DIALOGIC BUDDY READING: FIDELITY, VOCABULARY, SUSTAINABILITY

by

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DEDICATION

This is dedicated to my children, Maria and Don, and to all of my students—past, present and future. The time we spend together is invaluable to my continued learning. You are a constant reminder to me that “kids do well if they can.”
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ABSTRACT

DIALOGIC BUDDY READING: FIDELITY, VOCABULARY, SUSTAINABILITY

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George Mason University, 2012

Dissertation Director: Dr. C. Stephen White

This dissertation employed a single subject, multi-probe design that studied the fidelity, vocabulary gains, and sustainability associated with dialogic buddy reading in a diverse, suburban elementary school. Fourteen sixth grade students were trained in dialogic reading and then paired with Head Start students. Six pairs of students were randomly selected from a pool of 14 pairs and one trio participating in 15-minute dialogic buddy reading sessions four times a week. Data collection aligned the questions of the study with the construct of fidelity and included direct observation of dialogic reading, the administration of researcher developed vocabulary probes, and interviews. Data analysis required the integration of visual analysis of empirical data and coding of qualitative data to determine causality of outcomes and the social validity of dialogic buddy reading in elementary schools. Results indicated that dialogic buddy reading was implemented with increasing fidelity, leading to vocabulary gains and sustainability.
1. INTRODUCTION, PROBLEM STATEMENT, AND BACKGROUND OF THE PROBLEM

A teacher stands to the side of the entrance hall of a school, playfully greeting students as they walk to their classrooms or to the cafeteria to eat breakfast. A handful of young Head Start students lead each bus line following behind a sixth grade safety patrol. Some of these new, young students are smiling and appear eager, taking all of their focus to contain themselves enough to stay in line. Some appear a little tired, maybe even a little scared. The teacher looks at the faces and listens to the giggles and comments and remembers, “Kids do well if they can” (R. W. Greene, 2001). The teacher wonders how Greene’s philosophy translates to literacy learning for such young, diverse learners. What could get in the way of these children successfully learning to read and write?

Problem Statement

Most of the children in the Head Start class in this diverse urban-suburban school speak a language other than English at home; and if these students represent recent trends in America, most of these children control and use vocabularies far below the middle and upper class peers they will join in kindergarten (Hart & Risley, 2003). They all want to do well now, but their vocabularies may present a problem in their learning and eventual engagement with literacy. Understanding the ways vocabulary influences literacy learning and how vocabulary is developed create a rational for increasing the oral
language used by pre-school children. The remainder of this chapter describes the background of the problem underdeveloped vocabularies in some preschool students poses for their literacy learning.

**Background of the Problem**

The background of the problem includes many aspects. First, the bodies of literature isolating the variables and processes associated with vocabulary learning are introduced. Next, a synthesis of realism (Maxwell, 2004), etiology (Marcoulides, 2005), and systems thinking (Senge, 1994) forms a potential research lens and places these variables and processes within a system for literacy learning. Finally, the research questions are posed and the method is discussed. The chapter closes with a discussion about the questions posed and method used to complete the study.

**Literature reviewed to frame the variables and processes.** This section briefly introduces the body of literature behind each variable or process in the system. These areas are language and vocabulary development, emergent literacy, dialogic reading, and fidelity of practices. Reviewing this literature further refines and isolates the variables and processes examined in this study.

**Language and vocabulary development.** Competing or disparate ideas and systems found in the literature that studies oral language and vocabulary development complement one another, generating a better understanding of how words are learned and language is developed. Phonology and word learning feed into a system of language development that capitalizes on a child’s development of syntactical complexity. Syntax develops complexity as schema is built based on various and continuous social language
experiences. These experiences begin in the home; however it is important that these emerging, complementary theories of language development are considered in new pedagogical approaches in the classroom so that young students accelerate their vocabulary learning.

**Emergent literacy.** Emergent literacy is a term used to describe the literacy behaviors that develop before formal schooling or very early in a child’s school experience (Sulzby & Teale, 1991). Researchers interested in emergent literacy have been trying to more fully conceptualize reading acquisition as a system grounded in social interactions. Thus, four major perspectives focus research and practice in emergent literacy. First, children begin developing reading and writing behaviors before beginning formal reading instruction. Second, literacy is an interactive process between reading, writing, and language. Third, children are actively involved in their development. Fourth, literacy development is a function of the social setting (Mason & Sinha, 1993).

Emergent literacy and the research linking vocabulary to phonological awareness form the foundation to the “schools of the future” Huey (1910) emphasized in his early synthesis of the reading research. The relationships between oral language (level of control over vocabulary and syntax) and reading acquisition are critical as ways to address the achievement gap during the preschool, kindergarten years, and first grade years are pursued.

**Dialogic reading.** Research and practice is providing ways to influence and build oral language in all children in the emergent stage of reading. Studies note the positive
impact of two different forms of storybook reading on children. First, shared reading, a more typical form, increases listening comprehension. Shared reading involves a parent or teacher reading a story to a child without purposefully engaging the child in discussing or telling the story. On the other hand, dialogic reading (Whitehurst et al., 1988) is a structured way of interacting with children while reading storybooks.

Dialogic reading (DR) has repeatedly improved the vocabulary and verbal expression of children when used at home and at daycare centers (Mol, Bus, de Jong, & Smeets, 2008). The structure, or protocol, for the adult child interaction includes four steps. First, the parent or teacher prompts the child. The prompt can ask for a word (as in a cloze procedure), the recall of an action, an inference based on open-ended questions, or a personal connection. The prompt is followed by an adult evaluation of the child’s response through praise and correction. The evaluation is quickly followed with an extension of the child’s initial response. Finally the cycle is completed when the adult asks the child to repeat the extended response to the initial prompt.

Two acronyms aid the remembering of the dialogic reading protocol. First, the DR cycle consists of prompt, evaluate, extend, and repeat (PEER) (Pearson Early Learning, 2002). Second, the various prompt options are cloze, recall, open ended questions, wh- questions, distance questions (CROWD) (Pearson Early Learning, 2002). Two scaffolds picturing PEER and CROWD can be found in Appendix A.

The nature of dialogic reading taps the four components of emergent literacy discussed earlier as it increases vocabulary, which will aid in the development of phonological awareness once formal reading instruction begins. The following excerpt is
an example of an interaction scaffolded through the DR protocol while reading the story, *Whistle for Willie*:

**Peggy [Teacher]:** “So instead he began to turn himself around—around and around he whirled… faster and faster…” What was it like when he whirled? “He whirled…faster and faster…”

**Ralph [Child]:** He falls.

**Ms. Peggy:** He falls? Not totally, but almost! So when he “whirled” he went around and around in circles, right?

**Ralph:** Fast, fast, fast!

**Ms. Peggy:** Fast, fast, fast. When he whirled he went around and around in circles really fast.

**Ralph:** Fast, went around in circles fast.

**Ms. Peggy:** Let’s do it! [Ms. Peggy and Ralph go around and around in circles]

I’m whirling! I’m whirling! I’m whirling!

**Ralph:** I’m whirling! I’m whirling! (Burns, Johnson, & Assaf, 2012)

Burns et al. (2012) discuss the value of including DR as a routine that develops oral language. Conducting studies examining the effects of using dialogic reading in the classroom will help promote a better understanding of how to increase language proficiency within school curricula.

**Fidelity.** Many research methodologies and methods operate in clinical settings free of confounding circumstances, and in doing so, often isolate important variables that correlate with or cause increased student achievement. These variables can potentially be
brought to bear on classroom routines using the enormously diverse human resources existing within students, parents and teachers and can have a valuable impact on teaching and learning. Applied research that taps this diversity and is conducted in actual classroom settings is necessary to determine how to scale up research based, pedagogical routines that promote “schools of the future” across various contexts.

It can be difficult to design and execute scientific research in the natural context of the classroom. Fidelity is an important consideration in validating and extending the application of clinical research within the classroom and homes in efforts to promote effective practices. Studies that examine the effects of interventions, or effectiveness studies, are strengthened when designed with fidelity in mind (O’Donnell, 2008; Ruiz-Primo, 2006; Smith, Daunic, & Taylor, 2007). Fidelity concerns the degree to which an intervention is implemented in relation to how it was intended.

Fidelity appears to be understudied in education research (O’Donnell, 2008); however, recent studies have drawn from the fidelity literature in the health and behavior fields to inform the construct of fidelity in education settings. Fidelity is complex, influencing study design, training, delivery, receipt, and enactment (Smith et al., 2007). The full construct incorporates finite structures (i.e. adherence to defined intervention) and social processes (i.e. quality of delivery) (O’Donnell, 2008). The inclusion of social processes is extremely important in studying teaching and learning, particularly when examining questions situated within constructivism and emergent literacy. Such complexity requires researchers to pull from a variety of methods and measurement tools in order to examine fidelity in intervention studies (Ruiz-Primo, 2006).
Considering the sustainability of a routine within the natural setting of a classroom or home brings attention to whether or not a high level of fidelity can be attained and maintained in practice so as to lead to positive outcomes. Increasing fidelity to programs and practices that may be sustainable across diverse, complex contexts can be considered an issue of social equity in classrooms.

**Potential research lens to address the problem.** A body of research links oral language to reading acquisition (Tunmer, Herriman, & Nesdale, 1988) and continued development (Torok, 2005). Hart and Risley (2003) found that students in poverty often use a vocabulary significantly smaller than that of their middle and upper class peers. There is a sense of urgency to develop ways of increasing vocabulary used by children emerging as readers. An applied research agenda in the area of developing vocabulary in preschool settings addresses this need by systematically studying how new language and literacy knowledge is transferred into early childhood pedagogy. Such an agenda offers research that is tightly designed, yet flexible enough to be replicated in various contexts. Additionally, such an agenda requires the skillful and creative synthesis and overlay of multiple research perspectives. The following paragraphs explain how realism, etiology, and systems thinking come together to create one possible lens to view vocabulary and literacy acquisition and to inform the design of this study.

**Realism, etiology, and systems thinking.** Scientific realism (Maxwell, 2004) captures the dimensions needed to tightly design research that studies pedagogical effects within diverse social contexts. Scientific realism seeks to explain the way in which outcomes occurred, and recognizes the social, contextual processes involved in study
outcomes as causal mechanisms (Maxwell, 2004). Designing a study from a realist stance calls for the isolation of dependent and independent variables (i.e. vocabulary gains and an identified intervention) and the recognition of the social processes (relationships between older and younger students) that guide the interactions between these variables. Creating a tight, flexible design that facilitates and measures the variables associated with oral language proficiency in a diverse range of social contexts will help the research field and teachers better understand how to increase the language growth of students emerging as readers.

