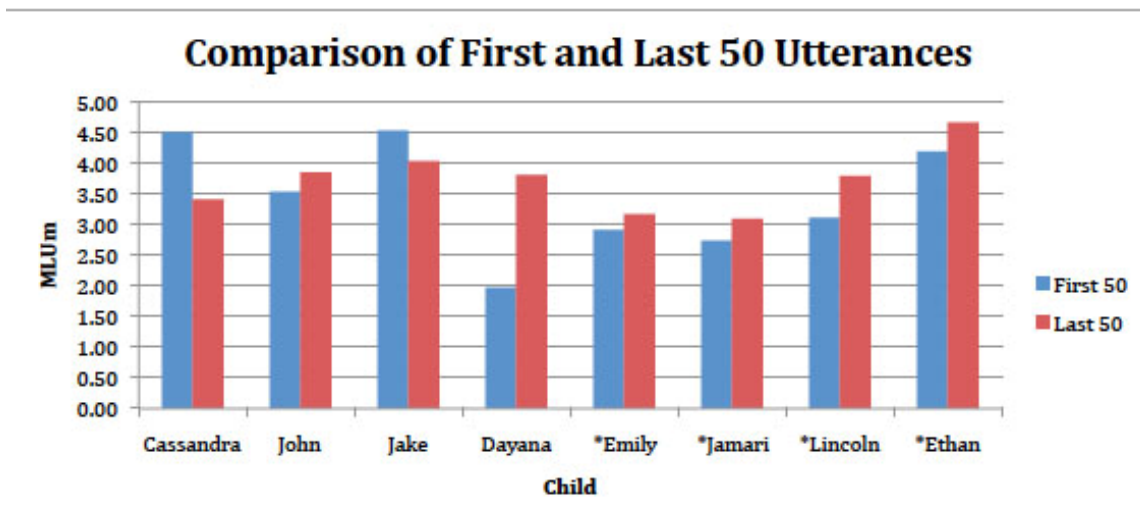


Figure 18. Asterisk (*) indicates that child has an IEP.

Table 28

Increase in MLU_ms of Typically Developing Children

Age equivalent (within 1 month)	MLU	Typical Gain in MLU m
18	1.31	
21	1.62	.31
24	1.92	.30
30	2.54	.62
33	2.85	.31
36	3.16	.31
39	3.47	.31
42	3.78	.31
45	4.09	.31
48	4.40	.31
51	4.71	.31
54	5.02	.31
57	5.32	.30
60	5.63	.31

*Source of data is Miller and Chapman, 1990.

Table 29

Change in MLUm for Focal Children

Child	1 st 50 MLUm (age at time of assessment)	Last 50 MLUm (age at time of assessment)	Difference
Cassandra	4.52 (56 months)	3.42 (59 months)	-1.1
John	3.54 (56 months)	3.86 (59 months)	0.32
Jake	4.54 (62 months)	4.04 (65 months)	-0.5
Dayanna	1.98 (58 months)	3.82 (61 months)	1.84
*Emily	2.92 (46 months)	3.18 (49 months)	0.26
*Jamari	2.74 (53 months)	3.10 (56 months)	0.36
*Lincoln	3.12 (56 months)	3.80 (59 months)	0.68
*Ethan	4.20 (61 months)	4.68 (64 months)	0.48

Table 30

Comparison of Students' MLUms With Those of Typically Developing Children

Child	Age ^a (yr;mo)	MLU _m (1st 50)	MLU _m (last 50)	MLU _m (SD) ^b (typical)	MLU _m Range (typical)
Emily (IEP)	3;10	2.98	3.18	4.09 (.67)	3.42-5.42
Jamari (IEP)	4;5	2.73	3.10	4.57 (.76)	3.81-5.33
Lincoln (IEP)	4;8	3.12	3.80	4.75 (.79)	4.08-5.54
Ethan (IEP)	5;1	4.22	4.75	4.88 (.72)	4.16-5.60
Cassandra	4;11	4.52	3.37	4.75 (.79)	4.08-5.54
John	5;2	3.54	3.69	4.88 (.72)	4.16-5.60
Jake	5;2	4.68	4.04	4.88 (.72)	4.16-5.60
Dayana	4;10	1.98	3.80	4.75 (.79)	3.96-5.54

^aAge at start of pre-implementation, ^b Based on data from Rice, Smolik, Perpich, Thompson, Rything, and Blossom (2010).

Supports for Implementing the Project Approach

The fourth research question focused on teachers' perceptions of the ways in which the supports that were provided were helpful in implementing the Project Approach. The researcher attempted to provide high quality professional development and support for the teachers and SLPs to help them implement a successful first project. Types of support provided were: (a) training on the Project Approach, (b) mentoring/coaching and weekly meetings, (c) an Implementation

Checklist, (e) networking with other novice implementers, and (f) access to experienced implementers. Data about each type of support follows.

Training. Interview data revealed that Sherri and Rayna appreciated the orientation as to the nature of the Project Approach, tips on how to get started, and how to do webbing with children. Sherri mentioned that she especially appreciated the opportunity to practice by engaging in a simulation during the initial training.

The two SLPs expressed regret in their mid-way and post-implementation interviews that they were not able to attend the morning portion of the training, due to a district SLP meeting. Amanda explained that it was difficult for her to compensate for missing that part of the training:

I was given some of the material and an explanation of the Projects, so...that helped to build my understanding of it. I think it would have been better to hear it and to go through the whole day of practicing it.

Coaching.

Onsite interactions. Post-implementation interviews revealed that the following aspects of coaching were appreciated by the teachers: the scheduling of weekly lunch meetings, the provision of lunch, openness to teachers' questions, willingness to help teachers when they struggled, willingness to provide classroom demonstrations, expertise, bringing in props and materials, and patience. Sherri was particularly appreciative of the coach/mentor's patience due to the stressors of being new to the school:

She just always worked through it with me, helped me understand what I needed to do, and I appreciated that. And I did need the training, because I had no clue what I was talking about or doing. So that helped a lot. And just Sallee's patience, really, for me, because, like I said, this has been a whole new year for me. Everything here's new. So having somebody there to help me with it was a big deal.

The teachers reported appreciating the fact that the coach was available on an ongoing basis. Kristie explained, “Like 100% it impacted me, because there’s always questions, and when you try something new, it’s nice to know that there’s someone that can say, ‘Okay, let’s try this.’ Or just even tell me, I’m doing okay. Because sometimes you need to hear that.”

Implementation checklist. Interviews conducted mid-way through and following implementation revealed that the two lead teachers found that this tool was very helpful to them in implementing the Project Approach. In the mid-way interview Kristie referred to it as her “little bible.” She explained:

I refer back to it all the time, because sometimes you think, “Now where do I go next? What do I need to do?” And I, so I refer back to it all the time. So that’s what I do sometimes on the weekends. I’ll read through it, and I’ll make a check, and I’ll think, “Okay, I’ve done that, and I’ve done that. Oh I haven’t done that.” And then it sparks an idea for me. I use it to help guide me. It also gives me a new way I need to be going with it, ideas.

Kristie saw the *Checklist* as a support she would use to help her through future implementations of the Project Approach, when the coach would no longer be available. Sherri shared that she also valued the structure provided by the *Checklist* because she was “not always the most organized.”

Engaging learners in a process of self-assessment of their performance using a conceptual or operational framework results in more dramatic effects on learner outcomes than do other adult learning methods (Trivette et al., 2009). The *Implementation Checklist* provided this framework in the current study. It was extremely useful as a guide for teachers to use independently and as a basis for discussion with the coach/mentor and with other implementers. Fidelity of

implementation can be examined in terms of dosage, adherence, and quality of delivery (Hamre et al., 2010). In the current study, the researcher used the *Implementation Checklist* to assess teachers' adherence to the components of the Project Approach.

Throughout the implementation of the Project Approach, the researcher used the *Checklist* as an informal way to periodically review of the fidelity of participants' implementation of the Project Approach. While the *Checklist* was often used as a basis for discussion at group coaching/mentoring meetings, it was not possible to do individual, in-depth reviews of fidelity with teachers in that setting. The individual reviews typically took place prior to or following the group meetings or in individual teacher's classrooms. A final analysis of fidelity of implementation for the two classes was based on the researcher's final *Implementation Checklist* for each class. All items on the *Checklist* were counted as either "implemented" or "not implemented." Across all phases, the teachers never reached above 85% fidelity. However, the design of the checklist made it unlikely that a teacher would reach 100%, since some items were different options for fulfilling an overarching requirement (e.g., items 10a, 10b, 10c, 10d). Based on the investigator's experience with implementing the Project Approach, 75% was established as a criterion for high quality implementation. This analysis also indicates that the fidelity of implementation in both classes was reasonably high throughout the first two phases of the project. However, the level of fidelity in the morning class dropped dramatically in Phase 3 (see Table 31). Although Sherri implemented the grocery project with higher fidelity during Phase 1, fidelity of implementation in Kristie's

class was higher during Phase 2 and remained at a high level in Phase 3. The lack of fidelity in the morning class was predominantly related to the teacher's decision to plan the culminating activities without input from the children (i.e., *Checklist* items 46 and 47). The drop-off in cooperative play for two of the children in the morning class (Dayana and John) may have been related to the teacher-directed nature of the class' Phase 3 activities. It may also account for Sherri and Rayna's feeling that the project lasted too long.

Table 31

Comparison of Fidelity of Implementation Between the AM and PM Classes

	Phase I	Phase 2	Phase 3
Class	(<i>n</i> = 42 indicators)	(<i>n</i> = 75 indicators)	(<i>n</i> = 18 indicators)
AM Class	83 % (35/42)	76% (57/75)	61% (11/18)
PM Class	79% (33/42)	85% (64/75)	78% (14/18)

Other novice teachers. All adult participants shared that they relied on their inexperienced counterparts for support in implementation. Teachers recounted relying on one another's support through informal encounters and through the weekly lunch meetings. They explained that they provided one another with support in the form of: sharing ideas for implementation that worked well, sharing experiences and ideas to improve aspects of the Project Approach that had not

worked well, sharing resources, emotional support, and as Rayna put it, “just knowing that someone else was going through it was support.”

On the other hand, the SLPs found it more difficult to schedule time to discuss project work with one another. In her mid-implementation interview, Susan explained that she and Amanda had not had an opportunity to really discuss implementation of the Project Approach. However, by the time of the post-implementation interviews, Susan noted that she done most of her dialoguing about the project with Amanda.

Conclusion

The results of this study indicate that the Project Approach had a positive impact on young children’s development of social interactions, challenging behaviors, and language. This finding was observed for both children with IEPs and children identified as at-risk. In addition, the results indicate that, overall, teachers and SLPs felt positive about their experiences implementing the Project Approach.

Prior to training on the Project Approach, adult participants described feeling neutral or positive about implementing the Project Approach, but by the completion of their class projects, their comments about implementation were unanimously positive. During mid-implementation interviews teachers in one class reported two concerns. They were concerned that they would not be able to adequately cover academics and kindergarten readiness skills while implementing the Project Approach, and they were concerned about the effort needed to hold their student’s interest over the course of an 11-week project. By the final interviews, the staff in the two classes had different perceptions regarding the desirable length for a

project. For example, Kristie was excited that children's interest in her project had lasted so long, while Sherri felt that the length of their project extended beyond the period when children were interested in the topic. Post-implementation, Sherri was concerned that she did not provide enough small group time to work on academics, and she noted that she planned to do a better job of that during future projects. The other lead teacher did not mention concerns about academics. She was focused on her students' gains in social development and the memories that might result from participating in a project.

I think they will [remember building the truck]. I hope. I think they will. It might be something they'll.... Maybe not all the details about it, but I think that will be something like they'll say, "Well, what'd you do in preschool?" I betcha' they'll say, "We built a truck."

The participating teachers and SLPs indicated that all but one focal child responded well to participating in a project. Adult participants agreed that interest and engagement in the project led to children's positive responses to project work. They indicated that hands-on learning, adding authentic props and objects to the environment, and child-initiated learning contributed to children's interest and engagement in project work.

Both interview and observational data indicate that the Project Approach supported an increase in positive social interactions and participation in teamwork for three of the four children with IEPs and the four children identified as at-risk. Interview data, and field notes indicate that the Project Approach supported a decrease in challenging behaviors among targeted children. Finally, qualitative and quantitative data indicate that the Project Approach had a positive impact on target children's language development. Teachers stated that their students learned many

new vocabulary words. In addition, analysis of children's first and last 50 utterances using SALT software revealed that MLU_m increased for all children with IEPs, and MLU_m increased dramatically for one at-risk child whose limited verbalizations were identified as a challenging behavior.

Chapter 5

Discussion

The evidence-base regarding the impact of the Project Approach on children with IEPs and children identified as at-risk is scarce. In this study, mixed methods were used to investigate the impact of high quality training in the Project Approach on the social interactions, challenging behaviors, and language development of eight children. In addition, the researcher explored the ways in which supports for high quality implementation provided to the teachers, assistant teachers, and SLPs helped them implement the Project Approach.

Three primary findings that emerged from the data will be discussed in this chapter: (a) benefits of the Project Approach for children with special needs in inclusive settings, (b) factors that affected the outcomes of the Project Approach on children with IEPs and on those identified as at-risk, and (c) supports for successful teacher implementation of the Project Approach.

Benefits of the Project Approach for Children With Special Needs in Inclusive Settings

Unlike previous research that relied on teacher perceptions (Donegan et al., 2005; Hertzog, 2007), the current study also used direct observation to determine the impact of the Project Approach on prekindergarten-aged children. While the observed responses of some children were stronger than that of others, all four preschoolers with special needs and all four preschoolers identified as at-risk benefited from engaging in project work. Benefits included increased social interactions, and increased use of language. This finding adds to the literature on teacher perceptions of the benefits of the Project Approach for preschoolers with special needs (Edmiaston, 1998; Given & Duman, 2007;

Harris & Gleim, 2008; Scranton & Doubet, 2003) and children from at-risk environments (Beneke, 1998; Lang, 2003; Sanchez, 2007). The findings also extend earlier studies in which teachers and administrators described the benefits of the Project Approach for preschoolers in inclusive settings (Beneke & Ostrosky, 2009; Donegan et al., 2005).