The tension in generating tight, yet flexible, designs is controlled by the need to remain scientifically minded in order to infer causality between variables and processes. The elements used to guide the design of such a scientific minded study are contained in the ideas of etiology. Marcoulides (2005) explains that searching for the “etiology” of occurrences dates back to the ancient Greeks’ pursuit of knowledge and is used in medical research and practice today. Etiology considers what happened, how it happened, and “why it happened in the way that it did” (Marcoulides, 2005). Three sequential components make up the “etiology” of effects in education research: isolation of variables x and y; association between variables x and y; and the direction of influence. Marcoulides (2005) also noted that the social nature of education makes true isolation very difficult, thus “pseudo isolation” is often used. He cautions that many contextual elements pose threats to this “pseudo isolation” and that any causal inferences concerning the direction of influence should take these threats into account. He goes on
to say that replication in various settings with various sets of data bolsters “etiological claims.” (Marcoulides, 2005)

Systems thinking puts the variables, processes, and potential “etiological claims” into play within a contained context; and it provides a visual construct and a language to communicate variables, processes, influences, and relevant questions concerning an area of study (Senge, 1994). The construct, or “circle of causality” (Senge, 1994, p. 73), contains elements (variables and processes) and arrows of influence signifying direction of influence. The circle runs on feedback, which is carried through each arrow. Two different forms of feedback (reinforcing feedback and balancing feedback) create two different types of loops. Reinforcing feedback creates a growth loop and balancing feedback creates a stability loop. Each loop can contain a delay, or an interruption between the action and desired consequences. Recognizing elements, types of feedback, and delays is critical to creating a sustainable system of growth. The following section sets up a system that connects vocabulary and literacy.

**Vocabulary and literacy—Variables in play within a social system.** The seminal work, The Psychology and Pedagogy of Reading (Huey, 1910), reviewed a wide variety of literacy issues. In particular, Huey noted how influential the home life is to early literacy because of its ability to capitalize on language and experience. The author went so far as to say that schools should replicate characteristics of the home in “schools of the future” (Huey, 1910).

Research from across the field since that time, harnessing strengths from various methodologies and methods, has isolated several important “characteristics” or variables.
The first variable, listening comprehension and vocabulary, is critical to success in reading acquisition and continued development because it influences phonological awareness (Lonigan, 2007), decoding (Torok, 2005), and comprehension. Second, a child’s vocabulary increases in tandem with the child’s control over syntactic complexity (Bates & Goodman, 1997) and is a function of a child’s experience, given there are no processing difficulties to hinder development (Cole, John-Steiner, Scribner, & Souberman, 1978). Additionally, children’s experiences with storybook reading during the emergent reading years (birth through six years of age) influence language and literacy development (Penno, Wilkinson, & Moore, 2002).

The research synthesized above forms a possible system for literacy acquisition and development that can be replicated in the “schools of the future.” The construct is pictured in Figure 1. This system taps the knowledge surrounding listening comprehension and vocabulary development, emergent literacy and storybook reading, and fidelity of practices. To read the system, start at any of the variables or processes and follow along the arrows to see how each element influences the other, creating a repeated pattern of influence (Senge, 1994).
Figure 1 shows a system powered by reinforcing feedback, which supports continued growth towards literacy acquisition (assuming each of the variables and processes are operating adequately). For example, increased storybook reading leads to increased fidelity, which increases listening comprehension and vocabulary and influences the successful development of phonological awareness. Successful development of phonological awareness increases the possibility of successful acquisition of early reading and writing skills and strategies.

The system takes on a different view if one or more of the variables or processes do not operate adequately. Lack of fidelity to storybook reading and other emergent literacy activities could potentially limit listening comprehension and vocabulary growth. A smaller vocabulary makes developing phonological awareness more difficult, thus...
making learning to read and write more difficult. The system is still a reinforcing loop, however it may be reinforcing confusion that greatly slows literacy acquisition.

A potential problem exists as a delay in the reinforcing system for students that enter preschool with vocabularies that are significantly smaller than that of their middle and upper class peers. The delay is found in fidelity to storybook reading. This view creates a more complex system, one Senge (1994) calls a “Limits to Growth” system, which is shown in Figure 2.

![Figure 2: System Indicating a Limit to Reading Acquisition](image)

Listening comprehension and vocabulary is a condition that, if improved, will provide positive reinforcing feedback to phonological awareness and literacy acquisition. Fidelity to storybook reading improves vocabulary; however, lack of fidelity creates a delay, an interruption in vocabulary growth, and slows the literacy learning process.
Therefore, improving fidelity to storybook reading would increase growth in listening comprehension and vocabulary, as well as phonological awareness, which would have a positive effect on literacy learning. This study focuses on the balancing loop of the system by exploring the fidelity of a particular storybook reading protocol used by sixth grade students and Head Start preschool students and its impact on the vocabulary of the preschool students.

**Research Questions and Method.** The following subsections discuss the research questions and the research method. The questions were developed considering the variables and processes involved in developing vocabulary through dialogic reading.

**Research questions.** Several studies designed from the perspective of a variety of conceptual frameworks have served to advance the field’s understanding of oral language development and its relation to reading acquisition. A mixed mental model, such as realism, can potentially place our collective understanding into practice and further our learning. Realism creates a space to explain the cause of a potential regularity of an effect using isolated variables (vocabulary and dialogic reading) and the social processes (fidelity and sustainability) that situate them (Maxwell, 2004). The literature on language development, emergent literacy, dialogic reading, and fidelity led to the following two research questions:

1) How is a preschool student’s expressive and receptive vocabularies affected by routine dialogic buddy reading facilitated by a sixth grade student using the primary language of the preschool student?

2) How sustainable is dialogic buddy reading in a school setting?
Research method. The method, single subject research, uses quantitative and qualitative tools to systematically observe and determine the cause of potential vocabulary learning in the participants in a particular context. Single subject research is optimal for defining effective practices in applied contexts because it leads to causal relations between the practice and the measured outcome (Horner et al., 2005). Single subject designs contain control measures within the design without needing to set up a separate control group (Neuman & McCormick, 1995). These built in control measures are accomplished by repeating the planned measures throughout three phases of the study: baseline, intervention, and follow-up. The baseline acts as the control because it shows the student’s performance prior to the onset of the intervention (R. H. Horner et al., 2005). Additionally, single subject research is a design that matches well with studies that examine fidelity to explain outcomes that are not likely going to return to the baseline performance after the intervention is terminated (Neuman & McCormick, 1995). Finally, single subject research addresses the social validity of an intervention or implementation of a pedagogical routine.

Social validity involves the social value of the outcomes and the practicality of implementation. Increased vocabulary is socially valuable due to its relationship to listening comprehension and phonological awareness. If a routine like DR can be implemented with a high degree of fidelity using resources that already exist in a school, then it can be practical and can be used to describe the sustainability of DR in school settings. This study’s course and conclusions include threats to internal, external and
social validity that lead to limitations in inferring causality. The design and validity threats are detailed in chapter three.

**Summary**

This chapter stated that lower vocabularies pose a problem for literacy acquisition in young children, leading to the need to find ways to effectively increase vocabulary in preschool settings. The background of this problem framed the pertinent variables and processes using realism, etiology, and systems thinking. These variables and processes were briefly explained by introducing the relevant literature bases: language and vocabulary development, emergent literacy, dialogic reading, and fidelity. Finally, the single subject design was briefly explained as a method that most appropriately aligned with this project’s goals and questions.

Chapter two continues the review of the relevant research leading to the design of this study. The literature review drew extensively from four areas of study. The first area focuses on language development in first language and how language development applies to early reading. Second, literature in emergent literacy was reviewed in light of how this stage captures the linguistic and cognitive development necessary for a child’s seamless transition into conventional reading and writing. Third, a review of selected studies conducted in dialogic reading is included. Finally, studies framing fidelity in intervention research are described.
2. REVIEW OF THE LITERATURE

Oral language, emergent literacy, and activities that support the two are important to learning to read. Dickenson et al. (2006) captures a great deal of the findings related to oral language and reading acquisition and development through a window metaphor. His focus is specifically directed toward vocabulary development and its relationship with the phonological aspects of metalinguistics. He conceptualized that a window is open for this learning from preschool through fourth grade. During this time a child’s environment is critical in that it helps form the brain functions that allow for attentional control and higher cognitive functioning. Language is a key in this environment because it allows for the continuous development of attention and cognition, which together define that watershed moment when metalinguistic awareness begins to form. It is this awareness that creates the connections between print and language. Literature in the areas of vocabulary acquisition and development, emergent literacy, dialogic reading, and fidelity are reviewed in the following four sections.

Linguistics and Oral Language Development

There are two relevant findings regarding a direct link between language and the onset of decoding ability. First, there is a relationship showing vocabulary as a precursor to the development of phonological development (Lonigan, 2006). Second, syntactical awareness facilitates the use of this phonological awareness in continuous text (Torok,
2005). Therefore, it is necessary for researchers, teachers, and policy makers to consider how children acquire and control language, thus allowing school communities to generate pedagogical routines that facilitate its continuous development. The following section concerning oral language development moves from a specific focus on oral vocabulary acquisition to a more general synthesis of the oral language development theories of Skinner, Chomsky, Brown, and Vygotsky.

**Vocabulary acquisition and development.** There are several theories about how infants and young children begin to develop oral vocabulary. This section will discuss fast mapping, bootstrapping, the lexicalist theory, and linguistic schemata. The discussion of this linguistic literature moves from phonology and the lexicon (fast mapping and bootstrapping) to the more recent ideas connecting these components to semantics, syntactical structures and discourse (lexicalist theory and linguistic schema).

**Fast mapping and bootstrapping.** Fast mapping is a concept of word acquisition first framed by Susan Cary in 1978. She proposed that to learn a word a child must know its syntactical properties and how the meaning relates to other words and concepts already known. Initial word learning consists of direct modeling and over-teaching at the infant and early toddler stage. However, by the age of two a child learns words based on their use in a linguistic context and the specific situation that surrounds its use (Carey, 1978). It has also been suggested that growth in one year olds’ vocabularies accelerated as they began to use two or more word phrases (Anisfeld, Rosenberg, Hoberman, & Gasparini, 1998). Anisfeld et al. (1998) also found that the sentence leads to increased learning of specific labels for concepts. Thus, a child as early as the age of one year
creates a “word to world path” through syntax and social engagement which allow the word to be internalized and extended (Behrend, Scofield, & Kleinknecht, 2001).

Some linguists are finding that there is more than one way to map a word and this is dependent on the type and complexity of the word (Best, Dockrell, & Braisby, 2006). This leads to the concept of bootstrapping, which refers to the ways children connect their previous experiences to a new word. Researchers have uncovered various forms of bootstrapping, three of which are perceptual or phonological bootstrapping, logical bootstrapping, and syntactic bootstrapping (Bates & Goodman, 1997).

Phonological bootstrapping involves the infant, toddler, or young child’s use of the prosodic aspect of speech flow to ascertain word and phrase boundaries (Christophe, Guasti, & Nespor, 1997). Logical bootstrapping refers to the order in which children learn word types, proceeding from nouns to verbs to function words (e.g. for, of), which is due to the relational aspects of verbs and function words. Christophe et al. (1997) suggest that such relations cannot be worked out until syntax is used. Ultimately, children use many aspects of sentences (semantics, morphology, word order, and prosody) in learning words and grammar, which is known as syntactic bootstrapping (Bates & Goodman, 1997).

**Lexicalist theory and linguistic schema.** The concept of bootstrapping and the idea that there is more than one way to learn a word has led some linguists to suggest that the lexicon and learning of syntactical structures are so intertwined that they cannot be studied or learned separately. This construct is known as the lexicalist theory (Bates & Goodman, 1997). This theory suggests that there is a unified system consisting of an
interactive-activation model which uses current input and previous context to predict and
determine word order and meaning (Bates & Goodman, 1997). Past experience with the
phrase or word will determine which bootstrapping system will be used to bring the word
or phrase into the lexicon; therefore the lexicon does not work independently.

The lexicalist theory and use of input and previous context seems to be closely
tied to the use of semantics and linguistic schema. Children’s use of these two constructs
increase as they grow from infants through school. New words, especially verbs, are
learned based on a preexisting grammatical schema. A lack of this schema can lead to
listening comprehension problems (Akhtar & Tomasello, 1997). Linguists who have
studied elementary age children noted that fast mapping led to minimal and unstable
word learning, but a strong semantic foundation accelerated vocabulary growth (Best et
al., 2006). Therefore, it would follow that children in preschool and primary grades that
do not have a store of linguistic and semantic schemes to help them acquire new words
and structures will need to develop such schemata.

**Language Acquisition and Development: Grounded in Evolving Theories.**
Based on the lexicalist theory, vocabulary and grammar can be closely aligned into a
single construct through linguistic and semantic schemata. Much complex language
develops beyond the use of fast mapping and bootstrapping. The linguistic theories of
Burrhus Skinner, Noam Chomsky, Roger Brown, and Lev Vygotsky are reviewed with
this framework in mind.

During the mid-twentieth century, Skinner suggested that children learn language
through imitating adult models. He also noted that children increase accurate use of
meaning and grammar based on the feedback provided by parents (Skinner, 1957). Noam Chomsky dislodged this platform by noting that children’s structures are not always similar to adult use. Chomsky proposed that universal syntactic structures were used to develop language and these were operated through a linguistic activation device, which was innate in every human being (Chomsky, 1968). In 1973, Brown agreed with Chomsky that syntactic structures seemed to help generate language learning. He also noted that children begin developing these structures soon after their first birthday and continue through the elementary years at varying rates. He was unsure, however, what motivated children to want to increase the complexity of their language (Brown, 1973).

Vygotsky developed his theories on language in the early 20th century. However, his work was not introduced to the western world until the 1960s and it was not widely understood until late in the 1970s (Cole et al., 1978). Vygotsky viewed language as a tool that enables humans to manipulate their perception of their environment (Cole et al., 1978). Adults mediate the use of this tool for children within a social context. Although language development is not solely dependent on imitation of adult models, it is dependent on the level of modeling and type of feedback provided by advanced speakers. Further, once the lexical-syntactical forces are primed with sufficient linguistic schema, then syntactical structures begin to help drive the force behind language learning (although this process may be more simultaneous than linear) (Akhtar & Tomasello, 1997).

According to the Vygotskian theory, language development is motivated by the social context in which it is situated (Cole et al., 1978). The context will determine what
is modeled, type of feedback provided, and therefore the complexity of linguistic schema to develop as a tool. It is also important to note that the types of linguistic schemas that develop are varied; and it could be this variance as well as developmental level that cause some school age children to struggle in school.

**Summary of Language Development.** Children must develop a complex and flexible use of language and language discourses in order to succeed in school. This process begins in the home environment as children begin to fast map and bootstrap various meanings and syntactic structures into a single system. Linguistic schema set the path for the accumulation of linguistic experiences required to develop more and more complex syntax and vocabulary, which is dependent on context (Akhtar & Tomasello, 1997). The social context provided for young children before formal schooling begins is the catalyst for oral language development (Cole et al., 1978) and related aspects of emergent literacy. Emergent literacy is discussed further in the next section, providing a more complete picture of potential “schools of the future.”

**Emergent Literacy**

Yaden et al. (2000) stated that emergent literacy has become a broadly used term among researchers representing varied “ontological, epistemological and methodological stances” (p. 426). However, emergent literacy continues to maintain its historical theoretical roots in developmental and constructivist learning (Yaden, Rowe, & MacGillivray, 2000). According to Mason & Sinha (1993) emergent literacy involves four major developmental and constructivist assumptions, which focus much of the research and practice in emergent literacy. First, children begin developing reading and
writing behaviors before beginning formal reading instruction. Second, literacy is an interactive process between reading, writing, and language. Third, children are actively involved in their development. Fourth, literacy development is a function of the social setting. Emergent literacy has also maintained its original definitive characteristic as the unconventional forms of literacy children develop in informal home and school environments (Teale & Sulzby, 1986).

Some examples of context specific activities that tend to promote these early literacy behaviors are storybook reading, emergent writing, and dramatic play (Yaden et al., 2000), as well as conversational opportunities to use “extended discourse forms such as explanations or personal narratives…and convey information to relative strangers” (Snow, 1991, p. 8). These activities lay groundwork from which the interactive process of literacy develops. Furthermore, language carries this process throughout the emergent stage and across multiple domains (Snow, 1991).

Language carries the interactive process through an abstract domain, which contains a shift from contextualized language to de-contextualized language. This domain captures the developmental learning of the meta-language that labels print concepts (e.g. letter, word) and metalinguistic awareness. Emergent literacy fosters this linguistic shift to de-contextualized language (Mason & Allen, 1986), which is vital regarding how children proceed into formal literacy learning and later comprehension abilities (Snow, 1991). Purcell-Gates (2001) points out that all children have oral language; but it is their understanding of how written language works that is important to the relationship between language and emergent literacy. Additionally, it is children’s
ability to find purpose in written discourses that is paramount, particularly when written forms were not experienced during their formative years (Purcell-Gates, 2001).

Watson (2001) states that there is a generational effect on language use and development which shifts contextualized language (language describing the here and now being experienced by the child) to language that is more definitional, inferential, and interpretive. The generational effect is characterized by the way language is used within the family, especially during a child’s formative years. These language patterns tend to repeat themselves from generation to generation, impacting the timing of the shift from contextualized language to de-contextualized language. The shift to more de-contextualized language is facilitated using question and answer protocols that help frame and define events before, during, and after they occur. This inferential, interpretive, and definitional discourse matches the discourse in school, which means that children who are familiar with the use of de-contextualized language move into the school culture rather seamlessly. Watson also contends that it requires numerous events to build the linguistic schemas that can add a definitional discourse to a child’s toolbox. It may seem as though discourse comes into play more after the reading acquisition stage. However, Gee (2004) suggests that adjusting instruction to match and add to student discourses is equally important during the preschool and primary years because “These protoforms…are the stuff from which success in school-based and academic reading flows” (p. 131).

Students’ understanding and use of de-contextualized language could be easily overlooked as formal reading instruction begins. One could say that de-contextualized
language is the academic language (Collier, 1987) for preschool and primary children. This is particularly true for preschool and primary grade students still emerging as readers in their home language who, while still developing language to serve text processing and their understanding of the de-contextualized characteristics of their home language, are being taught to read in a second language. The understanding of how socio-cultural activities like storybook reading, storytelling, emergent writing, and dramatic play create the schema for the understanding and use of de-contextualized language is an important direction for applied research (Purcell-Gates, 2001) with monolingual and bilingual children within their school and home contexts.

Increasing vocabulary and the ability to talk about definitions and related concepts is important to the development of phonological awareness and of de-contextualized language. It is important to develop these abilities in monolingual, English speaking and bilingual, preschool children. Storybook reading is one emergent literacy activity that can potentially facilitate oral language development and the development of de-contextualized language if conducted often and in a conversational way. The next section includes a study-by-study review of studies associated with dialogic reading, a structured way of participating in storybook reading with young children, and its effects on expressive and receptive vocabulary.

**Story Book Reading and Dialogic Reading**

Whitehurst et al. (1988) set the stage for many subsequent studies when they introduced dialogic reading (DR) to their research. To differentiate DR from typical shared storybook reading where the adult reads and the child listens, the researchers
developed the DR structure. This structure guides the adult reader in adapting prompts and feedback to match the child’s needs in telling the story during repeated readings. A DR conversational cycle includes a prompt, an evaluation, an enhancement, and a repeat. The various prompts include cloze, recall, open ended, and distance prompts. The DR cycle (PEER) and various prompts (CROWD) are further explained in Appendix A. Additionally, an example of the conversation resulting from the DR provided on page five is offered again in the following excerpt:

_Peggy [Teacher]:_ “So instead he began to turn himself around—around and around he whirled… faster and faster…” What was it like when he whirled? “He whirled…faster and faster…”

_Ralph [Child]:_ He falls.

_Ms. Peggy:_ He falls? Not totally, but almost! So when he “whirled” he went around and around in circles, right?

_Ralph:_ Fast, fast, fast!

_Ms. Peggy:_ Fast, fast, fast. When he whirled he went around and around in circles really fast.

_Ralph:_ Fast, went around in circles fast.

_Ms. Peggy:_ Let’s do it! [Ms. Peggy and Ralph go around and around in circles] I’m whirling! I’m whirling! I’m whirling!

_Ralph:_ I’m whirling! I’m whirling! (Burns et al., 2012)

Whitehurst et al. designed an experimental intervention to determine if DR increased child language. The intervention lasted for four weeks and required the
treatment group to engage in interactive techniques meant to stimulate child participation through discussion. The control group was instructed to read as usual. The DR group was trained to engage in the following processes during storybook reading: (a) using evocative techniques by referring more to the pictures and engaging in less direct, uninterrupted reading; (b) providing feedback that acknowledges, praises, and enhances the child’s attempts at answering the questions; and (c) developing complex dialogue through extended verbal enhancements over time. Participants included 30 two-year-old children and their mothers living in middle class households. It was found that children in the experimental group scored significantly higher than those of the control group on posttest measures of language (Peabody Picture Vocabulary Test, Expressive One Word Vocabulary Test, and the Verbal Expression Subtest of the Illinois Test of Psycholinguistic Abilities). Additionally, analysis of audio taped reading sessions indicated that the experimental group also had higher mean length utterance (MLU). The authors concluded that using a more dialogic format while reading with children does increase language growth (Whitehurst et al., 1988).