In a tiered model for intervention, Tier I is designed to “provide high quality instruction as an essential foundation for learning for all students” (Coleman, Buysse, & Neitzel, 2006b). As a component of Tier 1 instruction, the Project Approach has the flexibility to engage and provide a stimulating and responsive context for children with and without disabilities in inclusive settings. Observational data add to the growing body of literature documenting social, communicative, and behavioral outcomes for preschoolers.

Factors That Affected Outcomes of the Project Approach for Children with IEPs and Those Identified as At-Risk

Teacher interview data indicates that factors that contributed to the benefits of the Project Approach for children were: (a) clarity of role in play, (b) opportunities to develop reciprocal relationships, (c) supports for language development, (d) reduction of challenging behaviors, (e) teacher anticipation of children’s interests and materials, and (f) addition of real props and objects to the classroom environment. In addition, the interview data indicate that the teachers perceived a tension between play and academics to varying degrees. These perceptions may have reduced the impact of the Project Approach on the play levels of children in the AM class, both for children with IEPs and those identified as at-risk.

Clarity of role in play. During implementation of the Project Approach, the play levels of children with disabilities increased, and they were more likely to interact socially with their peers. This increase can be attributed to the ongoing process of planning, exploring, and discussing (Siraj-Blatchford & Sylva, 2004) that structures project work. Buysse et al. (2002) found that opportunities for participation in a variety of classroom activities with higher functioning peers positively impacted the ability of children with special needs to socialize and form friendships with their typically developing peers. Odom and Wolery (2003) have described participation in more developmentally advanced settings as essential. The process of planning, exploring, discussing and implementing that took place as children participated in project work may have resulted in increased opportunities for focal children with special needs to interact comfortably with their at-risk peers. For example, teacher interview data and the observational data suggest that children's joint participation in the construction of the semi-truck contributed to increased engagement, higher levels of play, and increased language production for children with disabilities in both inclusive classes. In Kristie's room, children regularly shared in the development of plans for constructing their truck. They discussed with one another and with the teacher what they hoped to accomplish and how they would accomplish it. In Sherri's room, where the construction of the truck was less involved, the impact was also positive, although to a lesser degree. It may be that the teachers' interest in and opportunities for child-initiated learning during project work provided a high quality emotional context (Mashburn & Pianta, in press), thereby resulting in increased participation by target children.

Similarly, it appears that the first-hand investigation and discussion of plans for the grocery store provided information that supported children's participation in dramatic play. Barton and Wolery (2008) analyzed literature on interventions for promoting pretend play in children with disabilities. They found that pretend behaviors are "highly context dependent" (p. 121). In the context of the projects conducted in this study, children knew the roles to be portrayed, the materials to be used, and the vocabulary to use when they entered the grocery store in the dramatic play area (Porath, 2003). The clarity and structure provided by the format of project work may also have decreased the social demands involved in play (Guralnick, 1999) and consequently increased the participation in play of children with disabilities. These interactions are important for children's learning because high quality social environments are associated with gains in academic and literacy skills (McClelland, Acock, & Morrison, 2006; Mashburn, 2008).

Opportunities to develop reciprocal relationships. It is also likely that the clarity of roles in field work, surveying, construction, and dramatic play contributed to the development of reciprocal relationships between children, and consequently to formation of friendships (Buysse, Goldman, & Hollingsworth, 2008). For example, many parts of the semi-truck were connected by using masking tape. To successfully use the tape, one child had to hold the roll of tape while another child pulled a piece of tape out and tore it off the roll. Similarly, children could not successfully play in the class grocery store unless certain play roles were filled. For example, the customer could not check out without a cashier, and the cashier needed the assistance of a bagger. Engaging in these reciprocal roles encouraged children to use

language and helped them develop positive relationships with peers. Conversational competence affects children's abilities to interact successfully and be accepted by peers (Black & Hazen, 1990). Children engage in conversation most competently in familiar situations where they can rely on "script knowledge" for their conversations with peers (Furman & Walden, 1990). The development of reciprocal relationships is important academically as well as socially, because peer interactions, especially those that involve language, have been shown to positively impact learning (Mashburn, Downer, Justice, & Pianta, 2007; Theodorou & Nind, 2010).

Supports for language development. Engaging in project work provided children with a common focus, motivation, and opportunities for conversation through joint planning, discussion, investigation, and construction (Beneke & Ostrosky, 2009). Interview data and SALT analyses point to an increase in MLU_m for all target children with special needs, and positive changes in vocabulary for all focal children. These changes may be the result of increased opportunities to initiate interactions with peers. Jamari, a boy who was difficult to understand, had a hard time finding a context for social interactions with peers. Children with limited ability to produce language are less likely than peers with "sufficient" language to initiate interactions with other children (Harper & McCluske, 2001). As Jamari participated in the project, his opportunities for social interaction increased, and he more frequently engaged in higher levels of play. However, Dayana, a 4-year-old girl identified as at-risk, provided the most salient example of the benefits of the Project Approach on language skills. Like Jamari, her lack of verbalization put her at high

risk for social isolation (Harper & McClusky). The dramatic increase in the length of her utterances was likely due to increased verbal interactions with children who had higher language abilities (Cohen & Uhry, 2007; Fawcett & Garton, 2005; Mashburn, Justice, Downer, & Pianta, 2009; Stanton-Chapman et al., 2008) and with adults who taught her topic-related vocabulary and modeled play behaviors (Craig-Unkefer & Kaiser, 2002; Schwartz & Carta, 1996). As children collaborate to design and undertake project work, opportunities to learn new vocabulary and communicate with peers and adults increase.

Reduction in challenging behaviors. During the study, positive social interactions increased while challenging behaviors decreased. It is likely that increases in positive social interactions and language skills contributed to the reduction in challenging behaviors that were perceived by teachers during interviews (Stipek et al., 1998; Stormont et al., 2003). In addition, children had many choices about when, where, and how, or whether to participate in project activities, and it is likely that these choices also helped to reduce challenging behaviors (Jolivet et al., 2002; Kern et al., 1998).

Teacher anticipation of children's interests and materials. Teachers and SLPs described the children as interested and engaged in project work. However, they talked about their need to bring in new materials that would "spark" children's interest. Kristie and Jennifer described anticipating what materials would be needed based on children's interest. Kristie remarked, "it takes a lot of thought process on the part of the adult to make sure that you're thinking ahead of where they're going to go, what kind of materials you need." This emphasis on anticipatory planning

complements findings by DeKlyen and Odom (1989), who reported that structuring play to facilitate successful social interaction increased the frequency of peer interaction. The current study demonstrates that the structure provided by the Project Approach increased the level of play among peers. Kristie also noted, “And knowing that they did it, I think....made it more interesting and kept them more actively involved.” Other researchers (Powell et al., 2008; Tsao et al., 2001) have demonstrated the potential of child-initiated activities to increase children’s social interaction with peers.

On the other hand, Sherri and Rayna struggled to follow children’s interest in the project. They felt it was a burden to come up with new materials, objects, and experiences to re-engage children’s interest. They also felt they lost children’s interest in the project following the construction of the semi-truck. Learning to use the process of project implementation to support child-initiated learning can be challenging and takes time (Clark, 2006). Lieber et al. (2009) found that teachers who were high-level implementers of a new curriculum had integrated it and understood it well enough to expand on it independently. While Sherri and Rayna made great progress across the phases, they may not have fully integrated the Project Approach by the close of Phase 3.

The differences in the experiences of the professionals from these two classrooms can be attributed to several factors. First, every group of children is different, and it may simply be that the children in Sherri and Rayna’s class had satisfied their interest in semi-trucks and the grocery store and were ready to move on. Another possibility is that when teachers are intentionally teaming, they may

feel pressured to conform (Johnson, 2003). Since Sherri and Kristie had worked together to support one another in implementing their projects, Sherri may have been reluctant to bring her project to a close before Kristie's. In addition, it may be that Sherri and Rayna were no longer interested in the topic and were ready to move on, but did not feel that they could do so for reasons described above. Finally, it may be that, because project-related activities in Sherri and Rayna's class were more likely to be teacher-initiated than in the other class, the children might not have felt as engaged as they would have if they had assumed a larger role in planning and discussing activities (Beneke & Ostrosky, 2009; Jolivet et al., 2002; Odom & Wolery, 2003). It takes time and practice to fully understand and integrate the Project Approach (Clark, 2006). At the time of the study, Sherri and Rayna may not yet have mastered the teaching strategies or reached a full understanding of the process needed to engage children's interests through project work.

Addition of real props and objects to the classroom environment.

Teachers and SLPs remarked that the addition of real objects helped to engage children's interest and attention to the project, which is consistent with previous studies such as Beneke and Ostrosky (2009). For example, Kristie noted, "That steering wheel was a huge deal, you know." This finding also extends research by Ivory and McCollum (1999) who reported that the types of toys teachers make available unobtrusively influences levels of play. McCabe, Jenkins, Mills, Dale, and Cole (1999), also found that the addition of objects for dramatic play are likely to result in increased levels of play for children with disabilities.

While the six previously identified factors contributed to the benefits that resulted from the Project Approach, one factor was problematic. Interview data and field notes revealed that the adult participants associated with one class felt considerable tension between play and academic goals.

Tension between play versus academics. Recent research has demonstrated that entering kindergarten with some knowledge of letters and numbers benefits children's future academic success (Duncan et al., 2007). While the teachers in both classes covered the same academics, there was a difference in the way the material was covered and in the emphasis on its importance. This was especially apparent toward the end of Phase 2 and throughout Phase 3. In her mid-point interview, Sherri expressed her concern that her students were not getting sufficient time to work on academics. She also stated that she was concerned that she was not providing enough opportunities for children to practice academics and prepare for kindergarten. She explained that she had decided to pull children from play to participate in one-on-one or small group work during choice time. Consequently, Sherri began interrupting children's play to have them work at a table with her on academic or readiness skills. Sherri's activities were primarily teacher-directed and were likely to have disrupted active peer engagement.

In contrast, Kristie usually scheduled her small group time apart from choice time. She was more likely to move about the classroom and observe the children during choice time. She would join children's play with the purpose of sustaining play or scaffolding it to a higher level. Elaborating on the focus of children's play and providing information are associated with engagement and attention, and they have

more influence on child engagement than requests, questions, and responsiveness (McWilliams, Scarborough, & Kim, 2003). The difference in the trajectories of cooperative play in the two classrooms may reflect this difference in choice time structure (see Figures 4 and 5). Children's levels of cooperative play began to decline when Sherri began to pull out her students for individual and small group work, while in Kristie's room the levels of cooperative play continued to accelerate through the end of the project.

A tendency to engage in didactic versus scaffolded interactions is common among prekindergarten teachers (Early et al., 2005), and Sherri may have been aware that other teachers in her center were engaged in this type of teaching. Since it was her first year at the *Early Learning Center*, Sherri may have felt pressure to conform. When teachers move among groups of children engaged in child-directed play and scaffold their learning, children manifest more signs of cognitive development than they do when they are engaged in teacher-directed play (Gmitrova & Gmitrov, 2003). Responsive teaching requires active listening and two-way interaction (Lobman, 2006). De Kruif et al. (2000) found that children who were previously engaged became nonengaged when teachers tried to take control over the activity or tried to redirect them to a teacher-directed activity. The decision to pull children from play limited Sherri's ability to teach in a way that was responsive. Consequently her style interfered with children's engagement and peer interactions.

The Importance of High Quality Supports for Successful Teacher Implementation of the Project Approach

The findings indicate that the combination of supports available in the current study (having a coach/mentor onsite; the *Implementation Checklist*; novice teachers; experienced teachers) was effective in helping teachers implement the Project Approach. All of the components were described as necessary and productive. Positive perceptions of training and coaching are associated with adherence to high level implementation (Ransford, Greenberg, Domitrovich, Small, & Jacobson, 2009). Supports for implementation used in this study were identified from the literature on adult learning methods (Trivette et al., 2009). Three supports (training, coaching/mentoring, and the *Implementation Checklist*) were particularly effective in supporting implementation of the Project Approach and are discussed below.

Training. The evaluations of the initial Project Approach training were positive (see Appendix J). The participants were asked to provide feedback regarding the most useful information, their personal accomplishment during the training, and ways that they would know if the Project Approach was working. The participants particularly valued gaining a better understanding of the Project Approach and working together as a team. They indicated that they would know that the Project Approach was working if students were interested, involved, excited about their work, investigating, asking more questions, asking about the project, and showing increases in language. Only one teacher indicated that she was not sure her students would be able to participate in project work. The findings of this study might not have been as positive if the quality of the training had not been high, or if

it had not prepared them to focus on child engagement as a sign of successful implementation.

Coaching. Supports for teachers included collaboration among teachers, SLPs and coaches; in-class observations; and weekly feedback, discussion, and planning. This is consistent with findings regarding the elements of successful coaching by Hsieh, Hemmeter, McCollum, and Ostrosky (2009). As the adult participants raised issues that were preventing successful implementation, the researcher attempted to provide mentoring/coaching through reflective discussion, explanation, and examples. For example, adult participants expressed concern about preparing and displaying documentation. The researcher then provided a 1-hour before school training on documentation and a 2-hour training on Reggio Emilia on a school district Institute day. In addition, graphic organizers such as a diagram illustrating steps to implementing successful project work were developed to support teachers' successful implementation (see Appendix L).

All adult participants reported being appreciative of the coaching support they received, although Susan indicated that she would benefit from receiving earlier notice of the times when the group would be meeting. SLPs had a more difficult time attending the noon meetings with the coach/mentor due to their schedules for therapy and language groups in other buildings, and the fact that the meetings were scheduled around the teachers' lunch hours. SLPs were sometimes able to join the teachers for part of the meetings. Amanda attended approximately four meetings, and Susan attended two. The principal provided the assistant

teachers with inservice credit as an incentive for their attendance at the lunch meetings. Rayna and Jennifer each attended nine meetings.