The body of literature encompassing dialogic and storybook reading is discussed further using a study-by-study review. Thirty-two studies were considered. Studies chosen to be included in this review involve a child outcome of increased receptive and/or expressive vocabulary, an interactive reading intervention involving no other extensions, and children ranging in age from two to six years of age. This section is broken into two subsections. The first section outlines studies of dialogic reading conducted at home. The second section reviews studies of dialogic reading or storybook
reading conducted in the classroom or day care center. The second section concludes by stating how the reviewed research supports the current study.

**Parent-Child dialogic reading.** Eleven studies are reviewed in this subsection. The subsection begins with a meta-analysis that summarizes the effectiveness of parent-child dialogic reading (DR). Mol et al. (2008) conducted a meta-analysis to measure the added value dialogic reading provides in comparison to traditional story book reading, to determine if dialogic reading has specific effects on types of vocabulary, and to examine possible differential effects based on age and income level of participating families. Selection criteria included (a) dialogic reading programs involving a parent child dyad; (b) participants with no mental, physical, or sensory handicaps; (c) objective measures of expressive and receptive vocabulary; (d) a (quasi-) experimental design that included a control group where parents were asked to read as usual; (e) a report in English; and (f) could be published or unpublished. The analysis included 16 studies. Effect sizes were calculated to determine the overall main effect of dialogic reading over typical storybook reading on children’s vocabulary. A focus on expressive vocabulary found a medium effect size (Cohen’s d = .59); however, this effect size reduced significantly as the age of the children increased to four and five years. The author suggested that this occurred because parents may not have adjusted the technique to prompt for more age appropriate or sophisticated language. Additionally, the effects were not as significant for younger children from lower socio-economic families, who are likely to encounter language and literacy difficulties. This is possibly because younger children in these environments need more time to adapt to the discourse used in DR. It follows, then, that DR could me
more effective with older children if these children are from homes of lower socioeconomic classes. Mol et al. (2008) concluded that DR offers an effective way of enhancing storybook reading in homes of two to three year old children, but needs to be adjusted for children most at risk for school failure.

Arnold, Lonigan, Whitehurst, and Epstein (1994) examined the effects of dialogic reading on the vocabulary and expressive language skills as a function of the modality of parent training. Sixty-four middle to upper class two-year-old children and their mothers participated in this study. The experimental design consisted of a modified random assignment to one of three groups: typically trained parents, video trained parents, and a control group. The five week intervention included pre and post treatment measures of language using the Peabody Picture Vocabulary Tests (PPVT) to assess receptive vocabulary, the Expressive One Word Picture Vocabulary Test (EOWPVT) to assess expressive vocabulary, and the verbal expression and grammatical closures subtests of the Illinois Test of Psycholinguistic Abilities to assess linguistic complexity. Statistical analysis revealed significant differences across the groups on the PPVT, EOWPVT, and the ITPA-VA. The video trained group outperformed the control group by three to five months on the expressive measure, but did not reach significance on the receptive measure. The direct training group outperformed the control group on the test of verbal expression only. Finally, the video trained group performed higher on the PPVT-R and EOWPVT, but differences were not significant on the ITPA-VE measure. These results replicated the results of the earlier study (Whitehurst et al., 1988) showing DR to be effective in enhancing vocabulary and language development. Additionally, the viability
of video training opens up possibilities more easily bringing DR to more homes (Arnold, Lonigan, Whitehurst, & Epstein, 1994). The authors noted that additional research is needed to examine the effects of DR with different socioeconomic and cultural populations and to examine how DR may influence other pre-literacy skills in preschool and the early grades.

Huebner (2000) examined the effects of DR on the language of toddlers as part of parent public library partnership. Participant pairs consisted of 164 two year olds and their mothers who were randomly assigned to a DR group or a typical library services group after baseline data were collected. Pre and post intervention measures included the PPVT-R (receptive vocabulary), EOWPVT, (expressive vocabulary) and the ITPA-VE (verbal expression). Data was also collected and analyzed to study changes in parent child interactions over time. Parents audio taped reading sessions and researchers coded the tapes in 10 second intervals according to parent child interactive behaviors. Changes in child language were also coded using frequency counts of non-lexicalized vocalizations, one-word utterances, and multi-word phrases. The authors found that parent child interactions changed as dialogic interactions (who, what, when, where, and how questions; questions about function and attributes; labeling; and open ended questions) increased and non-dialogic interactions (pointing, yes/no questions, criticisms, and not including the child) decreased. Child use of language showed an increase of more one-word utterances, more multi-word utterances, and longer mean length utterances (MLUs). Statistical analysis of the standardized language measures showed a medium effect for the ITPA-VE, but did not reach significance on the PPVT-R or
EOWPVT measures. These findings suggest that DR produces favorable changes in the reading interactions between parents and children and on children’s verbal expression even when parents are trained through community based services. The author also indicated that a limitation of this study was very few low-income participants (Huebner, 2000a).

Huebner (2000) conducted another study examining the effects of DR on low-income families through community based support services. Sixty-one two-year-old children and their parents participated. The design included pre and post intervention data, but it did not include a control group or standardized measures of language. Rather, interviews with parents were used. The MacArthur Short Form Vocabulary Checklist-Level II was imbedded in the interview. Parents were also asked to recall the three longest phrases used by the child. These phrases were averaged to act as a proxy for grammar development. Finally, the interview requested information about child enjoyment of literacy activities. Baseline data indicated that few children scored at or above age level for vocabulary, most children were not combining words, and there was little engagement with literacy activities at the onset of the study. Many children outgrew the vocabulary checklist by the time post intervention data was collected. However, parents reported increases in sentence length and changes in reading pleasure. The authors conclude that DR positively influences the home language and literacy activities of low-income families (Huebner, 2000b). Limitations included the lack of a control group and self report bias on the part of the parents.
Chow and McBride-Chang (2003) studied the potential language and literacy benefits of DR in Hong Kong. The researchers used an experimental pre and posttest design. Eighty-six Chinese children and their mothers were randomly assigned to one of three groups for the eight-week intervention: dialogic reading, typical shared reading, and a control group with no treatment. Pre and post measures included PPVT-III (translated into Chinese) to measure receptive vocabulary and the Preschool and Primary Chinese Literacy Scale (PPCLS), a measure of character visual and auditory discrimination. A follow up questionnaire was also used to determine frequency of reading and to assess parent attitudes. Statistical analysis showed significant improvement on the PPVT-III for DR and typical shared reading group treatment. The DR group also improved on the PPCLS with a medium effect size (Cohen’s d = .47). The questionnaire revealed that 75.9 percent of the children enjoyed reading more so than prior to the intervention and 82.8 percent of the parents reported positive reflections about the interaction. The authors conclude that DR provided implicit opportunities for improved receptive vocabulary and explicit opportunities for character learning (Chow & McBride-Chang, 2003). Limitations included a small sample size, which influenced statistical significance, the need for a longer intervention period, and the need for improved compliance measures.

Fielding-Barnsley and Purdie (2003) evaluated the effects of an eight-week intervention using DR with 26 at-risk five-year-old children the year prior to formal reading instruction. Twenty-three children made up the control group. Parents in the treatment group were trained using a researcher-designed video that incorporated a focus
on rhyme, vocabulary, and concepts about print. The experimental time one and time two design measured receptive vocabulary (PPVT-III), rhyme, alliteration, letter knowledge, and concepts about print. Time one measurements included the PPVT-III, rhyme, alliteration, letter identification. Time two measures replaced letter identification with word reading and the spelling of 10 words representing most of the 26 graphemes. The intervention involved parents reading five books five times each over eight weeks using DR techniques. Statistical analysis of data collected at time one showed higher performance by those children in the DR group on the PPVT, initial consonants, rhyme, and concepts about print. Time two analyses showed that both groups made gains, but the DR group scored higher on final consonant and concepts about print. The authors determined that DR before formal schooling is advantageous and should include concepts about print, rhyme, letter identification, and alliteration activities as well as a vocabulary focus (Fielding-Barnsley & Purdie, 2003). The study is limited due to a volunteer pool of participants and a small sample size.

Huebner and Meltzoff (2005) replicated the 2000 library based DR study, however a more diverse socio-economic and cultural sample participated in the project. The purpose of this study was to learn how DR could be taken to scale as a community based universal prevention intervention. A particular focus of the study was to examine the effects of different training conditions for parents (video instruction in person, independent video instruction, and independent video instruction with telephone follow-up). The participant sample consisted of 125 parents and 128 two and three-year-old children. The MacArthur Short Form Vocabulary Checklist was used to learn the
language level of the children and to assure matched conditions across the three intervention groups and one control group. The eight-week study replicated methods from their previous work in that the pre and post experimental design used parent interviews and coded pre and post intervention audio-tapes to describe and measure change in interactions and language over time. Language samples of five minute read sessions were coded in 10-second intervals. A dialogic ratio was calculated to compare interactive behaviors of parents before and after the intervention. Statistical analysis showed an increased dialogic ratio cross all groups, increasing from .09 to 5.56. Language effects included an increased number of utterances (M = 17.61 to M = 26.70) and increased average length of utterance (M = 2.79 words to M =3.36 words). Results also indicated that the in-person training lead to more significant changes in behaviors and language. The authors conclude that DR continues to prove to be a valuable technique for facilitating language development among young children and using libraries as training sites can help to scale up the use of this technique within diverse communities (Huebner & Meltzoff, 2005).

Jimenez, Filippini, and Gerber (2006) examine the effect of DR in primary language with 16 seven and eight-year-old Spanish speaking children and their mothers. Two pairs of mother and child preferred to use English during reading and 14 preferred Spanish. The intervention occurred over eight weeks and included four home visits. Baseline data was collected at the initial visit. Training began with the second visit and continued every other week. Each one-hour session involved explanation of two dialogic strategies and included handouts that were left with the participants. The strategies
included making connections, praising and encouraging child’s responses, asking quality questions, expanding child’s responses, making predictions, and asking questions. The final visit was videotaped to collect post intervention data. The pre and post data were transcribed and coded on two separate points; parent use of strategies and child language analysis. Child language was coded using the Computerized Language Analysis. Parent interactions were coded and organized into frequency counts. Statistical analysis of these frequency counts revealed that more parents began increasing the number of dialogic prompts, with significant increases in making connections, making predictions, and quality questions. Children’s verbal participation increased in terms of number of turns speaking, length of turns, word types used, and word tokens. Additionally, there was evidence of more de-contextualized language being used by children. The authors conclude that DR is effective in first language in spite of varying education levels of parents (Jimenez, Filippini, & Gerber, 2006). The authors recommend research that examines the influence of consistent use of DR in first language on linguistic transfer of early reading concepts and skills in second language.