Experienced implementers. Not only did teachers and SLPs in the current study rely on the coach, but they also relied on one another for support and ideas for successful project implementation. The two assistant teachers and two lead teachers commented on the helpfulness of the experienced implementers in their building. Kristie and Sherri's classrooms were located in different wings of the *Early Learning Center*. However, a teacher with experience implementing the Project Approach was located in each of their wings. Lisa, the experienced teacher in Kristie's wing had been implementing the Project Approach for several years. Karla, the experienced teacher in Sherri's wing had received training the prior summer and had implemented one complete project at the time of the training. Both Lisa and Karla attended the lunch meetings on a regular basis.

The availability of support from experienced implementers was especially important to Kristie. She described this support during her mid-point interview:

And there's another teacher in my building, and she's been wonderful. So, even on days when Sallee's not here, I could always talk to Lisa and say, "Okay, now help me with this." Because we were getting ready for the field trip, and Sallee wasn't here on that Friday before. I'm not sure exactly, how I'm going to divide the kids up, and what they're really interested in. And so she gave me a great idea. Lisa said, "Okay have them sign up." And I'm like, "Oh duh," so have them sign up—do they want to look at the bakery? Do they want to look at the trucks? Do they want to look at the cashier? So it's just nice to be able to talk to someone, and go through it. I couldn't do it without help.

Sherri described using the project work of the experienced teacher as a model for future project work:

Then I went into Lisa's room just to look at what she was doing. She's way up here on the project. And it was just fun looking at where it could go. I'm not

quite there, but it was fun to see what she was doing and how she was implementing things. I got ideas for next year.

Therefore, it was serendipitous that two teachers who had experience with the Project Approach were each located near a novice teacher who was implementing the Project Approach for the first time, since it appeared to be beneficial to them.

The experienced and novice implementers formed community of practice. Communities of practice, like that formed by the adult participants in the current study, provide a source of ongoing professional development (Sheridan, Edwards, Marvin, & Knoche, 2009). For example, the two novice lead teachers, Kristie and Sherri, intentionally selected the same topic for their projects, so that they could support one another. In addition, the peer coaching of the experienced teachers was an important source of information and support for the novice peers. Peer coaching has been reported to increase implementation (Kohler, McCullough, & Buchan, 1995). The weekly lunch meetings provided an important format for novice implementers to engage in discussion with experienced peers. At these meetings, providers and consumers of support were able to come together and communicate about their experiences with implementation. SLPs, however, were at a disadvantage, because due to the inflexibility of their schedules they often could not attend the meetings.

Limitations

It is important to discuss several limitations of this study. First, the number of adult and child participants was small. While the results indicate positive effects of the Project Approach on the child participants, a larger sample size would provide more variation in characteristics (e.g., type and degree of child disability, child age,

teacher age, child's preschool experience, teacher experience, geographic location, ethnic background) that could provide further insight into the impact of the Project Approach on diverse learners. Additionally, the study could have been strengthened by interviews with teachers and observations of children in non-intervention classrooms.

Interviews were limited to the target teachers and speech and language pathologists, and in retrospect, more depth of understanding about the usefulness of the various supports for implementation would have been possible if the experienced teachers who participated in the lunch meetings and the center director also had been interviewed. These interviews would have provided opportunities to further triangulate the data and to increase the validity of the results.

The *Implementation Checklist* was designed to support adherence to high quality implementation of the Project Approach in the sense that the steps, activities, and materials on the checklist reflect those used by other teachers who have successfully implemented projects. However, the *Checklist* did not address the dosage and quality of implementation, which limits the usefulness of the *Checklist* as a support for teachers. Also the researcher was not able to evaluate implementation comprehensively. For instance, teachers could indicate that they provided children with opportunities to participate in making observational drawings, but there was not a way for them to indicate how frequently these opportunities were provided. Also, the researcher may not have observed children engaged in observational drawing during one of her visits.

The teachers in the present study were novices at implementing the Project Approach, and this was their primary focus. Teachers with more experience at implementing project work might have been better able to explore the potential of the Project Approach to support behavior change. Additional research might further define the conditions under which the Project Approach supports the development of children with special needs.

Finally, in the current study, an analysis of impact on children with specific demographic factors (e.g., family socio-economic status, child diagnosis) was not conducted, but rather more general descriptors were used, such as presence of an IEP and children meeting State Board of Education criteria for at-risk status. Additional data might provide insight into the impact of participation in project work on children from different backgrounds.

Implications for Future Research

The findings of this study present many possibilities for future research. A study that also includes a control group of teacher and student participants from classrooms that are not implementing the Project Approach would lend perspective on the degree of impact produced by participation in projects. Conducting such studies with larger numbers of students and teachers of varying demographic characteristics could also provide insight into the impact of the Project Approach on individuals from diverse backgrounds. However, conducting these studies with larger numbers would require additional coaches. Research to identify criteria for selecting effective coaches for implementation of the Project Approach is also essential.

Barton and Wolery (2008) have indicated that more research is needed on ways that interventions using pretend play have been incorporated into the preschool curriculum and on how they can be incorporated in the future. The current study indicated that clarity regarding the roles for dramatic play benefited the children with special needs in the current study, including a child on the autism spectrum. Further research is needed to determine the processes and practices embedded in the Project Approach that may have a positive impact on the dramatic play of children with special needs in inclusive settings. Research is also needed to explore how these processes and practices can be adapted to provide optimal support for children with special needs.

Of the children with IEPs in the current study, Emily, appeared to be the least engaged and to receive the least benefit from participating in a project. It would be useful to explore ways to help teachers better support the involvement in project work of children like Emily who are younger or have short attention spans. For example, research that included experienced implementers could explore the potential of the Project Approach to support behavior change. Research that monitored children's responses on an ongoing basis could better explore opportunities to support behavior change within project work.

It also would be useful to explore the relationship between the robustness of teachers' implementation of the Project Approach and child outcomes. For instance, it would be beneficial to know to what extent and for how long the changes in children's social interactions, challenging behaviors, and language development last

given high quality implementation of a project. For this purpose, follow-up data could be gathered to elaborate on the current findings.

Similarly, it would be useful to study the extent and quality of the participating teachers' future projects in relation to the supports available to them. Such research could explore the types of support(s) needed for ongoing implementation. This research could also inform those who provide professional development about the content needed to strengthen fidelity of implementation.

Despite differences in the level of implementation by the two sets of teachers in the current study, children in both classes benefited. Future research could explore the relationship between the level of implementation of the Project Approach to and developmental gains experienced by children.

Research that teases out the impact of the various supports provided in the current study is needed to identify the types of supports that are most effective alone or in combination with others. These supports could include: the implementation checklist, coaching, support of experienced teachers, weekly meetings of novice implementers, and teaming with assistant teachers and SLPs. Future research should also explore the impact of locating teachers with expertise in implementing the Project Approach in close proximity to teachers who are attempting to implement their first projects.

Research is needed to explore strategies to help SLPs take advantage of opportunities for language therapy resulting from student engagement in the Project Approach. It would be interesting to examine the long-term impact of

implementation of the Project Approach on the classroom-based therapies provided by SLPs.

Further research to refine and establish the usefulness of the *Implementation Checklist* also would be valuable. It would be helpful to know if the checklist would be of value to teachers in isolated situations where other types of support are not available. In addition, it would be interesting to see what impact a written *Guide to the Implementation Checklist* might have on the fidelity of teacher's implementation.

In the current study, teachers believed their students benefited from participating in the joint construction of one large product. However, projects are sometimes implemented in such a way that small groups of children develop their own mini-studies and create individual or small group products. It would be beneficial to compare the impact of these two implementation models on the development of children with IEPs and children identified as at-risk.

Implications for Future Practice

In the current study, sharing in the creation of a class-wide construction that was subsequently used for dramatic play had a positive impact on the social interactions, challenging behaviors, and language development of children with special needs and children identified as at-risk in two inclusive preschool classrooms. When implementing projects in inclusive prekindergarten settings, educators should consider guiding children toward joint creation of shared constructions (such as the semi-truck) and/or dramatic play environments (such as the grocery store). To do this, educators need to understand the processes that take place as a class of children moves through the three phases of project

implementation. Educators need to value and learn to support children's participation in joint decision-making and planning.

The current study demonstrated the positive impact of in-depth understanding of project-related roles (such as the bagger, checker, and baker) on the dramatic play of children with special needs. It is important for teachers to understand the potential benefits of the project approach on children's dramatic play. Moreover, it is important for teachers to understand how to help children develop this type of in-depth understanding in the context of project work.

Given the encouraging findings of the current study, it is important to inform those who organize professional development for teachers and SLPs that there are numerous benefits that result from implementing the Project Approach for children with special needs and children identified as at-risk. We need to provide joint training and mentoring for teachers and SLPs on the Project Approach, so that they can collaborate effectively for the benefit of children. Moreover, it is important that administrators are informed about the benefits of project work, so that they support teachers' attendance at trainings and assist teachers in accessing supports for implementation. Administrators need to recognize and value the impact of play on children's social and language development and support teachers in providing adequate opportunities for uninterrupted play. Actively encouraging teachers to develop their skills at scaffolding children's play to a higher level and at embedding learning goals in play also will contribute to the quality of future practice. Including information about the positive relationship between social and academic

development may also be helpful, since administrators and support staff may perceive the Project Approach as taking time away from academics.

The *Implementation Checklist* should be revised, refined, and piloted with teachers in a variety of early childhood settings so that it can be used as a support by Project Approach trainers and educators in the field. A *Guide to the Implementation Checklist* should be developed to provide examples and in-depth explanations for each checklist item. In addition, training materials should be developed to help experienced and novice teachers with regular education and special education backgrounds understand how individual and group goals can be embedded in, or implemented alongside, project work. Furthermore, an *Implementation Checklist* and an *Implementation Guide for SLPs* should be developed in collaboration with SLPs who have expertise in providing speech and language services in natural setting. These products would support SLPs' ability to take advantage of such opportunities for increasing the effectiveness of their work with young children within the context of project work.

In conclusion, the current study contributes to the existing literature on the Project Approach in several substantive ways. First, it demonstrates the positive impact of the Project Approach on the development of children with special needs and children identified as at-risk. Second, it points to the positive influence of the Project Approach on preschoolers' social interactions. Third, it indicates the potential of the Project Approach to reduce the occurrence of young children's challenging behaviors. Fourth, the results of this study provide a basis for further research on the relationship of preschoolers' participation in project work with

positive changes in language development. Fifth, this investigation demonstrates the potential benefits of a combination of supports, including an *Implementation Checklist* and coaching, to help novice teachers implement high quality project work. Finally, the results of this study reveal the potential of the Project Approach to increase the effectiveness of the work of SLPs in natural classrooms.

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Appendix A

Eligibility Criteria for ISBE-Funded Prekindergarten At-Risk Programs From the ISBE *Implementation Manual* (pp. 21-24)

Eligibility Criteria

Eligibility requirements are based on local need to identify children at risk of academic failure. At-risk children are those who, because of their home and community environment, are subject to such language, cultural, economic, and like disadvantages to be at risk of academic failure. A disproportionate share of all children considered to be at risk come from low-income families, including low-income working families, homeless families, families where English is not the primary language spoken in the home, or families where one or both parents are teenagers or have not completed high school. However, neither a child's membership in a certain group nor a child's family situation should determine whether that child is at risk. Eligibility criteria may be established for Preschool for All to meet the needs of the programs and community. (See Sample Forms 1, 2, & 3 in Section 2.)

When determining eligibility criteria for the Preschool for All program, a good tool to consider is Maslow's Hierarchy of Needs created by psychologist, Dr. Abraham Maslow. Maslow's Hierarchy of Needs is broken into five levels; however, only four levels are applicable to screening.

Level I – Biological and Physiological Needs

These needs would score four points each because they are considered basic deficiency needs. A child who is stressed or hungry cannot learn. A child who is in an environment absent of unconditional love cannot learn. The brain of a child who feels physically or emotionally threatened can produce chemicals that will actually inhibit learning. Threat or stress can put a young child's brain in survival mode at the expense of higher order thinking skills, and lasting threat or stress can reduce the brain's capacity for understanding, meaning, memory, and analytical thinking (TLL Education Services). A sample of checklist items that could place a child at risk of academic failure for Level I are:

Economic

- Federal Lunch Program
- Subsidized Housing
- Public Aid
- Homeless

Health

- Nutritional Deficiency
- Lead Exposure
- Vision Problems
- Chronic Illness: (ear infections, asthma, ADD, etc.)
- Health Concerns

Birth/Prenatal Factors

- Lack of Prenatal Care
- Age of Mother
- Low Birth Weight
- Fetal Drug Exposure
- Oxygen Deprivation

Lack of Medical Attention
Pre/Post Delivery High Risk
Congenital Anomalies
Fetal Distress
Premature Birth
Failure to Thrive

Level II – Safety Needs

These needs would score three points each. Security needs are important for survival, but they are not as demanding as the biological and physiological needs.

A sample of checklist items that could place a child at risk of academic failure for Level II are:

Parenting/Home Environment

Behavior Management Skills
Communication Skills
Effective and Positive Interaction
Nurturing
Access to Support Services
Realistic Goals
Family Structure
Safe Environment
Consistency of Care

Abuse/Neglect

Foster Care
Shelters
Court Supervision
Restraining Order
DCFS Involvement

Level III – Belongingness and Love Needs

These needs would score two points each. These needs are considered less basic than physiological and security needs. Developing relationships with family and friends help fulfill the need for companionship and acceptance.

A sample of checklist items that could place a child at risk of academic failure for Level III are:

Speech/Language

Difficulty Labeling
Repeats
Will not answer questions
Low Vocabulary
Conversing Issues
Trouble Understanding
Articulation
Receptive Issues
Connective Speech

Social/Emotional

Lack of Self Control
Lack of Self Esteem

Trouble expressing feelings

Trauma

Loss/Death/Divorce

Separation issues

Lack of Social Skills

Lack of Respect

English as a Second Language (ESL)

Primary Home Language

Oral Proficiency Level

Level IV – Esteem Needs

These needs would score one point each. After the first three needs have been satisfied, esteem needs become increasingly more important.

A sample of checklist items that could place a child at risk of academic failure for Level IV are:

Learning Skills

Short attention span

Personal Data

Trouble Following Directions

Low Score on Developmental Screening

Body Parts

Gross/Fine Motor

Pencil Grasp

Walking

Balance

Grasping

Visual Motor

Appendix B

Child and Parent Demographic Form

Please complete and return to your child's teacher. Thank you!

Parent Name(s): _____

Child's Name: _____ Child's Birthday: _____

Does your child have a diagnosis or special needs? Yes ☐ No ☐

If yes, please list diagnosis or special needs: _____

Services your child currently receives (both within and outside of the preschool):

Parent Information

1. Please mark the highest level of education you have completed.

☐ High School or GED

☐ Some college

☐ 2-year college degree

☐ Bachelor's

☐ Master's

☐ Other (please specify): _____

2. Which of the following best describes your race or ethnic group?

☐ American Indian or Alaska Native

☐ Asian

☐ African American

☐ Native Hawaiian or Other Pacific Islander

☐ Asian

☐ White

☐ other (please describe): _____)

3. Which of the following best describes your age?

☐ under19

☐ 40-49

☐ 20-29

☐ 50-59

☐ 30-39

☐ 60+

Appendix C

Abilities Index

THE ABILITIES INDEX

Rune J. Simeonsson
Donald B. Bailey

Frank Porter Graham Child Development Center
University of North Carolina at Chapel Hill

© 1991

The ABILITIES Index provides a profile of a child's abilities across 9 major areas. Individuals completing the Index should be familiar with the child and may base their ratings on knowledge of the child, as well as assessment results or available records.

Ratings in each area are made on a scale of 1 to 6, with 1 indicating normal ability, 2 (suspected) indicating some questions about the child's ability, and 6 indicating extreme or profound lack of ability. In making each rating, think about the child compared to other children the same age. Guidelines follow to assist you in making each rating. You may use the space on the back of this form to provide additional information about ratings.

Audition (Hearing) Think about the child's ability to hear in everyday activities. Score hearing for each ear separately. A score of 6 (Profound loss) means that the child has no hearing. Rate the child's hearing without a hearing aid. If the child uses a hearing aid, indicate this on the back of the form.	Behavior & Social Skills Two ratings are made in this area, one for social skills and one for inappropriate or unusual behavior. Social skills refer to the child's ability to relate to others in a meaningful manner. Inappropriate & unusual behavior may include fighting, hitting, screaming, rocking, hand flapping, biting self, etc..	Intellectual Function (Thinking & Reasoning) This rating reflects the child's abilities to think and reason. Think about the way the child solves problems and plays with toys and compare this to other children of the same age.
Limbs (Use of Hands, Arms & Legs) Think about the child's ability to use his or her hands, arms, and legs in daily activities. Score left and right limbs separately. A score of 6 (Profound difficulty) means that the child has no use of a limb.	Intentional Communication (Understanding & Communicating with others) Two ratings are made, one for the child's ability to understand others and one for the child's ability to communicate with others. This rating includes attempts to communicate in ways other than talking (signs, gestures, picture boards). Think about the child's ability to understand and communicate with others and compare this to other children of the same age.	Tonicity (Muscle Tone) Think about the child's muscle tone. Normal means that the child's muscles are neither tight nor loose. If the child's muscle tone is not in the normal range, place an "X" in each box that indicates the degree of tightness or looseness or both. Two ratings should be made since, in some children, tightness or looseness can vary in different parts of the body or from one time to the next.
Integrity of Physical Health (Overall Health) Think about the child's general health. Normal means the usual health problems & illnesses typical for a child this age. If there is a health problem, ratings should be made indicating the degree to which health problems limit activities. Ongoing health problems may include seizures, diabetes, muscular dystrophy, cancer, etc.	Eyes (Vision) Think about the child's ability to see in everyday activities. Score both the left & right eye. A score of 6 (Profound loss) means that the child has no vision. Rate the child's vision without glasses. If the child uses glasses, indicate this on the back of the form.	Structural Status (Shape, Body Form & Structure) This rating reflects the form and structure of the child's body. Normal means that there are no differences associated with form, shape, or structure of the body parts. Differences in form include conditions like cleft palate or club foot; differences in structure include conditions like curved spine and arm or leg deformity. Ratings should indicate how much these differences interfere with how the child moves, plays, or looks.

The ABILITIES Index

Rune J. Simeonsson
Donald B. Bailey

Child's Name: _____
Date of Birth: ____/____/____
Child's Program: _____
Today's Date: ____/____/____

INSTRUCTIONS: In each column, place an X in the space that best describes the child. Please note that multiple Xs should be recorded under A (Audition), B (Behavior), L (Limbs), I (Intentional Communication), T (Tonicity), & E (Eyes).

	A		B		I	L		I	T	I	E	S
	Audition (Hearing)		Behavior & Social Skills		Intellectual Functioning	Limbs (Use of hands, arms, & legs)		Intentional Communication	Tonicity (Muscle Tone)	Integrity of Physical Health	Eyes (Vision)	Structural Status
	Left Ear	Right Ear	Social Skills	Inappropriate Behavior	Thinking & Reasoning	Left Hand / Arm	Right Hand / Arm / Leg	Understanding / relating with others	Degree of tightness / looseness	Overall Health	Left Eye	Right Eye
1	Normal		All behaviors typical & appropriate for age		Normal for age	Complete normal use		Normal for age verbal & non-verbal (excludes signs, gestures or symbol systems)	Normal	General good health	Normal	Normal
2	Suspected hearing loss		Suspected disability	Suspected inappropriate behaviors	Suspected disability	Suspected difficulty		Suspected disability	Suspected	Suspected health problems	Suspected vision loss	Suspected difference or interference
3	Mild hearing loss		Mild disability	Mildly inappropriate behaviors	Mild disability	Mild difficulty		Mild disability	Mild	Minor ongoing health problems	Mild vision loss	Mild difference or interference
4	Moderate hearing loss		Moderate disability	Moderately inappropriate behaviors	Moderate disability	Moderate difficulty		Moderate disability	Moderate	Ongoing but medically-controlled health problems	Moderate vision loss	Moderate difference or interference
5	Severe hearing loss		Severe disability	Severely inappropriate behaviors	Severe disability	Severe difficulty		Severe disability	Severe	Ongoing poorly-controlled health problems	Severe vision loss	Severe difference or interference
6	Profound hearing loss		Extreme disability	Extremely inappropriate behaviors	Profound disability	Profound difficulty		Profound disability	Totally tight	Extreme health problems, near total restriction of activities	Profound vision loss	Extreme difference or interference

Appendix D

Teacher/Assistant Teacher Demographic Form

Your Name: _____

1. What is your position?

- ☐ prekindergarten at-risk teacher
- ☐ early childhood special education teacher
- ☐ assistant teacher
- ☐ other (please describe): _____)

2. How long have you worked in your current position?

- ☐ Less than 2 years
- ☐ 2-5 years
- ☐ 6-10 years
- ☐ More than 10 years

3. In addition to your current position, how many years experience have you had in positions in which you worked with young children, birth-5? _____)

4. If you have a teaching certificate, please note which type:

- ☐ Type 04
- ☐ Elementary
- ☐ Early Childhood Special Education Approval
- ☐ Learning Behavior Specialist I certificate
- ☐ other (please specify): _____)

5. Please mark the highest level of education you have completed.

- ☐ High School or GED
- ☐ Some college
- ☐ 2-year college graduate (major area of study: _____)
- ☐ 4-year college graduate (major area of study: _____)
- ☐ Post-graduate degree (major area of study: _____)

6. Have you attended training in the Project Approach? Yes ☐ No ☐

If yes, how did you learn about the Project Approach?

☐ Learned about it in my college coursework

☐ Conference session

☐ 1-day workshop

☐ 2- or 3-day workshop

7. Which of the following best describes your race or ethnic group?

☐ Mexican, Mexican American

☐ Other Latino or Hispanic

☐ African American

☐ Caucasian

☐ Asian

☐ Pacific Islander

☐ American Indian

☐ other (please describe):_____)

8. Which of the following best describes your age?

☐ 15-19

☐ 45-49

☐ 20-24

☐ 50-54

☐ 25-29

☐ 55-59

☐ 30-34

☐ 60-64

☐ 35-39

☐ 65+

☐ 40-44

Thank You!

SLP Demographic Form

Your Name: _____

1. What is your position?

☐ Speech-Language Pathologist

☐ other (please describe): _____)

2. How long have you worked in your current position?

☐ Less than 2 years

☐ 2-5 years

☐ 6-10 years

☐ More than 10 years

3. In addition to your current position, how many years experience have you had in positions in which you worked with young children, birth-5? _____)

4.If you have a teaching certificate, please note which type:

☐ Type 04

☐ Elementary

☐ Early Childhood Special Education Approval

☐ Learning Behavior Specialist I certificate

☐ other (please specify): _____)

5. Please mark the highest level of education you have completed.

☐ 4-year college graduate (major area of study: _____)

☐ Post-graduate degree (major area of study: _____)

6. Have you attended training in the Project Approach? Yes ☐ No ☐

If yes, how did you learn about the Project Approach?

☐ Learned about it in my college coursework

☐ Conference session

- ☐ 1-day workshop
- ☐ 2- or 3-day workshop

7. Which of the following best describes your race or ethnic group?

- ☐ Mexican, Mexican American
- ☐ Other Latino or Hispanic
- ☐ African American
- ☐ Caucasian
- ☐ Asian
- ☐ Pacific Islander
- ☐ American Indian
- ☐ other (please describe):_____)

8. What is your age? _____)

Thank You!

Appendix E

Teacher/Assistant Teacher Consent Form

UNIVERSITY OF ILLINOIS

AT URBANA-CHAMPAIGN

College of Education
Dept. of Special Education
288 Education Building
1310 South Sixth Street
Champaign, IL 61820-6990



February, 2010

Dear Teacher,

You are invited to participate in a research project on the impact of the Project Approach on children's learning. Sallee Beneke and Professor Michaelene Ostrosky from the Department of Special Education at the University of Illinois will conduct this project.

In this project, you will be interviewed prior to the Project Approach training and again 6-8 weeks following the training. Each interview will take approximately 60 minutes. In these interviews, which will be audio taped with your permission, you will be asked to discuss the impact of the Project Approach on children's learning and behavior. The audio tapes and all other information obtained during this research project will be kept secure. The audio tapes will be kept in a locked file cabinet and will be accessible only to project personnel. The audio tapes will be transcribed and coded to remove individuals' names and will be erased after the project is completed.

You will also be asked to complete a checklist about your implementation of the Project Approach. This checklist will take around 15 minutes to complete, and you will be asked to complete it on a weekly basis for 6-8 weeks following the training on the approach.

We plan to videotape observations of children in your classroom. You may be in the videotape as you interact with children. The videotapes and all other information that is obtained during this research project will be kept strictly secure. The videotapes will be coded to erase all names.

We do not anticipate any risk from this study greater than normal life, and we anticipate that the results will increase our understanding of how to support children's learning and development. The results of this study may be used for a scholarly report, a journal article and a conference presentation. In any publication or public presentation pseudonyms will be substituted for any identifying information.

Your participation in this project is completely voluntary, and you are free to withdraw at any time and for any reason without penalty. Your choice to participate or not will not impact your job or status at school. You are also free to refuse to answer any questions you

do not wish to answer. You will receive a copy of the research results after this project is completed.

If you have any questions about this research, please contact Ms. Beneke by telephone at 815-872-6501 or by email at sbeneke2@illinois.edu or Professor Ostrosky at 217-333-0260 or ostrosky@illinois.edu.

Sincerely,

Sallee Beneke, Doctoral Candidate
815-872-6501
sbeneke2@illinois.edu

Michaelene Ostrosky, Professor
217-333-0260
ostrosky@illinois.edu

I have read and understand the information and voluntarily agree to participate in the research project described above. I have been given a copy of this consent form.

Signature

Date

I agree to have the interview audio taped for the purposes of transcription.

Signature

Date

Please note that video clips may be used for educational purposes and that teachers will have the opportunity to view and approve any clips that may be used.

I do/do not (circle one) give permission to be video taped and possibly included in a video clip that would be used for educational purposes. I understand that I may ask to view the clip before giving final permission for use for educational purposes.