Blom-Hoffman, O’Neil-Pirozzi, Volpe, Cutting, and Bissinger, (2006) examined the impact of a video-based DR training program, Read Together Talk Together (Pearson, 2002) on care givers’ interactions and children’s verbalizations. The participants consisted of 12 children-parent dyads associated with two separate urban community health centers (CHCs). The study employed a pre and post experimental, six-week intervention design in which pairs were matched according to base line data and randomly assigned to two groups. The treatment group consisted of parents and children
that viewed the training video while in the CHC and received a bookmark highlighting main points from the video. The control group did not view the video but did receive a bookmark listing seven positive activities for caregivers and parents. Data consisted of video taped reading sessions five minutes in length. Data collection points included the first visit, a six-week follow up visit, and a 12-week visit. Baseline data indicated no difference in the home literacy experiences and children’s verbalizations during reading activities across the two groups. Statistical analysis showed a large effect size for parent use of dialogic prompts. Page and evaluation prompts were used more often than expansion, repetition, recall, and distancing prompts. These facilitations results were shown to be stable at 12 weeks. There was also a large effect size for on-task verbalizations at six weeks, which continued to grow at 12 weeks. The limitations of this study include the small sample size the possible reactivity of participants during data collections sessions. In spite of these limitations, the results led the authors to believe that CHCs offer a venue for providing DR training for parents, which would help facilitate language growth in their children (Blom-Hoffman, O’Neil-Pirozzi, Volpe, Cutting, & Bissinger, 2006).

Halsey (2008) investigated DR using alphabet books in order to increase phonological awareness (initial sound detection and rhyme identification), letter knowledge, and expressive oral language skills. Twenty-nine parent-child pairs from low-income households participated. An experimental pre post design was used. Pairs of children and their parents were matched according to the children’s scores on the measure of receptive vocabulary, the PPVT-III, and random assignment of pairs to the
treatment or control group. Parents in the control group received one hour training in DR. The intervention required three DR sessions a week for eight weeks. One book was read three times per week. Parents submitted audio taped reading sessions as data sources examining parent-child interactions. Curriculum based assessments and the Dynamic Indicators of Basic Early Literacy Skills measured early literacy skills (letter identification, letter naming fluency, rhyme, and alliteration). A picture-naming task from the Individual Growth and Development Indicators assessment was used to measure expressive vocabulary. Statistical analysis of language and literacy measures revealed no effect on letter or phonological knowledge. There were small gains on expressive vocabulary. The author concludes that DR completed with alphabet books serves primarily as a vocabulary intervention (Halsey, 2008). Limitations included small sample size limiting statistical significance, the use of self-reports for compliance, and a short intervention time period.

Briesch, Chafouleas, Lebel, and Blom-Hofman (2008) examined the consistency and integrity of caregivers’ use of DR in the home after receiving training from Read Together Talk Together. A single subject, multiple baseline across groups design was used to collect data on the intervention. The start of data collection for group two began two weeks after that of group one, creating opportunity for replication of results within the design. Data included three 15-minute audio recordings of reading sessions per week. Two weeks of baseline data were collected before the training. Intervention data was collected for weeks three, four, five, and six. Follow up data were collected six months after the intervention was completed. Statistical analysis revealed a clear increase in
dialogic prompting for the first group but not for the second group. The overall effect size for the increase was 3.94. The researchers concluded that the video training works well with parents and noted the high use of quality questions (who, what, when, where), praise, expansion, and open-ended questions (Briesch, Chafouleas, Lebel, & Blom-Hoffman, 2008). The authors suggest that research is needed to determine how to engage parents in more expansion, repetition, and recall questions. Research is also needed to examine multiple child outcomes describing various aspects of emergent literacy. Limitations of the study include a small, homogeneous sample consisting of only white families and questionable levels of fidelity to DR when the audiotape was not present.

**Summary of parent-child dialogic reading.** These studies involved training parents or caregivers to engage in DR with children in one-on-one settings in the home. The participants varied in socio-economic, cultural, and linguistic backgrounds and ranged in age from two to seven years. Locations of trainings varied from school or daycare to health center waiting rooms to libraries to home visits. Most studies employed an experimental design that included pre and post treatment measures. These measures were standardized commercial tests, curriculum based assessments, and language samples. Many, but not all studies, included a control group. Data analysis included statistical calculations, coding, and often a combination of both. All studies reported success in the training and improvement in children’s expressive language outcomes. Most studies also found training via video to be effective.

**Dialogic reading in the schools or day care centers.** The following 11 studies examined the effectiveness of using dialogic reading and similar interactive techniques in
the school setting. Most studies involve DR as described by Whitehurst (1988), however some include slight variations. Some studies were conducted using one on one reading structures, while others used small groups. All studies involved a shared book experience that required no extension activities and a focus on language outcomes for students.

Murrow (1988) examined whether frequent one on one storybook reading in school settings would increase the number and complexity of comments and questions by economically disadvantaged preschool students. Seventy-nine diverse four year olds participated in the study, which involved one reading a week for 10 weeks. These children attended urban daycare centers and most resided in homes of lower to middle incomes. The study design incorporated two experimental groups and one control group. One treatment involved reading different books at each reading session. The second intervention group used repeated readings, reading each book three times. The control group did not participate in any one on one reading over the course of the 10 weeks. The readers were researchers trained to prompt for background knowledge, questions, personal connections, and support for information. Additionally, readers went back through books to reread or retell. Reading samples were taped and collected the second and tenth session. The tapes were transcribed and coded according to focus on meaning, print or illustrations, and story structure. The coded data was tabulated into frequencies to prepare for statistical analysis. Results indicated an increased number and complexity of questions and comments in both experimental groups. Repeated readings were found to engage the children in more interpretive discussions and were more focused on print and story structure. The results lead to the conclusion that children become more
interested in meaning and are capable of interpretive responses (association, prediction, and elaboration) when the support of an adult is readily available (Morrow, 1988).

Future directions in research noted by the author included studying the value of school-based, one on one reading over a longer period of time, as well as designing studies that examine how language and literacy skills developed during repeated reading transfers to new reading.

Valdez-Menchaca and Whitehurst (1992) studied the effects of the use of one-on-one DR in a Mexican daycare center. This study used an experimental design and included one treatment group and one control group. Participants included 20 monolingual, Mexican, two-year-old children from lower income households. All children were determined to be developing normally based on the Denver Developmental Screening Test, but demonstrated low linguistic ability according to the PPVT-R and EOWPVT. Pairs of students were matched based on linguistic level, income, level of maternal education, family size and gender. The pairs were randomly assigned to one of the groups. The intervention group involved 30 DR sessions 10 to 12 minutes in length conducted once a day spanning a six to seven week time period. A graduate student acted as the “teacher.” The control group participated in a daily, one on one, arts and crafts lesson designed to enhance perceptual motor skills. Posttest measures included taped sessions that were coded for syntactic, semantic, and pragmatic information. Standardized measures of receptive vocabulary (PPVT-R), expressive vocabulary (EOWPVT), and verbal expression (ITPA-VE) were collected as post intervention data. Statistical analysis revealed that the DR group produced a mean effect size of 1.56 over
the control group across the three language measures. Language samples taken during final reading session were transcribed, coded, and statistically analyzed as well. These results showed that children from the DR group produced higher rates of answers, initiations, and topic continuations. The researchers concluded that DR can be used by teachers of students from low income households, that discussing pictures in storybooks produces large and enduring effects, and that language is a teachable outcome that can be addressed using storybooks in preschool (Valdez-Menchaca & Whitehurst, 1992). Limitations of this study involve internal validity in that the separate effects of DR and repeated reading were not determined. Also, external validity was influenced because the “teacher” was a well-trained doctoral student. Suggested future directions include the necessity to design applied studies involving DR in school settings.

Whitehurst et al. (1994) designed a study in order support a model that focused on particular preschool activities to develop emergent literacy skills that lead to later reading skills. The researchers also sought to find ways to make it easier for Head Start and other preschool programs to increase the language and literacy skills of three and four-year-old children. Participants included 167 four-year-old Head Start students from diverse cultural backgrounds who were assigned to experimental and control groups. The design involved pre and post standardized measurements of receptive vocabulary (PPVT-R), expressive vocabulary (EOWVT), and verbal expression (ITPA-VE). Early literacy skills were assessed using 18 subscales from the Developing Skills Checklist. The intervention involved incorporating DR with groups of students three times a week, incorporating DR with the parents of these children at home, and incorporating a phonemic awareness
training program at the school. The intervention lasted for 30 weeks. Statistical analysis of the standardized measures revealed significant main effects for the intervention group over the control group. Linguistic awareness (as measured by the Developing Skills Checklist) and language gains were higher for the treatment group. Medium effect sizes favoring the treatment group emerged for writing (Cohen’s $d = .516$) and print concepts (Cohen’s $d = .624$). The authors concluded that the statistically and educationally significant increases in language, writing, and print concepts can be attained through the modest addition of DR and phonemic awareness training. They caution, however, that DR with small groups in the school did not raise the language scores alone. Therefore, the authors maintain that if language is the key outcome desired, then one on one DR in the home or with volunteers needs to be a priority (Whitehurst et al., 1994). Future directions included the study of long term effects of DR on reading acquisition and decoding.

Whitehurst and Arnold (1994) designed a study to determine the effects of adapting DR to small groups of children in low-income preschools. They also wanted to study the effect of combining school-based group DR with home-based, one-on-one DR. The participants included 73 three-year-old children lagging about 10 months behind their peers in standard English vocabulary and expression. The experimental design involved pre and post intervention data collection and random assignment of matched students to one of three conditions (school based DR and home DR, school based DR only, and supervised play). The intervention lasted six weeks. Standardized measures of language included the PPVT-R (receptive vocabulary), the EOWPVT (expressive

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vocabulary), the ITPA-VE (verbal expression), and the Our Word test. Our Word was
developed by the researchers and uses the same format as the EOWPVT, but measures
student expressive use of words encountered during DR. Post intervention data was
collected after six weeks marking the end of the intervention. A follow up data collection
occurred six months after later Statistical analysis. These results revealed that the group
experiencing DR at school and at home outperformed other groups on both measures of
expressive vocabulary. This gain was still apparent six months after the intervention
terminated. The authors concluded that DR can be used in small groups at school and
with less educated adults, thus answering external validity concerns of previous research
(Whitehurst & Arnold, 1994). Limitations included the issue that the design and analysis
did not address the interactional or cognitive processes that enable language learning
during joint storybook reading.