Signature

Date

If you have any questions about your rights as a research participant please contact Anne Robertson, Bureau of Educational Research, 217-333-3023, or arobertsn@illinois.edu or the Institutional Review Board at 217-333-2670 (you may call collect) or irb@illinois.edu

Appendix F

Project Approach Implementation Checklist

Phase 1	
Did the teacher:	Record Yes, No, NA
1. Select a topic based on either district curriculum, children's interest, or a catalytic event [e.g., topics of conversations among children, unexpected event such as a new baby or a neighborhood construction project]?	
2. Select a topic that meets the criteria for topic selection presented in the Project Approach training?	
3. Generate a teacher topic web with co-teacher(s)?	
4. Zoom in on an aspect of the topic to use as a starting point [e.g., an aspect of the topic (a) that is most likely to interest the children and (b) lend itself to first-hand investigation]? (a) ____ (b) ____	
5. Brainstorm a list of open-ended materials to begin collecting (e.g., papers, boxes, cardboard, tubes, lids)?	
6. Brainstorm a list of child reference materials to begin collecting [e.g., (a) <i>See Inside</i> books, (b) adult manuals with diagrams and photos, (c) magazines, brochures]? (a) ____ (b) ____ (c) ____	
7. Begin to collect (a) reference books and (b) materials that children may use to gather information? (a) ____ (b) ____	
8. Brainstorm a list of vocabulary words and/or terms children might learn as a result of participating in the project [e.g., (a) words for topic-related tools, (b) processes, (c) objects, (d) materials, jobs]? (a) ____ (b) ____ (c) ____	(d)

9. Identify an area of wall space at the large group meeting area where ongoing documentation of the project will be displayed on a <i>Project History Board</i> [e.g., low bulletin board or wall area that children can view and reference during class meetings]?	
10. Plan and implement an opening event to provoke discussion of the topic [e.g., (a) simple story, (b) topic-related book, (c) presentation of topic-related object, (d) photograph, poster]?	
(a)____ (b)____ (c)____ (d)____	
11. Begin recording children's knowledge of the topic in web format on large paper that is then posted on wall?	
12. Explain the Project Approach to the parents [e.g., (a) send home a written explanation, (b) hold an informational meeting, (c) email informational links]?	
(a)____ (b)____ (c)____	
13. Notify parents that the project is beginning and suggest ways they can be helpful [e.g., contribute (a) materials, (b) props, (c) expertise]?	
(a)____ (b)____ (c)____	
14. Provide opportunities for children to reflect on and represent their prior knowledge or experience with the topic [e.g., (a) drawing, (b) painting, (c) sculpting, (d) pretending, (e) dictating]?	
(a)____ (b)____ (c)____ (d)____ (e)____	
15. Ask children (a) what they want to find out about the topic and (b) record as list of questions?	
(a)____ (b)____	
16. Begin to generate a teacher list of (a) possible guest experts and (b) locations for field work?	
(a)____ (b)____	
17. Hold (a) large- and/or (b) small-group discussions to record children's questions about the topic?	
(a)____ (b)____	

18. Select one or two questions and ask children to make predictions about how they can get the answers?	
19. Display (a) web, (b) children's questions, and (c) samples of Phase I work on Project History Board [e.g., artwork, photographs, emergent writing]? (a)____ (b)____ (c)____	

Phase 2	Record Yes, No, NA
Did the teacher:	
20. Continue to inform parents about the progress of the project on a regular basis [e.g., (a) newsletter stories, (b) notes home, (c) phone calls]? (a)____ (b)____ (c)____	
21. Provide materials that could help children better understand the topic through first-hand exploration [e.g., authentic objects related to the topic such as (a) tools, (b) accessories, (c) components, (d) samples]? (a)____ (b)____ (c)____ (d)____	
22. Provide topic-related materials that children could help better understand the topic through experimentation [e.g., (a) mixing, touching, (b) cutting, (c) connecting, (d) mashing, (e) cooking, (f) combining, (g) taking apart]? (a)____ (b)____ (c)____ (d)____ (e)____ (f)____ (g)____	
23. Provide topic-related props that could help children better understand the topic through dramatic play in the (a) housekeeping and (b) block areas (e.g., hats, uniforms, equipment, tools, accessories, signs, components, photographs?) (a)____ (b)____	
24. Provide open-ended art materials that children could use to represent their growing understanding of the topic [e.g., (a) a variety of papers, (b) cardboard, (c) tape, (d) staplers, (e) cardboard tubes, (f) cardboard boxes, (g) clay]? (a)____ (b)____ (c)____ (d)____ (e)____ (f)____ (g)____	
25. Ask children to draw a plan for constructions they intend to build (a) individually or (b) as part of a small group? (a)____ (b)____	

26. Teach the children to use clipboards and pens to record their observations?	
27. Teach the children to use drawing as a way of recording information?	
28. Read children's books that provide factual information and introduce new vocabulary [e.g., (a) See-inside books, (b) nonfiction books, (c) stories based on factual information)? (a)____ (b)____ (c)____	
29. Ask open-ended questions to provoke deeper thinking about the topic [e.g., what makes you think so?, how could you do that?, what else could we try?, what do you think will happen?]?	
30. Encourage children to take advantage of the help or expertise of their peers [e.g., ask a friend who's good at hammering to help you connect the boards, find someone to hold that tape so you can cut it]?	
31. Prepare illustrated teacher- and/or child-made word cards (a) for the class word wall and (b) for the writing area [e.g., children can suggest new topic related words, child or teacher copy the word onto the card, and child illustrates it]. (a)____ (b)____	
32. Regularly invite children to suggest additions to the Project History Board [e.g., (a) add new drawings, (b) graphs, (c) samples, (d) anecdotal notes, (e) quotes, (f) photos, (g) artifacts]? (a)____ (b)____ (c)____ (d)____ (e)____ (f)____ (g)____	
33. Provide regular opportunities for children to review and add new knowledge of the topic to the class topic web?	
34. Provide regular opportunities to (a)review the questions, (b) record any findings, and (c) add additional questions? (a)____ (b)____ (c)____	

35. Provide opportunities for fieldwork [e.g., focused observations of the topic, whether (a) on- or (b) off-site]? (a)____ (b)____	
36. Prepare children to ask questions during field work [e.g., (a) take dictation of each child's question and record it on an index card, (b) provide children with opportunities to practice asking questions]? (a)____ (b)____	
37. Involve children in a variety of methods for viewing their findings [e.g., (a) charting, (b) diagramming, (c) graphing]? (a)____ (b)____ (c)____	
38. Ask children what the group would like to make to show what they have learned about the topic [e.g.,(a) large group construction, (b) playscape, (c) mural]? (a)____ (b)____ (c)____	
39. Ask children to dictate plans for their group representation [e.g., (a) what exactly do they plan to make, (b) how will they make it, (c) what materials do they think they will need, (d) who will make what]? (a)____ (b)____ (c)____ (d)____	
40. (a) Revisit and (b) invite the children to update their plans for the group representation regularly (e.g., 2 or 3 times per week)? (a)____ (b)____	
41. Provide time and space for production of the group representation [e.g., (a) at least an hour of uninterrupted choice time, (b) a designated project production area, (c) learning centers set up for small group work on components of the representation]? (a)____ (b)____ (c)____	
42. Provide a variety of open-ended materials that the children can choose from to use in producing the group representation?	

43. Teach children new skills or strategies that will help them accomplish project-related tasks [e.g., (a) writing, (b) tracing, (c) taping, (d) measuring, (e) drilling, (f) nailing, (g) sewing, (h) gluing, (i) folding]? (a)____ (b)____ (c)____ (d)____ (e)____ (f)____ (g)____ (h)____ (i)____	
44. Scaffold when an aspect of producing the representation is beyond children's ability [e.g., sawing thick wood, cutting wire, sewing fabric?]	

Phase 3	Record Yes, No, NA
Did the teacher:	
45. Ask children how they would like to celebrate their accomplishment [e.g., open house for parents, inviting another class over, displaying their group representation in a public place]?	
46. Invite children to help make specific plans for the culminating event [e.g., (a) deciding who will be invited, (b) deciding what will happen at the event, (c) making displays, (d) invitations, (e) posters]. (a)____ (b)____ (c)____ (d)____ (e)____	
47. Support the children's efforts to implement the culminating event [e.g., (a) mail invitations, (b) shop for refreshments, (c) communicate with administration]? (a)____ (b)____ (c)____	
48. Prepare a final documentation display summarizing important events in the project [e.g., (a) how did the project start?, (b) what were the children's questions?, (c) what were the salient events?, (d) what were the challenges?, (e) what children especially benefitted from participation in the project?, (f) how did the class benefit from participation in the project?, (g) what standards were met?]? (a)____ (b)____ (c)____ (d)____ (e)____ (f)____ (g)____	
49. Summarize and communicate information about the project with parents and administrators [e.g., (a) hallway documentation display, (b) newsletter, note to parents]. (a)____ (b)____	

Appendix G

Parent/Child Consent Form

College of Education
Dept. of Special Education
288 Education Building
1310 South Sixth Street
Champaign, IL 61820-6990



January, 2010

Dear Parent:

My name is Sallee Beneke and I am a graduate student from the Department of Special Education at the University of Illinois. My advisor, Dr. Michaelene Ostrosky and I would like to include your child, along with his or her classmates, in a research project on the Project Approach. We do not anticipate any risk greater than normal life and your child may benefit from this research by participating in a class project. Your child's teacher is planning to implement the Project Approach as part of her curriculum, and your child will be able to participate in project-related activities during daily center time. Three center time sessions will be videotaped before your child's teacher begins to implement the Project Approach. Four additional center time sessions will be videotaped after the Project Approach is implemented. These videotapes will be used to assess the benefits of the Project Approach.

Your child's participation in this project is completely voluntary. In addition to your permission, each day that taping takes place, your child will also be asked if he or she would like to take part in this project. Only those children who want to participate will do so, and any child may stop participating at any time. The choice to participate or not will not impact your child's grades or status at school. The videotapes and all other information that is obtained during this research project will be kept strictly secure and will not become a part of your child's school record. The videotapes will be kept in a locked file cabinet and will be accessible only to project personnel. The videotapes will be transcribed and coded to remove children's names.

The results of this study may be used for a scholarly report, journal article and conference presentation. We may also want to develop a short clip from the video recordings that could be used for future teacher education. Pseudonyms will be substituted for the names of children who may be represented in the video clip.

■ In the space at the bottom of this letter, please indicate whether you do or do not want your child to participate in this project. Ask your child to bring one copy of this completed form to his or her teacher by January 18. The second copy is to keep for your records. If you have any questions about this research project, please feel free to contact us either by mail, e-mail, or telephone.

Sincerely,

Sallee Beneke, Doctoral Candidate
815-872-6501
sbeneke2@illinois.edu

Michaelene Ostrosky, Professor
217-333-0260
ostrosky@illinois.edu

No names will be included in video clips used for educational purposes, and parents will have the opportunity to view and provide final approval for any video clips to be used for educational purposes.

I do/do not (circle one) give permission for my child _____
(name of child) to participate in the research project described above.

_____ Date _____ Parent's signature

I do/do not (circle one) give permission for my child _____ to be video
taped and possibly included in a video clip that would be used for educational
purposes. I understand that I may ask to view the clip before giving final permission
for use for educational purposes.

_____ Date _____ Parent's signature

If you have any questions about your rights as a research participant please contact
Anne Robertson, Bureau of Educational Research, 217-333-3023, or
arobrtsn@uiuc.edu or the Institutional Review Board at 217-333-2670 or irb@uiuc.edu

Appendix H

Description of the Three Phases of the Project Approach*

Phase 1

The first phase of a project that includes coming to agreement on the general topic to be investigated; summarizing, representing, or recording what the children know or think about the topic; revisiting their past experiences related to the topic; formulating the questions to be answered; and making predictions of what the answers might be and where the necessary information can be obtained.

Phase 2

The period when the children are collecting the data they need to answer the questions developed in Phase 1. It includes site visits, interviewing relevant experts, conducting surveys, distributing questionnaires, and other ways of gathering and representing pertinent data. A variety of media are often used by children to represent and report their growing knowledge and understandings of the topic through art, model making, music, play, and verbal expression.

Phase 3

The final phase of a project, during which the children and teachers examine and reflect upon what they have found out from their investigation, and plan and conduct reports of the project for others to hear about and examine. A culminating event is often the conclusion of Phase 3.

*Source: Illinois Projects in Practice, 2010

Appendix I

Training Agenda

Introduction to the Project Approach

Early Learning Center

January 29, 2009

- I. Introduction and Overview of the Project Approach
 - a. Definition of a project
 - b. Description of 3 phases
 - c. Child-initiated
- II. Project Approach & Early Learning Standards
 - a. Powerpoint presentation of Pizza Project
 - b. Helping children ask questions
 - c. Participants identify Illinois Early Learning Standards that were met during Pizza Project
 - d. Discussion
- III. Issues in Topic Selection
 - a. Criteria for topic selection
 - b. Introduction of variety of ways that project can begin:
 - c. Methods for introducing topics
 - d. Discussion
- IV. Projects and Social Development: A Project on Cars
 - a. Powerpoint presentation of Car Project
 - b. Review of key events
 - c. Identify strategies for supporting social interaction
 - d. Discussion

V. Begin simulation

- a. Participants form groups of 4 or 5
- b. Each group selects topic for simulation
- c. Group develops web about topic
- d. Individuals revisit past experience with topic (drawing, poem, song) and share with others.
- e. Group generates list of research questions
- f. Groups share lists with all and ask for suggestions

VI. Overview of documenting children's learning

- a. Powerpoint of types of documentation and 3 windows on learning
- b. Groups collect data
- c. Groups prepare documentation
- d. Groups share experiences

VII. Closing remarks

Appendix J

Evaluation of Training

Early Learning Center
Educating for Success

Administrator's Name: _____ Date: January 29, 2010

Most Useful Information	Personal Accomplishment	How to Know if Project Work Has Impacted Students
A better understanding of Project Approach (8) Loved the hands on – Suggest step by step on doing project approach (5) Team work – growth in child's development – Learning standards are covered (3) Pulling all items together for a project (6) Don't over-do it, keep it simple (2) Different ideas and ways to create the project (5) Not all students will be engaged in project throughout Importance of taking another prospective	Working together as a team (9) Hands on experience (2) The child is more important that the theme Learning different ways of using the approach (3) Understanding what Project Approach is (3) Got more interested – not scared of it (2) Learned to organize better while doing project approach Learned to come out of comfort zone and try something new (2)	When students are interested and getting involved (6) Students getting excited about their work (2) Students' interaction (3) Not sure if the kids I work with will be able to use this More investigative work – students asking more questions (4) Increased language (5) If students keep talking about it and want to do more (4)