Senechal (1997) studied the differential effect of didactic storybook reading on
preschoolers’ acquisition of expressive and receptive vocabulary. Thirty-three and four
year olds from middle class homes participated in this experimental study. The
experimental conditions included a group receiving a single reading, a group receiving
repeated readings, and a group receiving repeated readings with questioning. The book
was read three times in the two repeated reading conditions. Expressive and receptive
vocabulary was measured using researcher produced, book based assessments. The
receptive vocabulary assessment mirrored that of the PPVT-R. The expressive
vocabulary assessment required students to respond to prompts asking them to label
pictures in the book. Target words (novel words for familiar concepts) were pretested
before the first reading, followed by the reading based on the condition, and concluded with an immediate posttest for expressive and receptive vocabulary. Calculated effect sizes for gains indicated that repeated reading with questioning benefited both aspects of vocabulary. The condition which included asking questions was more beneficial to expressive than to receptive vocabulary gains. Further statistical analysis revealed main effects for reading condition and age on the expressive vocabulary posttest. It was concluded that multiple exposures to various titles add a rich context for word learning in the preschool classroom, particularly when combined with questioning and prompting.

The study was deemed limited in that the pretests may have sensitized children to the target words. The authors indicated that this study needed to be replicated using different reading materials. Further, the project needs to be extended by examining the use of novel words for novel concepts and the impact of varying questioning techniques (Senechal, 1997).

Lonigan and Whitehurst (1998) designed a study in order to replicate Whitehurst & Arnold (1994) and to determine the relative effectiveness of teacher initiated DR and parent initiated DR. The participants included 114 three and four-year-old children attending day care centers serving low income neighborhoods. A pre posttest design was employed using a random within class assignment to one of four conditions: parent DR only, teacher DR only, parent and teacher DR, and a control group. The pre and post measures included the PPVT-R (receptive vocabulary), the EOWPVT (expressive vocabulary), and the ITPA-VE (verbal expression). Post intervention also included a language sample from the final DR session for 66 children. Results indicated that the
condition involving teacher and parent based DR can be a positive influence on expressive vocabulary and verbal expression. Furthermore, language samples showed an effect size for MLU to be .63 and an effect size for total words produced on an unfamiliar book to be 1.03. It was concluded that relative effectiveness of who facilitates DR depends on the outcome measure. Teachers appeared to influence vocabulary while parents had a greater influence over verbal expression (Lonigan & Whitehurst, 1998). Additionally, the group setting may not be able to maximize Vygotsky’s zone of proximal development in order to influence factors of verbal expression. However, group based DR in preschool classroom settings serves a purpose in developing vocabulary (Lonigan & Whitehurst, 1998). One limitation involved decreased controls over compliance, which is a reality of conducting applied research. Future research needs to examine the causal links between the positive effects of DR and reading acquisition in order to justify attempts to scale up DR in preschool and early childhood classrooms.

Lonigan, Anthony, Bloomfield, Dyer, and Samwel (1999) set out to further examine the differential effect of center based shared reading and center based dialogic reading. This study also focused on the effects of the intervention on phonological sensitivity and listening comprehension in addition to children’s oral language skills. Ninety-five two to five year old children from low-income families participated in this study. The study was conducted in two waves across two years. Students were randomly assigned to one of three conditions: shared group reading, dialogic reading, and a non-treatment control group. Graduate students acted as the “teachers” and led the small group reading sessions, which occurred with groups of three to five children outside the
classroom. Pre and post intervention measures of language were the PPVT-R (receptive vocabulary), EOWPT (expressive vocabulary), ITPA-VE (verbal expression), and the listening comprehension subtest of the Woodcock Johnson Psycho-educational Battery. Four areas of phonological sensitivity were measured using tasks involving rhyme oddity, alliteration oddity, sound blending, and sound elision. Results indicated that DR and shared reading had positive effects on language, comprehension, and phonological sensitivity. DR tended to have a larger impact on verbal expression than did shared reading, showing effects sizes of .77 for DR and .51 for shared reading. Analysis of listening comprehension calculated shared reading as having greater impact than DR, with effect sizes of .77 and .51 respectively. Finally, only the alliteration task seemed to be differentially influenced by shared and dialogic reading, showing that shared reading (Cohen’s d = .70) led to better alliterative performance than did DR (Cohen’s d = .36).

Based on these results, the authors contend that DR can increase oral language skills and shared reading can promote emergent literacy skills, including a small effect on phonological sensitivity. In addition, the authors feel that shared reading, being a more simple intervention, may prove to be more practical in school settings given that shared reading does have positive effects on children’s language and literacy development. Finally, it is possible that DR loses its instructional impact in group settings, also making shared reading appear more advantageous (Lonigan, Anthony, Bloomfield, Dyer, & Samwel, 1999).

Hargrave and Senchal (2000) conducted a study examining the degree to which preschool students with low expressive vocabulary can learn new words through
participating in group DR. Thirty-six preschool children participated in this study. The children were three-, four-, and five- years old from predominately low-income households in two culturally diverse neighborhoods. The quantitative design involved collecting pre and post intervention data using standardized and researcher generated measures. Standardized measures assessed receptive vocabulary (PPVT-R,) and expressive vocabulary (EOWPV-R). Expressive vocabulary was also measured through a book vocabulary test created by the researchers. The book vocabulary test required children to label 18 nouns that they were exposed to while reading the books throughout the four-week intervention. Pretest scores showed that the children were behind by 13 months on receptive vocabulary. Post-test analysis revealed no significant change in receptive vocabulary; however, significant effects were found on both expressive vocabulary measures. Hargrave and Senechal conclude that DR is a successful technique for teachers to use with groups of up to eight children and that such a technique should be used over a long period of time in order to make a larger impact. Two limitations of the study are that attendance and compliance varied across centers and homes and that the duration of reading sessions differed (Hargrave & Senechal, 2000).

Speaker, Taylor, and Kamen (2004) designed a study to examine the qualitative changes in verbal fluency in preschool children when exposed to storytelling through picture book reading. Verbal fluency was described through vocabulary, grammatics, length of utterance, and sentence formation. Five children participated in the study. Language samples unrelated to the readings were taken before and after the intervention in order to ascertain whether or not the language gained during reading had a generative
effect on overall language use. Syntax was assessed using Brown’s fourteen grammatical morphemes to determine the mean length utterance (MLU). Vocabulary was analyzed via Templin’s Type Token Ratio (TTR). The intervention involved the reading of 10 different books that fit into the four weekly themes of the curriculum. Each book included planned, open-ended questions to be used before, during, and after the readings. Readings were completed on an individual basis and were video or audio taped and transcribed. Analysis indicated that the level of improvement varied in vocabulary, grammar, and sentence formations; however, there were significant gains in MLU. The researchers concluded that increased exposure to storytelling may facilitate the emergence of more advanced language use. The qualitative nature of the study limits the generalizability, but analysis of the post intervention language sample showed that the language improvements transferred to more spontaneous settings (Speaker, Taylor, & Kamen, 2004). The authors recommend that the study be replicated in various contexts in hopes of raising the level of advocacy for storytelling in preschool.

Lever (2008) focused a dissertation study on the viability of using DR to improve narrative constructions by kindergarten students. Participants included 40 English speaking five-year-old children. The experimental design included vocabulary measures, a narrative retelling task, and a narrative production task. The PPVT-III was used to measure receptive vocabulary. Expressive vocabulary was assessed by asking each child to label pictures of target words, which were selected from the books that were read. Retelling tasks were analyzed using the Edmonton Narrative Norms Instrument. Children were matched and randomly assigned to a treatment group (which participated
in group based DR) or a control group (which participated in phonemic awareness training). Results indicated that those students involved in DR created better structured narratives including references to feelings and emotions and used more de-contextualized language. DR did not seem to affect language complexity or cohesion. Gains in expressive language were also found. The study was limited in that the participants included middle-income students, therefore it is unknown if DR would have a similar impact on other populations. Additionally, the effect size was small to moderate, although such an effect size is large enough to have educational impact. Therefore the author concluded that the DR can be used to develop stronger narrative construction skills in kindergarten students (Lever, 2008).

**Summary of dialogic reading.** The studies cited in this section focused on the effectiveness of shared book reading in general, and DR in particular, in raising vocabulary and other language skills in preschool and kindergarten aged children. Taken together, the results and conclusions point to the positive impact of using DR and shared reading in small groups a school setting, although there are differential effects in that different reading techniques seem to foster different aspects of language. Varying techniques include DR, shared reading, and repeated shared reading. Shared reading promoted listening comprehension, while DR had positive effects on vocabulary, mean length utterance, and narrative constructions. Repeated readings led to improved vocabulary and more interpretive responses when combined with interactive techniques like DR. The information in Table 1 outlines the techniques and their reported effects.
Studies also showed DR to be effective in a variety of ethnic and socio-economic school-based contexts using a variety of languages (Valdez-Menchaca & Whitehurst, 1992).

Table 1

<table>
<thead>
<tr>
<th>Technique</th>
<th>Description</th>
<th>Potential Outcomes</th>
<th>Example Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical storybook reading/Shared</td>
<td>No interactive reading techniques used; adult reads and child listens</td>
<td>Used as control group; Positive effects on listening comprehension</td>
<td>Whitehurst et al. (1988); Mol et al. (2008); Lonigan et al. (1999)</td>
</tr>
<tr>
<td>Dialogic reading</td>
<td>Interactive techniques that adapt prompts and informative feedback to child needs</td>
<td>Positive effects on vocabulary, mean length utterance, narrative constructions</td>
<td>Whitehurst et al. (1988); Arnold et al. (1994); Heubner (2000); Lever (2008)</td>
</tr>
<tr>
<td>Repeated reading</td>
<td>Same titles read multiple times in typical form or combined with interactive procedures</td>
<td>Positive effects on vocabulary and interpretive responses when combined with interactive techniques (i.e., DR)</td>
<td>Fielding-Barnsley &amp; Purdie (2003); Halsey (2008); Murrow (1988); Senechal (1997); Hargrave &amp; Senchal (2000)</td>
</tr>
</tbody>
</table>

Summarizing the methods and measurements used in the literature focused on DR with parents and shared reading, including DR, in the schools provides direction for future studies examining the language and literacy connection in emergent literacy.

Most, but not all, intervention designs included a control group. Some studies that contributed to the overall literature base used single subject methods (e.g., Briesch (2008)) and more qualitative methods (e.g., Speaker et al (2004). Instruments remained consistent across all studies and included standardized measures (PPVT, EOWVT, ITPA-VA) for quantitative investigations. Qualitative analysis of language samples included
the use of validated and researcher generated coding systems to address more complex aspects of language and interactions, and researcher created expressive vocabulary assessments that were book/intervention specific. Intervention durations ranged from four weeks to 30 weeks, and all studies found storybook reading to have a positive effect on oral language development. Fidelity to DR was reported in a few cases, but it is somewhat unclear in the literature. Information provided in Table 2 summarizes efforts to measure fidelity or compliance related to the studies reviewed above. The next section reviews literature from the public health and behavior field, as well as the education field, to better understand fidelity in applied education settings.