Appendix K

Sample Meeting Notes

Notes from Meeting, 3-10-10

- Teachers are really busy with report cards and meetings, so it is helpful for Sallee to bring in project-related items (i.e., gloves, hats, aprons).
- Construction- Both Sherri and Kristie's classrooms have gotten to a pretty advanced level of implementation. They have done field work and children are planning to make a group construction.
- Ongoing nature of project work may be one of the reasons that children with disabilities become engaged—it lasts long enough for them to understand how they can represent roles and information in play.
- Children in both classrooms have discussed building a bus or a walmart truck.
- Teachers wish children would want to build the bakery, but there doesn't seem to be enough interest. However, addition of gloves, hairnet, and aprons may help.
- Teachers used Promethium board to show pictures from the trip.
- Looking at pictures from field trip may give kids ideas about what they want to build.
- Color pictures can be printed in both wings.
- Lesson planning—
 - Uncomfortable for Kristie to feel like she's going day to day.
 - Suggestions were:
 - (1) Lisa plans for two days at a time. For example, she plans for Monday and Tuesday, and then sits down during her planning session on Tuesday and plans for the next 2 to 3 days. She keeps it open on her desktop. In her center-time block, she may only do 2 days.
 - (2) Could also fill in project plans in pencil, then go in and make adjustments based on what happens in the course of the project.
 - (3) Linda has a lesson plan form for project work that she has never understood how to use, but she will share.
 - (4) May be posting new lesson plans on PIP website next week
- Timing—no need to panic if you haven't gotten materials for construction immediately. Project has to evolve at a comfortable pace. Kids can spend time talking about and drawing their plans for the truck/bus.
- Plans—Sherri's class drew plans for what they want the truck to look like. Sherri had everybody do it at once. Kristie and Jennifer are going to try having the children come over to the table to do a plan during choice time. They will tell children that it's their job to stop and work on their plan sometime during the next two days.
- Participation—sometimes everyone will say they want to do something, but then when it's time for choice time, they just want to go play.
 - Lisa says she gives them 15 minutes to play and then asks if anyone wants to come work on the letter. She gets a big piece of paper and

- lays it out in the middle of the classroom and says, “Who wants to come help me with this?”
- Dilemma is getting children to participate without pulling them out of productive play.
 - Some children with special needs would never make it a choice, so the teachers agree that they have to call them over. Once they have gotten their feet wet with the new experiences, they may choose them independently next time.
 - Example: Lincoln participated in writing the letter yesterday, and he also participated in
 - Listserv- Some find the number of emails disconcerting. There is a feature on the listserv page of the *Projects in Practice* website where you can elect to receive all posts for a each day in one email.
 - Grocery Store Project in *Hundred Languages of Children* book
 - Drawings are so good because: (1) some children are kindergarten-age, (2) children in Reggio begin using art media at an early age, (3) children in Reggio have an art teacher in each center, (4) they probably printed the pictures by their most capable children.
 - The more our children engage in representational drawing, the better they will get.
 - The more we acknowledge and “lift up” each child’s best efforts at doing representational drawing (and dramatic play), the more likely they are to work harder at it and take pride in their work. (Example was Lincoln’s drawing of the scissor-lift.)
 - Documentation – Sallee doesn’t want to overwhelm teachers, but wants to begin the conversation about documentation.
 - Make it a goal to gradually begin documenting children’s work. Including a description to go with the display of each child’s work. Including a Project Summary in the upper left-hand corner of the display to explain the context of the work. (Sallee will bring *Windows on Learning* books to help with this.)
 - Need to establish a Project History area on a bulletin board that the kids can see and refer to during circle time.
 - Karla webbed on the Promethian board. She saved it and she and the kids have been adding to it over time. She printed the web via the board.
 - Include webs, lists of children’s questions, children’s predictions, survey work, etc. on the Project History board.
 - When too much documentation starts to accumulate, you can move the older pieces out to the hall. Do what you can, in light of your other responsibilities.
 - Documentation sends the message to the children that school is about learning, and look, we are proud of your accomplishments!
 - Sherri’s afternoon class is not doing the project, so she needs to have a separate space for the AM board.
Sallee will stay after school this week to help teachers get documentation boards started.

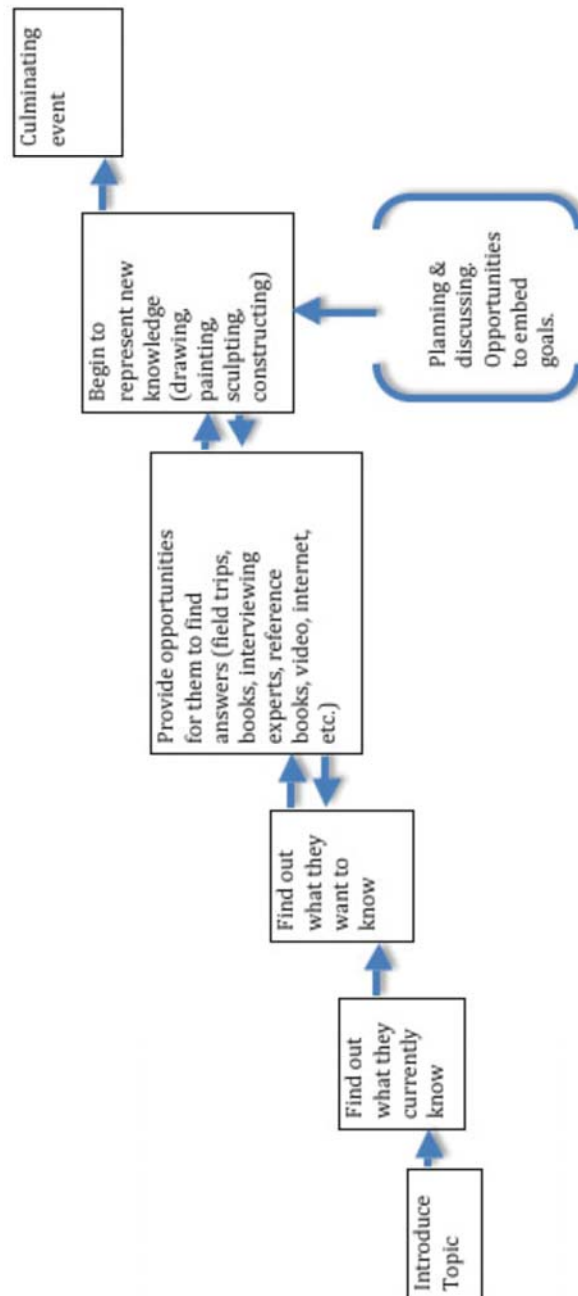
- o Reviewed examples of documentation from Reggio Emilia.
- o Discussed stand-up paper figures. Example: They made a little stand-up town. Kids become intrigued. They translated paper figures into clay figures.

Sallee brought old transparencies for kids to use.

- o Everybody agrees that the field trips to Walmart went well.
- o Jennifer will be leaving. She is being assigned to Wee Folk.
- o Karla says she struggles with documenting conversations.
 - o Sallee showed form for recording conversations (3 columns).
 - o Karla says it's hard to write fast enough. She tries to remember, but she believes she's missing so much.
 - Wants to get their ideas
 - How many words they're using
 - Are the words appropriate?
 - o Lisa says that sometimes it's helpful when there is a photograph—helps her remember what was said
 - o Sallee will bring Karla an extra tape recorder she has.
 - o The more the kids engage in representation, the better they will get. The more the teachers engage in documentation, the more second-nature it will become.
 - o Keep in mind that your first time doing project work is the most difficult, because the process is all new.
- o Webs
 - o No need to write everything they say. Just write a few words and include their name. (unless there are only a few kids and you have a huge piece of paper.) Dictating to web helps kids see meaningful use of writing print. They can remember the location of what they said by the placement on the paper. Too much writing might make the page too visually confusing.
 - o It's good for kids to see adults edit their own work. For example, you might say, "Oh that came out really messy. I think I'll recopy the web."
- o Surveys
 - o Kristie explained how she has introduced blank surveys into the writing area, and how the children are using them.

Appendix L

Graphic Organizer for Teachers



Appendix M

Sample Interview Protocols

AM Teacher/Assistant Teacher Interview (pre-intervention)

As you know, the teachers at your school are going to be trained in the Project Approach. I have some questions to ask you that will help me have a more accurate picture of your understanding of the approach and its potential impact on children. I am going to ask you questions about your class in general, children with special needs, and the four children who are the target of the study.

1. What do you know about the Project Approach?
 - a. Tell me what you know.
 - b. How do you feel about learning to implement the Project Approach?
2. Tell me about the “typical” children in your class. How do you anticipate the children might respond to participating in projects?
3. Do you think there will be any differences in response to the Project Approach for children with special needs?
 - a. If so, how?
 - b. Why do you think they might respond that way?
 - c. What if they don’t respond?
 - d. What will you do to get them involved in projects?
4. Do you think there will be any differences in response to the Project Approach for Jamari and Emily? What about for John and Dayana?
 - a. If so, how?
 - b. Why do you think they might respond that way?
 - c. What if they don’t respond?
 - d. What will you do to get them involved in projects?

5. Do you think using the Project Approach will affect children's engagement? If so, how?
 - a. A lot? Somewhat? Not at all? Don't know?
 - b. Please describe.
 - c. What about your students with special needs?
 - d. What about Jamari and Emily?
 - e. What about John and Dayana?

6. To what extent do you think using the Project Approach will affect children's challenging behavior? If so, how?
 - a. Please describe.
 - b. A lot? Somewhat? Not at all? Don't know?
 - c. What about your students with special needs?
 - d. What about Jamari and Emily?
 - e. What about John and Dayana?

7. To what extent do you think using the Project Approach will affect children's relationships with peers and social interactions? If so, how?
 - a. Please describe.
 - b. A lot? Somewhat? Not at all? Don't know?
 - c. What about your students with special needs?
 - d. What about Jamari and Emily?
 - e. What about John and Dayana?

8. Do you think using the Project Approach will affect children's vocabulary development? If so, how?
 - a. Please describe.
 - b. What about your students with special needs?
 - c. What about Jamari and Emily?
 - d. What about John and Dayana?

9. Do you think using the Project Approach will affect children's communication skills, specifically:
- a. How frequently they start conversations with other children?
 - i. If so, how?
 - ii. Please describe?
 - b. How frequently they respond verbally to others?
 - i. If so, how?
 - ii. Please describe?
 - c. The length of their conversations with other children? (e.g, turn-taking)
 - i. If so, how?
 - ii. Please describe?
10. Is there anything else you'd like to share about your perceptions of using the Project Approach?

AM Speech Therapist Interview (mid-intervention)

Now that you have had an opportunity to work with children and teachers who have had a chance to implement the Project Approach for 4 weeks, I have some questions to ask you that will help me have a more accurate picture of your understanding of the approach and its potential impact on children.

1. How do you feel about learning the Project Approach?
2. Do you think the classroom implementation of the Project Approach has affected your work with children?
 - a. If so, how?
 - b. Why?
3. In your visits to the classrooms have you observed how the typical child (by this I mean any child without an IEP) in the class has responded to participating in projects?
 - a. How has the typical child (by this I mean any child without an IEP) in the class responded?
 - b. How has John responded?
 - c. How has Dayana responded?
4. What differences, if any, have you observed in the responses of children with special needs to the Project Approach for children? If so, how?
 - a. Why do you think they responded that way?
 - b. What did you do when they didn't respond?
 - c. What did you do to get them involved in projects?
5. What differences in response, if any, have you observed in Jamari? What difference, if any, have you observed in Emily?
 - a. Why do you think they responded that way?
 - b. What did you do when they didn't respond?
 - c. What did you do to get them involved in projects?

6. How has the Project Approach impacted children's engagement, if at all?
 - a. Please describe.
 - b. What about John and Dayana?
 - c. What about the children with special needs (i.e., Jamari and Emily)
7. How has the Project Approach impacted children's challenging behavior, if at all?
 - a. Please describe.
 - b. What about the children who are at-risk (i.e., John and Dayana)?
 - c. What about the children with special needs (i.e., Emily and Jamari)
8. How has the Project Approach impacted children's social interactions, if at all?
 - a. Please describe.
 - b. What about the children who are at-risk (i.e., John and Dayana)?
 - c. What about the children with special needs (i.e., Jamari and Emily)?
9. How has the Project Approach impacted children's vocabulary development, if at all?
 - a. Please describe.
 - b. What about the children who are at-risk (i.e., John and Dayana)?
 - c. What about the children with special needs (i.e., Jamari and Emily)?
10. How have the supports that were offered (the project approach training, mentoring/coaching, the implementation checklist, support from the other teacher who is learning the project approach, support from other teachers in your building with expertise) impacted your ability to implement the Project Approach?
 - a. Note- if they don't say anything about any of the supports, make sure you ask about them. "Okay, you talked about the implementation guide, but you didn't say anything about the mentoring/coaching. Is there anything you want to add about that?"

11. As you look forward to the rest of the project, is there anything in particular you're excited about or looking forward to?
12. As you look forward to the rest of the project, is there anything in particular you're concerned about, worried about, as you get into the next few weeks.
13. Is there anything else you'd like to share about your perceptions of using the Project Approach?

PM Assistant Interview (post-implementation)

Now that you have had a chance to implementing the Project Approach for 4 weeks, I have some questions to ask you that will help me have a more accurate picture of your understanding of the approach and its potential impact on children.

1. How do you feel about learning to implement the Project Approach?
2. How has the typical child (by this I mean any child without an IEP) in your class responded to participating in projects?
 - a. How has Jake responded?
 - b. How has Cassandra responded?
 - i. Last time you mentioned that Cassandra had not typically played in housekeeping,, but she had begun to play there? Has this type of play continued during the last part of the project?
 1. Why? Why not?
 2. Can you provide a concrete example?
 - ii. Has Cassandra responded to the project in other ways?
 1. Why? Why not?
 2. Can you provide a concrete example?
3. What differences, if any, have you observed in the responses of children with special needs to the Project Approach for children? If so, how?
 - a. Why do you think they responded that way?
 - b. What did you do when they didn't respond?
 - c. What did you do to get them involved in projects?