Table 2

<table>
<thead>
<tr>
<th>Study</th>
<th>How Fidelity Was Defined</th>
<th>How Fidelity Was Measured</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chow &amp; McBride-Chang (2003)</td>
<td>Compliance to components and duration</td>
<td>Children’s identification of storybooks to be used in intervention</td>
</tr>
<tr>
<td>Halsey</td>
<td>Compliance to duration</td>
<td>Self report</td>
</tr>
<tr>
<td>Lonigan &amp; Whitehurst (1998)</td>
<td>Compliance to components and duration</td>
<td>Considered in research design; Teacher and parent logs; Weekly visits</td>
</tr>
<tr>
<td>Hargrave &amp; Senchal (2000)</td>
<td>Compliance to components and duration</td>
<td>Direct observation before training and during intervention; book logs</td>
</tr>
</tbody>
</table>

Fidelity

Fidelity is the study of whether or not an intervention is applied according to the developers’ intentions. It is a fairly complex construct that has been used in health and behavior fields, but remains less frequently used in applied, education settings.
(O’Donnell, 2008). The focus on research-based practices in the classrooms during the last decade necessitates mobilization of fidelity studies within intervention research (Ruiz-Primo, 2006). The following review chronologically presents the breakdown of five fidelity articles, which include specifics studies. The first two articles, a 2005 article on guidelines followed by a 2005 study, are found in the health and behavior fields and the remaining three articles, one paper and two studies, focus on education issues.

**Fidelity in the public health and behavior literature.** Borrelli et al. (2005) provide detailed guidelines to be used to develop sound treatment fidelity plans. Dimensions of a fidelity plan include treatment design, training, delivery, receipt, and enactment. Treatment design assures the intervention is grounded in relevant theory and practice. Training assures that the components of the intervention are successfully taught to the providers and that the providers understand the relevance of each aspect of the intervention. Lack of training negatively influences external validity because procedures and results will be difficult to replicate in other settings. Treatment delivery consists of processes and measures that determine to what degree the intervention was implemented in the way it was intended. Lack of adherence to the delivery leads to poor internal validity. Treatment delivery determines whether the participants understand or benefit from the intervention. Finally, treatment enactment ascertains whether or not the participant transfers the new strategy or learning to real life situations. The authors advocate for consideration of these components of treatment fidelity to increase adherence to the intervention throughout treatment, therefore positively impacting internal and external validity. Such considerations are particularly important in applied,
single subject research because replication of studies is vital to development and dissemination.

The guidelines defined above provide researchers with criteria for measuring fidelity and create a framework for best practices in intervention research (Resnick et al., 2005). Borrelli et al. (2005) developed an assessment tool based on the five-point framework in order to evaluate treatment fidelity. The research group developed a treatment fidelity checklist that consisted of 25 items. Three hundred forty-two studies (single-group and quasi-experimental designs) dated 1990 to 2000 were selected from the health and behavior literature. These studies focused on psychosocial interventions involving cognitively based treatments, social skills training, and behavioral interventions. The articles were coded based on the presence or absence of the items noted on the fidelity checklist. Code options were, “present,” “absent but should be present,” or “not applicable.” Pairs of coders first worked with an article individually and then came to consensus on discrepancies using a uniform coding sheet. Adherence to treatment fidelity strategies was calculated by summing those strategies coded as “present” and dividing that number by strategies that should have been present (the sum of “present” and “absent but should be present”). The researchers found that 60% of the articles included fidelity strategies and 15.5% maintained a high level of fidelity—meaning .80 of the strategies on the checklist were present. Furthermore, 6.5% of the studies included .80 of the strategies in each of the five categories—design, training, delivery, receipt, and enactment. The research group concluded that the treatment fidelity assessment tool could be used to design studies with strong internal and external
validity, as well as to empirically assess the validity of other studies (Borrelli et al., 2005).

**Fidelity in the education literature.** Ruiz-Primo (2006) wrote a paper to conceptualize and apply fidelity measures in education settings. The author stated that empirical data describing fidelity to treatment, or fidelity of implementation, is lacking and that fidelity is rarely connected to outcomes of studies (Ruiz-Primo, 2006). Five dimensions of fidelity were found in the literature, adherence to intervention program, exposure and duration of program, quality of delivery, participant responsiveness, and program differentiation (how different is the program from existing activities in the classroom). There are several reasons to measure all five dimensions of fidelity, two of which are to explain varying effects across studies and to make improvements to intervention, manuals, or training. According to the author, characteristics related to the program (i.e., complexity, time, materials required, training) and to the context (i.e., proximity, theoretical agreement between developer and provider, participant satisfaction, supervision) influence fidelity. Finally, Ruiz-Primo (2006) stated the importance of defining the significant components of a program so that fidelity can be appropriately measured. Measurement instruments include participant products, direct observation (checklists, rating scales, notes), interviews, logs, and questionnaires. Measurement sources included an independent observer, provider, or participant. The author applied the dimensions described above to conduct a fidelity study on a formative assessment project.
The Formative Assessment Study (Ruiz-Primo, 2006) looked at the implementation of a science curriculum across 12 pairs, each consisting of one teacher and one student. The authors defined the essential components of the science program. The fidelity measures that tapped the five dimensions included teacher questionnaires and vignettes, videotaping of lessons, teacher logs, and student notebooks. The results prompted several suggestions for developing fidelity studies. First, researchers need to define the critical components of the intervention, as well as acceptable variations in the program. Second, the fidelity measures within the program or intervention need to be embedded. Third, multiple methods, including videotapes in place of direct observation, can be used as a way to ensure all aspects of fidelity is measured.

Smith, Daunic, & Taylor (2007) also advocated for fidelity measures to be implemented in order to effectively disseminate evidence based practices in education. The authors indicated that a lack of fidelity in an intervention makes replication of results very difficult. Therefore, strategies that monitor and enhance study design, training, delivery, receipt and enactment bolster potential replication efforts. These strategies include, but are not limited to, direct observation, feedback (coaching) during training and implementation, self monitoring and reporting, review of products, and detailed intervention manuals. Although fidelity is clearly defined in the literature and its importance referred to repeatedly, no standards have been developed with respect to acceptable levels of fidelity. Further study is needed in this area in order to advance research practices in the field of education (Smith et al., 2007).
Like Smith et al. (2007), O’Donnell referred to the fidelity literature in the health field in order to more fully conceptualize application of fidelity in education settings. These authors defined fidelity of treatment in terms of fidelity to structure (adherence, duration, participant responsiveness) and fidelity to processes (quality of delivery, program differentiation, participant responsiveness), which is similar to the construct outlined by Ruiz-Primo (2006). Based on this working definition, 120 studies, articles, and books were reviewed to explore how fidelity was conceptualized and quantitatively measure in education research. It was determined that fidelity in education settings is important but that fidelity as a construct competes with other existing constructs in education (i.e. curriculum in use, adaptation). Additionally, it was found that too few education intervention studies model how to empirically measure fidelity and consider these results in relation to outcomes of the intervention. Therefore, O’Donnell (2008) developed six points to consider based on the work conducted in the public health field: establish program theory and fidelity requirements before implementation, operationalize critical components of the program, create separate measures for the critical components, conduct random or full census sampling within the study to generalize fidelity findings, measure intervention provider’s fidelity to critical components, and include and report reliability procedures (O’Donnell, 2008).

**Summary of fidelity.** Treatment fidelity, or fidelity of implementation, refers to the degree to which an intervention is implemented according to the critical program components. Researchers in the public health and education fields agree that treatment fidelity is imperative in that high fidelity strengthens internal and external validity. Two
different ways of explaining five core components of fidelity were articulated in the five articles reviewed. One summary labels the components as design, training, delivery, receipt, and enactment. A second summary divides these five components into two categories: fidelity to structure (adherence, duration, and participant responsiveness) and fidelity to processes (quality of delivery, program differentiation, and participant responsiveness). Many researchers agree that a multi method approach to developing measures across all dimensions will positively influence fidelity findings and communication (Ruiz-Primo, 2006). Doing so generates a more complete picture of what happened before and during implementation and, if related to the outcomes of the intervention, will aid in replication efforts.

**Chapter Summary**

The literature describing language development and emergent literacy indicate the need for pedagogical shifts in preschools (Dickinson, McCabe, & Essex, 2006). Both, language and literacy can be socially constructed and are dependent on current input and previous experience or schema (Bates & Goodman, 1997). DR provides a natural way to guide interactions around books, scaffolding the schema necessary to generate new language learning and facilitating the shift from contextualized language (language children use to describe the here and now) to de-contextualized language (including receptive and expressive vocabulary used to define, infer, and interpret events) (Snow, 1991; Watson, 2001).

The studies reviewed provide support for DR as a successful interactive reading technique in homes and in small group settings at schools despite varying levels of
compliance and diverse education and cultural backgrounds of participants (Huebner & Meltzoff, 2005). The technique appears to capture tenets of socio cultural and schema learning theories that are significant to language learning during emergent literacy. Various studies have shown increases in language complexity and use of de-contextualized language through expressive and receptive vocabulary, depending on the type of delivery (shared reading, repeated reading, or dialogic reading) and the delivery structure’s (group versus individual) adaptability to the children’s zone of proximal language development. Finally, studies have shown that DR is a technique that can be used across cultures and education levels (Jimenez et al., 2006).

Fidelity is an important, yet understudied aspect of intervention research in education. Assessing fidelity across its various dimensions substantiates internal and external validity in intervention research. The use of multiple research methods can help researchers measure fidelity and relate it to intervention outcomes.

Future directions for research concerning DR and its potential to influence children’s language development and emergent literacy behaviors include examining the effects of longer intervention time periods, particularly for students typically found at-risk for future reading difficulties. There is also a continued need to focus on understanding the language literacy connections. Finally, measuring fidelity of implementation will help to broaden the reaches of DR in classrooms, day care centers, and homes.
3. METHOD

The purpose of this study was to examine the effects of dialogic reading when used in a school setting and when pairing sixth grade students with Head Start students. The process is referred to as dialogic buddy reading (DBR) from this point forward due to the context of the study and the nature of the relationship developed between the older and younger student. The dependent variables under investigation were expressive vocabulary, receptive vocabulary, and the sustainability of DBR in the school setting. The independent variable was DBR, a shared reading technique that increases interactive behaviors exhibited by young children. Additionally, this study investigated the identified outcomes of DBR using the primary language of the participants in each pair. The research questions that guided the study were:

1) How is a preschool student’s expressive and receptive vocabularies affected by routine dialogic buddy reading facilitated by a sixth grade student using the primary language of the preschool student?

2) How sustainable is dialogic buddy reading in a school setting?