4. What differences in response, if any, have you observed in Lincoln?
 - a. Last time you mentioned that Lincoln was spending most of his time at the carpet area. What happened during the rest of the project? Did he continue to play only at the carpet area?
 - i. Why? Why not?
 - ii. Can you provide a concrete example?
 - b. Have you noticed any other changes in Lincoln's behavior?
 - i. Why? Why not?
 - ii. Can you provide a concrete example?
 - c. What did you do to get him involved in projects?
5. What difference, if any, have you observed in Ethan?
 - a. Last time you mentioned that Ethan was beginning to play with other kids in the class grocery store. Has that continued? Have there been any changes in his play?
 - i. Why? Why not?
 - ii. Can you provide a concrete example?
 - b. Are there other differences you have observed in Logan since I was here last?
 - i. Why? Why not?
 - ii. Can you provide a concrete example?
 - c. What did you do when he didn't respond?
 - d. What did you do to get him involved in projects?

6. How has the Project Approach impacted children's engagement, if at all?
 - a. Last time you mentioned that children were really interested in the project on the grocery store. How has their engagement with the project been since last talked?
 - i. Why? Why not?
 - ii. Can you provide a concrete example or two?
 - b. What about Jake?
 - c. What about Cassandra?
 - d. What about Lincoln ?
 - e. What about Ethan?
 - f. Note: Ask for reasoning and concrete examples for statements about children's engagement.

7. How has the Project Approach impacted children's challenging behavior, if at all?
 - a. Please describe.
 - b. What about Jake?
 - c. What about Charisma?
 - d. What about Lincoln?
 - e. What about Ethan?
 - f. Note: Ask for reasoning and concrete examples for statements about children's engagement.

8. How has the Project Approach impacted children's social interactions, if at all?
 - a. Please describe.
 - b. What about Jake
 - c. What about Cassandra?
 - d. What about Lincoln?
 - e. What about Ethan?
 - i. Last time you mentioned that Ethan's social interactions had changed since the beginning of the project. You said he was playing with the other kids. Has the project continued to impact Ethan's social interactions? If so, how?
 - ii. Can you provide a concrete example or two?
 - f. Note: Ask for reasoning and concrete examples for statements about children's engagement.

9. How has the Project Approach impacted children's vocabulary development, if at all?
 - a. Last time you mentioned that the children were beginning to use more new vocabulary related to the project, such as cashier. What has happened since then?
 - i. Why? Why not?
 - ii. Can you give some examples?
 - b. What about Jake?
 - c. What about Cassandra?
 - d. What about Lincoln?
 - e. What about Ethan?
 - f. Note: Ask for reasoning and concrete examples for statements about children's engagement.

10. How have the supports that were offered (the project approach training, mentoring/coaching, the implementation checklist, support from the other teacher who is learning the project approach, support from other teachers in your building with expertise) impacted your ability to implement the Project Approach?
- a. Last time you said you wanted to become more familiar with the *Implementation Checklist*. Were you able to do this? Was it helpful?
 - i. Why? Why not?
 - ii. Can you provide a concrete example?
 - b. Note- if they don't say anything about any of the supports, make sure you ask about them. "Okay, you talked about the implementation guide, but you didn't say anything about the mentoring/coaching. Is there anything you want to add about that?"
11. As you look back on the end of the project, was there anything in particular you found exciting?
- a. Last time we talked, you were looking forward to the children's construction of the Wal-mart truck. How did that go?
 - i. Why? Why not?
 - ii. Can you give concrete examples?
12. As you look back on the end of the project, was there anything in particular you found frustrating?
13. Is there anything else you'd like to share about your perceptions of using the Project Approach?

Appendix N

Sample Schedule of Classroom Observations

Table N1

Order of Observation – AM Class

Intervention status	Date	Order of observations
1-pre	1/13	E, D, Jo, Ja
2-pre	1/14	Ja, E, D, Jo
3-pre	1/19	Jo, JA, E, D
4-pre	1/22	D, Jo, Ja, E
5-pre	1/25	E, D, Jo, Ja
6-pre	1/28	Ja, E, D, Jo
1-intra	2/1	Jo, Ja, E, D
2-intra	2/4	D, Jo, Ja, E
3-intra	2/8	E, D, Jo, Ja
4-intra	2/11	Ja, E, D, Jo
5-intra	2/15	Jo, Ja, E, D
6-intra	2/18	D, Jo, Ja, E
7-intra	2/22	E, D, Jo, Ja
8-intra	2/25*	Ja, E, D, Jo
9-intra	3/1	Jo, Ja, E, D
10-intra	3/4	D, Jo, Ja, E
11-intra	3/8	E, D, Jo, Ja
12-intra	3/15	Ja, E, D, Jo
13-intra	3/18	Jo, Ja, E, D
14-intra	3/22	D, Jo, Ja, E

Table N2

Order of Observations – PM Class

Intervention status	Date	Order of observations
1-pre	1/13	L, E, Ca, Ja
2-pre	1/14	Ja, L, E, Ca
3-pre	1/19	Ca, Ja, L, E
4-pre	1/21	E, Ca, Ja, L
5-pre	1/25	L, E, Ca, Ja
6-pre	1/28	Ja, L, E, Ca
1-intra	2/1	Ca, Ja, L, E
2-intra	2/4	E, Ca, Ja, L
3-intra	2/8	L, E, Ca, Ja
4-intra	2/11	Ja, L, E, Ca
5-intra	2/15	Ca, Ja, L, E
6-intra	2/18	E, Ca, Ja, L
7-intra	2/22	L, E, Ca, Ja
8-intra	2/25*	Ja, L, E, Ca
9-intra	3/1	Ca, Ja, L, E
10-intra	3/4	E, Ca, Ja, L
11-intra	3/8	L, E, Ca, Ja
12-intra	3/15	Ja, L, E, Ca
13-intra	3/18	Ca, Ja, L, E
14-intra	3/22	E, Ca, Ja, L

Appendix O

Dates and Number of Minutes Available for Each Observation Date for Each Child

Table O1

Dates and Number of Minutes Available from Each Observation Date for Each Child

Minutes observed during choice time									
Week	Date	Emily (IEP)	Ethan (IEP)	Jamari (IEP)	Lincoln (IEP)	Cassandra	Dayana	Jake	John
1	1-13	0	0	0	9	0	0	9	0
1	1-14	9	9	9	9	9	6	9	0
2	1-19	6	0	9	0	9	9	9	9
2	1-22	0	9	9	9	9	9	9	9
3	1-25	0	0	9	0	0	9	0	6
3	1-28	9	0	9	9	9	0	9	9
4	2-3	0	9	9	9	0	9	9	9
4	2-4	9	9	9	9	0	0	9	9
5	2-11	9	9	0	9	0	9	9	0
6	2-18	9	9	9	9	9	0	0	9
6	2-19	9	0	9	9	9	9	9	9
7	2-24	6	9	9	6	0	9	9	9
7	2-26	0	9 ^a	0	9	9	0	0	9

(continued)

Table O1 (continued)

Week	Date	Minutes observed during choice time							
		Emily (IEP)	Ethan (IEP)	Jamari (IEP)	Lincoln (IEP)	Cassandra	Dayana	Jake	John
8	3-2	6	9	9	0	9	9 ^b	6	9
8	3-4	9	9	9	6	9	0	6	0
9	3-9	9	0	0	0	0	9	0	9
9	3-10	9	9	9	9	9	6	9	9
10	3-15	9	9	9	9	0	9	9	9
10	3-18	9	9	9	9	9	0	9	0
11	3-22	0	0	9	9	9	0	9	9
11	3-23	0	9	0	0	6	9	9 ^c	9
11	3-24	9	0	0	9	9	0	9 ^d	0
12	3-29	9	9	9	9	0	6	9	6
13	4-8	9	9	9	9	9	9	9	6
13	4-9	0	0	0	0	0	0	0	0
14	4-14	9	9	9	9	0	0	9	0
14	4-15	9	9	6	9	9	0	9	0
	Total Minutes	162	153	177	183	141	117	192	153

^aActual time of clip was 8 minutes and 46 seconds. More than 1 minute and 30 seconds of the third interval was coded as consistently coded as representing a particular play level, so clip was accepted as representing 9 minutes.

(continued)

Table 01 (continued)

^b Actual length of clip was 7 minutes and 41 seconds. More than 1 minute and 30 seconds of the third interval was coded as consistently representing a particular play level, so the clip was accepted as representing 9 minutes.

^c Actual length of clip was 8 minutes and 29 seconds. More than 1 minute and 30 seconds of the third interval was coded as consistently representing a particular play level, so the clip was accepted as representing 9 minutes.

^d Actual length of clip was 7 minutes and 33 seconds. More than 1 minute and 30 seconds of the third interval was coded as consistently representing a particular play level, so the clip was accepted as representing 9 minutes

Appendix P

Data Analysis Table

Table P1. Data Analysis Table

Research Question	Data Source	Analyses
1) To what extent do teachers and SLPs perceive the Project Approach as supporting the development of children with and without IEPs?	Interview Field notes	Content analysis
2) To what extent does implementation of the Project Approach result in changes in social interaction for children with special needs and children identified as having special needs and children identified as at risk?	Interview Field notes Classroom observations	Content analysis Pre-, mid-, and post-intervention comparison of percent of each type of play level represented in video data
3) Does implementation of the Project Approach result in changes in the challenging behaviors of children with special needs and children identified as at risk?	Interview Field notes	Content analysis Ongoing comparison of number and type of challenging behaviors
4) To what extent does implementation of the Project Approach result in changes in language development for children with special needs and children identified as at risk?	Interview Field notes SALT Analysis	Content analysis Pre- and post-intervention comparison of language samples using the SALT software program

(continued)

Table P1 continued

Research Question	Data Source	Analyses
5) How were supports (training, coaching, lunch meetings, implementation checklist, novice implementers, experienced implementers) helpful with implementation of the Project Approach	Interview	Content analysis
	Field notes	Content analysis
	Completed	Quantitative analysis
	Implementation Checklists	

Appendix Q

Definitions for Coding Interview Data

KFCF Knowledge, Feelings, Concerns, and Frustrations about Implementing the Project Approach

Pre-, mid-, or post-intervention statements that express teacher's or SLP's understanding or feelings **about their role in implementing the Project Approach**. Emphasis of quote is on teacher/teaching. Comments reflect:

- the teacher or SLP's perception of their own knowledge about the Project Approach (none, a little, a lot).
- teachers' *guesses* about how the project approach will work. ("I'm guessing it will work this way.)
- teacher or SLP's attitude toward implementing the Project Approach (excited, interested, okay with it, liked it, disappointed in it, afraid of trying it, dreading it, etc.).
- teacher's guesses about the reasons the Project Approach is worth implementing (support for learning, basis in research,).
- anticipated changes the teacher or SLP will have to make (more flexibility, more creativity, less structure, more guidance).
- aspects of implementing the Project Approach that scare or worry the teacher or SLP.

Teacher and SLP's mid-, and post-intervention concerns and frustrations about **their role in implementing the Project Approach**:

- Creating, organizing, or displaying documentation
- Feeling overwhelmed
- Doing the Project Approach correctly
- Having enough time for small groups
- Covering academics adequately
- Providing enough repetition for low-functioning children
- Provoking ongoing interest in the project when the children's interest wanes
- Group management during the construction phase of the project
- Knowing when to move to the next phase of the project
- Length of the project
- Knowing how to implement the project

REIE Response to the Project Approach and Engagement, Interest, and Excitement

Pre-, mid, or post-intervention statements that express teacher's or SLP's anticipations or observations about the **children's response** to the Project Approach of both typically developing and children with special needs. Statements may also be teachers or SLP's anticipated or observed

engagement, interest, or excitement of children with special needs or typically developing children. Comments reflect:

- General thoughts about children's response or lack of response to the Project Approach.
- Length of the learning experience
- the impact of the Project Approach on children with a range of abilities
- impact of the Project Approach on children with various dispositions
- impact of the Project Approach on where children choose to play in the classroom environment
- impact of the Project Approach on what toys or materials children choose to play with in the classroom environment
- parents' response to the Project Approach.
- response to participation in the project that of specific children: Elisabeth, James, Terri, Javarius, Sam, Charisma, LeShean, or Logan.
- increases or reductions in engagement.
- children being interested, not interested, or neutral regarding the project.
- child-initiated learning.
- strategies for engaging children
- children's characteristics that contribute/detract from their likely engagement with the Project Approach
- The impact of hands-on learning experiences
- the impact of observational drawing
- engagement, interest, or excitement from participation in the project of specific children: Elisabeth, James, Terri, Javarius, Sam, Charisma, LeShean, or Logan.

CB Challenging Behaviors

Pre-, mid-, or post-intervention statements by teachers or SLPs that describe the increase, reduction, or neutral impact of the Project on the challenging behaviors of typically developing children and children with special needs, including statements about:

- Increase in challenging behaviors related to children's involvement in the Project Approach
- Decreases in challenging behaviors related to children's involvement in the Project Approach
- Lack of impact on challenging behaviors related to children's involvement in the Project Approach
- Presence of challenging behaviors (shyness, quietness, argumentativeness, bossiness, etc., whininess, etc.)
- Classroom environment, structure, and routine
- Examples of increase, reduction, or neutral impact of the Project Approach on challenging behaviors of Elisabeth, James, Terri, Javarius, Sam, Charisma, LeShean, or Logan.

SI Social Interactions

Pre-, mid-, and post-intervention statements by teachers and SLPs regarding the impact of the Project Approach on the social interactions of typically developing children and children with special needs.

- Children's interactions with more or different peers
- Cooperation
- Sharing
- Turn-taking
- Increase in conversation
- New buddies or friends
- Teamwork
- Increased participation
- Increases in social interaction
- Increases in types of social interactions
- Increases in frequency of social interactions
- Increases in play
- Opportunities for new social learning
- Impact of being part of a group
- Examples of social interaction
- Examples of impact on the social interaction of Elisabeth, James, Terri, Javarius, Sam, Charisma, LeShean, or Logan

Voc Vocabulary

Pre-, mid-, or post-intervention statements by teachers or SLPs that describe the impact of the Project Approach on the vocabulary of children with special needs and typically developing children.

- Impact/lack of impact on vocabulary
- New vocabulary
- Opportunities for learning new vocabulary
- Examples of impact on the vocabularies of Elisabeth, James, Terri, Javarius, Sam, Charisma, LeShean, or Logan

SLP Impact on Delivery of Speech and Language Services

Pre-, mid-, or post-intervention statements by SLPs describing the impact of the Project Approach on speech and language services for children with special needs and typically developing children.

- Impact/lack of impact on ability to deliver speech and language services
- Impact/lack of impact on method of delivery of speech and language services

- Impact/lack of impact on children's receipt of speech and language services

SUP Supports for Learning and Implementing the Project Approach

Pre-, mid-, or post-intervention statements by teachers and SLPs regarding the support for their professional development on the Project Approach.

- General statements about the helpfulness/lack of helpfulness of the supports
- Supports specifically for SLPs
- Inservice training or full-day/half-day workshops
- Mentoring/coaching by Sallee Beneke
- Implementation Checklist
- Support from their fellow inexperienced teacher or SLP
- Support from the experienced teacher in the building
- Support from the Project Study team
- Lunch meetings
- Resources on the Project Approach such as books and websites
- Time to participate in professional development

Appendix R

Detailed Breakdown of Reliability by Theme

Table R1

Results of Reliability Coding, Set 1, 6-22-10

Category	Agreement
KFCF	2/2 = 100%
REIE	12/12 = 100%
CB	3/3 = 100%
SI	NA
VOC	3/3 = 100%
SLP	NA
SUP	NA
TOTAL MEAN	20/20 = 100%

Note. KFCF = knowledge, feelings, concerns, frustrations, REIE = response, engagement, interest, and excitement, CB = challenging behavior, SI = social interactions, VOC = vocabulary, SLP = speech and language pathologist, SUP = supports.

Table R2

Results of Reliability Coding, Set 2, 6-22-10

Category	Agreement
KFCF	3/3 = 100%
REIE	5/6 = 83%
CB	0/1 = 0%
SI	2/3 = 67%
VOC	NA
SLP	1/1 = 100%
SUP	6/6 = 100%
TOTAL MEAN	17/20 = 85%

Note. KFCF = knowledge, feelings, concerns, frustrations, REIE = response, engagement, interest, and excitement, CB = challenging behavior, SI = social interactions, VOC = vocabulary, SLP = speech and language pathologist, SUP = supports

Table R3

Results of Reliability Coding, Set 3, 6-23-10

Category	Agreement
KFCF	1/2 = 50%
REIE	4/4 = 100%
CB	2/4 = 50%
SI	4/4 = 100%
VOC	2/2 = 100%
SLP	1/1 = 100%
SUP	3/3 = 100%
TOTAL MEAN	17/20 = 85%

Note. KFCF = knowledge, feelings, concerns, frustrations, REIE = response, engagement, interest, and excitement, CB = challenging behavior, SI = social interactions, VOC = vocabulary, SLP = speech and language pathologist, SUP = supports

Table R4

Results of Reliability Coding, Set 4, 6-23-10

Category	Agreement
KFCF	5/6 = 83%
REIE	5/5 = 100%
CB	1/1 = 100%
SI	1/1 = 100%
VOC	2/2 = 100%
SLP	2/2 = 100%
SUP	3/3 = 100%
TOTAL MEAN	19/20 = 95%

Note. KFCF = knowledge, feelings, concerns, frustrations, REIE = response, engagement, interest, and excitement, CB = challenging behavior, SI = social interactions, VOC = vocabulary, SLP = speech and language pathologist, SUP = supports

Table R5

Results of Reliability Coding, Set 5, 6-23-10

Category	Agreement
KFCF	2/2 = 100%
REIE	2/2 = 100%
CB	4/4 = 100%
SI	10/10 = 100%
VOC	2/2 = 100%
SLP	NA
SUP	NA
TOTAL MEAN	20/20 = 100%

Note. KFCF = knowledge, feelings, concerns, frustrations, REIE = response, engagement, interest, and excitement, CB = challenging behavior, SI = social interactions, VOC = vocabulary, SLP = speech and language pathologist, SUP = supports

Table R6

Results of Reliability Coding, Set 6, 6-23-10

Category	Agreement
KFCF	2/2 = 100%
REIE	6/7 = 86%
CB	2/3 = 67%
SI	3/4 = 75%
VOC	NA
SLP	2/2 = 100%
SUP	2/2 = 100%
TOTAL MEAN	17/20 = 85%

Note. KFCF = knowledge, feelings, concerns, frustrations, REIE = response, engagement, interest, and excitement, CB = challenging behavior, SI = social interactions, VOC = vocabulary, SLP = speech and language pathologist, SUP = supports

Table R7

Results of Reliability Coding, Set 7, 6-24-10

Category	Agreement
KFCF	2/3 = 67%
REIE	7/7 = 100%
CB	3/4 = 75%
SI	2/2 = 100%
VOC	3/3 = 100%
SLP	NA
SUP	0/1 = 0%
TOTAL MEAN	17/20 = 85%

Note. KFCF = knowledge, feelings, concerns, frustrations, REIE = response, engagement, interest, and excitement, CB = challenging behavior, SI = social interactions, VOC = vocabulary, SLP = speech and language pathologist, SUP = supports

Table R8

Results of Reliability Coding, Set 8, 6-24-10

Category	Agreement
KFCF	2/2 = 100%
REIE	6/7 = 86%
CB	1/1 = 100%
SI	4/6 = 67%
VOC	2/2 = 100%
SLP	2/2 = 100%
SUP	NA
TOTAL MEAN	17/20 = 85%

Note. KFCF = knowledge, feelings, concerns, frustrations, REIE = response, engagement, interest, and excitement, CB = challenging behavior, SI = social interactions, VOC = vocabulary, SLP = speech and language pathologist, SUP = supports

Table R9

Results of Reliability Coding, Set 9, 6-24-10

Category	Agreement
KFCF	2/2 = 100%
REIE	7/7 = 100%
CB	4/4 = 100%
SI	2/2 = 100%
VOC	2/2 = 100%
SLP	NA
SUP	3/3 = 100%
TOTAL MEAN	20/20 = 100%

Note. KFCF = knowledge, feelings, concerns, frustrations, REIE = response, engagement, interest, and excitement, CB = challenging behavior, SI = social interactions, VOC = vocabulary, SLP = speech and language pathologist, SUP = supports

Table R10

Results of Reliability Coding, Set 10, 6-24-10

Category	Agreement
KFCF	1/3 = 33%
REIE	7/8 = 87%
CB	NA
SI	3/3 = 100%
VOC	3/3 = 100%
SLP	2/2 = 100%
SUP	1/1 = 100%
TOTAL MEAN	17/20 = 85%

Note. KFCF = knowledge, feelings, concerns, frustrations, REIE = response, engagement, interest, and excitement, CB = challenging behavior, SI = social interactions, VOC = vocabulary, SLP = speech and language pathologist, SUP = support

Appendix S

Play Codes (adapted from Ostrosky & Favazza, 2008-2012)

Each researcher watches videotaped observations of children at play, focusing observations on the peer interactions of one target child's. Every three minutes the observed child is rated or assigned one of the following categories. Ratings reflect the child's predominate level of play during each three-minute interval. Select the cod that reflects the play the child is engaging in the majority of the time (think-- 2 out of 3 minute segment).

1. ONLOOKER – Observing other children but *not* interacting with them. For example, the child wanders around the classroom, plays inappropriately with the materials during the observation, engages in self-stimulatory behavior (i.e., spinning plates round and round, not talking to anyone), or the child has some materials in his/her hands but walks around the housekeeping area, occasionally placing the toys on the stove, sink, table, or cupboard, but predominately watching his/her peers or looking around the room.
2. SOLITARY – The child plays alone and independently with toys that are different from those used within speaking distance and makes no effort to get close to other children. He pursues his own activity without reference to what others are doing.
 - a. Examples:
 - i. The child sits at the art table and creates a greeting card for the teacher. Other children at the table are cutting chunks of playdough from long strips of dough.
 - ii. The child works on a tower of blocks, while sitting alone in the block area.
 - iii. The child sits alone in the science area and gazes intently at the class hamster.
3. PARALLEL PLAY – Playing with the same materials *and* playing in the same vicinity as peers **but not interacting (back and forth) with peers**.
 - a. Examples:
 - i. The child is playing with the same materials as other children at his/her table, but if all the other children were (hypothetically) removed from the table, the child would still be there playing with the materials solo;
 - ii. The child is sitting at the table with an adult and other children but interacts only with the adult.
 - iii. The child plays with the cars and trucks but rarely interacts verbally or nonverbally with his peers; rather the child spends the majority of time rolling the car, making roads for the car, crashing the car, etc.
 - iv. During play at the science table the target child is circles the table telling everyone at the table to get to work (this goes on for more than 2 minutes, with other children looking at her, but not talking with her)

- v. The child eats at the snack table alongside other children, but does not interact with them.
- 4. ASSOCIATIVE PLAY – Playing with other children without role assignment, but **loosely organized**. These peer interactions need to be **reciprocal** (back and forth); they can be positive or negative (i.e., children interacting as they fight over materials). There is no division of labor or organization of the children around a shared goal or project.
 - a. Examples
 - i. Children are play with cars and trucks on the same road without any specific organization. They may trade cars or appear to follow each other, but do not appear to have an agreed upon plan.
 - ii. The child is sitting at the table with an adult and peers and interacts reciprocally with peers.
 - iii. A child might be observed placing groceries on the shelves in the housekeeping area like his/her peers, but there is no organization or role—they are doing the task in a loosely organized manner
 - iv. Children are putting plastic food on plates but there are no role assignments or anticipated outcomes such as making a meal for a peer or teacher.
- 5. COOPERATIVE PLAY – Playing with other children in an organized manner, planning for or roles assigned; these might include negotiations/problem solving of roles or tasks.
 - a. Examples
 - i. One child might assume the role of sacker/bagger in the grocery store, and while another child acts as the cashier, the sacker/bagger waits to place the customer's groceries in a sack.
 - ii. One child might assume the role of veterinarian, while another child brings a stuffed animal to him.
 - iii. Children painting the shelves together.
- 6. ADULT-CHILD PLAY – Playing with an adult when no other children are present.
 - a. Examples:
 - i. The child brings a cup of pretend coffee to the teacher to taste.
 - ii. The teacher and the child play a game together at a table.

Appendix T

Play Code Recording Form

Child_____

Coder_____

Date	0-3	3-6	6-9
1-13			
1-14			
1-19			
1-22			
1-25			
1-28			
2-3			
2-4			
2-11			
2-18			
2-19			
2-24			
2-26			
3-2			
3-4			
3-9			
3-10			
3-15			
3-18			
3-22			
3-23			
3-24			
3-29			
4-8			
4-14			
4-15			

O = Onlooker
S = Solitary

Associate Play = AP
Parallel Play = PP

A-C P = Adult-Child Play
Cooperative Play = C

Appendix U

Detailed Breakdown of Observation Reliability by Phase

Table U1.

Results of Reliability Coding for Pre-Intervention

Pre-intervention Phase	Agreement
Jamari	6/6 = 100%
Dayana	7/8 = 87%
John	2/2 = 100%
Emily	5/5 = 100%
Cassandra	5/6 = 83%
Jake	4/4 = 100%
Ethan	6/6 = 100%
Lincoln	5/6 = 83%
TOTAL MEAN	40/43 = 93%

Table U2

Results of Reliability Coding for Phase 1

Phase 1	Agreement
Jamari	6/6 = 100%
Dayana	3/3 = 100%
John	6/6 = 100%
Emily	2/3 = 67%
Cassandra	2/3 = 67%
Jake	6/6 = 100%
Ethan	3/3 = 100%
Lincoln	2/5 = 40%
TOTAL MEAN	30/35 = 86%

Table U3

Results of Reliability Coding for Phase 2

Phase 2	Agreement
Jamari	4/6 = 67%
Dayana	3/3 = 100%
John	6/6 = 100%
Emily	9/9 = 100%
Cassandra	5/5 = 100%
Jake	7/8 = 87%
Ethan	5/6 = 83%
Lincoln	4/5 = 80%
TOTAL MEAN	43/48 = 90%

Table U4

Results of Reliability Coding for Phase 3

Phase 3	Agreement
Jamari	1/3 = 33%
Dayana	2/2 = 100%
John	0/0 = NA
Emily	1/3 = 33%
Cassandra	3/3 = 100%
Jake	2/3 = 67%
Ethan	2/3 = 67%
Lincoln	2/2 = 100%
TOTAL MEAN	13/19 = 68%

Appendix V
Detailed Video Data

Table V1

Dates and Number of Minutes Available from Each Observation Date for Each Child

Phase	Type of play					
	AC	O	S	P	A	C
Phase 1	AC	O	S	P	A	C
Cassandra	0	0	11	11	0	78
Emily	0	0	20	20	40	20
Dayana	0	42	8	17	0	33
Jamari	0	0	0	80	20	0
John	0	17	0	28	22	33
Lincoln	0	0	10	5	50	35
Ethan	5.5	17	11	61	5.5	0
Jake	0	7	7	13	26	47
Phase 2	AC	O	S	P	A	C
Cassandra	5	0	20	25	15	35
Emily	0	10	40	40	5	5
Dayana	0	0	8	23	0	69

(continued)

Table V1 (continued)

Phase	Type of play					
	AC	O	S	P	A	C
Jamari	17	11	17	11	17	27
John	0	0	17	17	17	49
Lincoln	0	0	18	0	35	47
Ethan	0	5.5	0	5.5	11	78
Jake	19	0	19	5	5	57
Phase 3	AC	O	S	P	A	C
Cassandra	0	0	0	33	0	67
Emily	0	0	0	25	67	8
Dayana	0	0	0	40	20	40
Jamari	0	0	9	27	18	44
John	0	0	0	0	50	50
Lincoln	0	0	0	0	0	100
Ethan	0	0	17	50	0	33
Jake	0	0	8	0	8	82

Note: AC = adult-child, O = onlooker, S = onlooker, P = parallel, A = associate, C = cooperative.