Incorporating Results from the Pilot Study into the Design

A six-week pilot study was conducted during the spring of 2009. Eight pairs of children consisting of fifth grade and Head Start students participated in a fifteen minute buddy reading session four days a week. The students were from diverse socio-
economic, linguistic and cultural backgrounds. Four pairs were randomly selected to be focus pairs for data collection using a single subject multiple baseline design. The four pairs varied in age and primary language. Two pairs included preschool children that recently turned four and would remain in Head Start for another year; and two pairs included children that were five and would be attending kindergarten in the following fall. The students in three pairs spoke English as a primary language, and one pair of students spoke Spanish as a primary language.

The purpose of the pilot was to determine the effectiveness of several aspects of the proposed dissertation design. First, it was necessary to explore the feasibility of a multiple baseline design. Second, criteria for vocabulary word selection needed to be formed. It was also necessary to test the reliability of fifth grade students’ data gathering on book based receptive and expressive vocabulary. Another focus was to determine the effectiveness of the vocabulary measure. A final purpose was to determine how to train the older students in dialogic reading (DR) and how to scaffold their work with the younger children.

The pilot began with four 15 minute training sessions in which the older buddies reviewed the DR guide and viewed video of previous pairs working together. Next, the fifth grade Head Start pairs read together for a two weeks to get to know one another. Data collection began in the fourth week. The vocabulary measure involved the older child laying out eight pictures and the following prompting sequence: “Give me the picture that shows ______.” If the correct picture was selected, then the older student prompted, “Tell me what you know about the word, ______.” The prompt card was
put in one of three envelopes, depending on the accuracy of the child response: incorrect, correct, or correct with elaboration. A baseline was established using the data before dialogic reading began for a particular story. There was a return to baseline with new stories by withholding DR for the first three or more readings of the new book. The results of the pilot study follow.

Finding a baseline for each child was inconsistent across the pairs and also varied according to the book and vocabulary used. One student picked up on the vocabulary before DR was introduced using one book, yet a baseline was established in three readings of another book. Another student failed to show a consistent or downward trend across more than three readings. Yet a third student established a baseline after three readings. Some students appeared to lose interest in the books and/or in the buddy reading process due to the researcher’s need for extended repeated readings to establish a baseline. The inconsistency in establishing a baseline could also be related to relying on the fifth grade students to administer the vocabulary measure. There may have been a tendency to teach the words or provide hints based on the younger students’ responses. The protocol for the receptive/expressive vocabulary measure appeared to have the potential to be effective, although the younger students often tended to guess due to the use of eight pictures from which to choose. Finally, the older students struggled in using the general guides with their student-selected books, but did try to use them. However, students who also served as data collectors appeared to more comfortable applying the DR technique with teacher selected vocabulary bookmarks, which guided them more specifically through the DR options.
The results of the pilot study indicate that the following changes needed to be made in the dissertation design. First, a multiple probe design was used in place of a multiple baseline design. A multiple probe design establishes the relationship between the independent variable and the learned concepts, which in the case of this study are the individual targeted words. A multiple probe design is characterized by determining the initial level of response to each of the studied concepts; providing opportunities to show change in response for each of the studied concepts after the independent variable is introduced; and a stable baseline is established before introduction of the independent variable (R. D. Horner & Baer, 1978). Shifting from a multiple baseline design to a multiple probe design allowed for a pre-assessment of known vocabulary based on a variety of books, which contributed to establishing a baseline across the different books chosen by the students. Decreasing the amount of time in the vocabulary measure and offering more choice in reading material helped the pairs maintain autonomy.

Another change in the study design is that the researcher collected the data provided by the vocabulary measure. Additionally, the measure used three detractors rather than seven, and a new set of four pictures was introduced for each target word. This allowed the child to attend to the pictures and the prompt more readily. The vocabulary measure included a receptive prompt, followed by an expressive prompt and a return to the receptive prompt. The return to the receptive prompt provided a more accurate picture of the students’ knowledge of the word.

Finally, a more in-depth training in DR was established for the older buddy readers. The training involved a gradual release from modeling provided by the
researcher as students follow with the DR guides to students assessing one another using a DR checklist based on the guides. The descriptors on the checklist included the prompt, the evaluation, the enhancement, the repeat, and allowed the younger student to tell the story rather than being read to during repeated readings. The older students were also shown video clips of buddy reading that involve aspects of DR.

**Method for the Current Study**

The training needs and the young age of Head Start students in the fall lead to the following timeline and recruitment and selection procedures. First, all students in Head Start and sixth grade students were recruited by mid September. Random selection with replacement was used to select six pairs for data collection at this point; however, all pairs participated in DBR simultaneously in the preschool classroom. To prepare for DBR, the older students were trained in September and October without their buddies in order to provide the preschool children time to adjust to the routines of school activities. Buddies began working together in November providing time for the pairs to become comfortable with one another and to orient the younger students to sustained storybook reading. The researcher and Head Start teacher determined if the pairs selected in early September had developed the necessary attention to participate as data sources at this point. Data collection using pre-selected books and pre assessed vocabulary words began in February.

All students, fourteen pairs and one trio, participated in DBR simultaneously in the preschool classroom four mornings per week. The younger students waited for their buddy by sitting in a circle on the rug. The younger students always had a book that they
selected with them, and as weeks went on, would be pretend reading or sharing with a friend when the older students entered. The buddies would greet each other with smiles, hugs and high fives; then they would go to their favorite spots in the classroom to begin reading. The older student of each pair involved in data collection brought a book box with them which included the specified book or books that needed to be read during vocabulary data collection phases.

The space was energized with a great deal of activity, language and laughter that usually centered on the books being read. There were times of play and off task fun as students from different pairs became engaged with one another’s books or conversations. However, students were busy with DBR more often than not. All pairs participated in DBR at the same time in the typical classroom context. Moreover, all fidelity observations were collected in this classroom context as these students engaged in DBR. However, the younger students were removed from class on Friday afternoons for a one on one administration of the vocabulary probe. The following sections provide more detail about the design, participants, measures, and analysis used.

**Design and procedure.** A single-subject, multiple probe design (SSMPD) across six pairs of students was used instead of a multiple baseline to examine the effects of DBR on the expressive and receptive vocabularies of the Head Start participants (M. Mastropieri, personal communication, June 22, 2009). The multiple probe design maintains the benefits offered by the multiple baseline experimental design, built in controls that aid in inferring causality (R. H. Horner et al., 2005). This study employed a multiple probe design similar to the single subject multiple baseline design employed by
Briesch et al. (2008), a study reviewed in the previous chapter, which used two phases of multiple baselines within a single study. During this study, three separate groups of two dyads cycled through the base line, intervention and follow-up phases. The second group of two pairs began providing DBR data two weeks after the first, and the third pair began two weeks after the second, allowing replication of procedures within one study (Briesch et al., 2008).

**Establishing a baseline and multiple probe vocabulary measure.** Establishing a baseline involved determining the level of response before the intervention was implemented. Literature suggests three to five data points to establish the baseline when using a multiple baseline design (R. H. Horner et al., 2005). Based on the results of the pilot study, this procedure, used to establish a baseline, was altered to align with a multiple probe design and to allow for book choice by the students (M. Mastropieri, personal communication, June 22, 2009). An initial response to words from each of the student chosen books was established and used to create a vocabulary probe for each Head Start student. Students were given subsequent opportunities to show their knowledge of these words before DBR was used with each book, as well as after DBR was used as each book was introduced during sequential weeks.

The unique vocabulary probe was established for each Head Start student, based on the books chosen by the student, was developed the following way. A list of eight words was generated from each of three student-selected storybooks to create a measure for each Head Start student. Criteria for word selection required that the word be a noun or a verb, but could be fairly ordinary (e.g., catch) or interesting (e.g., toppled). Each
word for which the student showed no receptive and expressive knowledge was placed into a word selection pool. Four words were selected for each story, with each word appearing in different parts of the story. The 12 selected words created a unique multiple probe measure for each preschool participant. Each student demonstrated a baseline measure of zero for both the receptive and expressive components of the multiple probe measure. The multiple-probe was given once a week over the five weeks of data collection for each Head Start participant.

*Fidelity to intervention design.* Treatment design refers to how well the study or intervention aligns with existing theory and research. The literature reviewed and pilot study conducted prior to this investigation informed many aspects of the study design. Research in the area of language development and emergent literacy emphasized the importance of linguistic schema and social interactions, therefore opportunities for repeated readings via DBR were provided. Fifteen minutes of DBR were also conducted four times a week, allowing for continuity in these opportunities. However, no attendance was kept during the study so the number of actual DBR sessions for each pair is unknown.

Research in storybook reading led to the delineation of the critical components of dialogic reading. These critical components informed the training and were used to create two scaffolds that guided the sixth grade students during DBR sessions. Finally, using a single subject design allowed the Head Start participants to act as their own controls due to finding their individual vocabulary baselines. However, no real baseline was established for the use of DBR before training began. Although, there are some
limitations, this study did incorporate strategies or measures across all four considerations outlined by Borrelli et al. (2005), creating a strong design.

**DBR training.** The training for DBR consisted of two stages. The first phase involved learning how to select books and target words and how to conduct DBR. The second phase involved the pairs engaging in DBR with ongoing coaching from the researcher. A more detailed description of each phase follows.

The first stage of the training occurred over twenty-eight 15 minute sessions at the onset of the study (September and October), but before the pairs began to meet. Older students were provided guidelines, practice, and coaching in selecting appropriate books and vocabulary words. Book selection criteria included a sense of story or interesting information, rich vocabulary, and engaging pictures. Words targeted for discussion needed to be meaningful. The older students spent four sessions locating books that they felt were appropriate for DBR. The older students then worked in pairs to determine which books met the book selection criteria and which needed to be discarded. During the next four sessions, pairs read through the books and noted words that would work as targeted vocabulary by marking them with a sticky note. The researcher facilitated the older student discussions offering guidance as necessary.

The next twenty 15 minute sessions of first stage of DBR training involved learning how to facilitate DBR. To start, the students viewed the 30 minute video, Read Together Talk Together (Pearson Early Learning, 2002) from beginning to end. They then revisited different aspects of the video as they viewed live modeling and role-played with peers using the books and words previously selected. Additionally, the students
were provided with a guide to scaffold them in the DBR (Appendix A), which was also used during training and during the intervention. The researcher used the DBR fidelity checklist (Appendix B) to provide ongoing feedback to the role-playing pairs during the last week of October and the first week of November.

The second phase of the DBR training began the second week of November. The older reading buddies began to implement the dialogic techniques with their preschool aged partners using books selected from the classroom library. The researcher individually coached all the pairs that made up the selection pool using the DBR fidelity checklist during the months of November, December, and January.

**Fidelity to intervention training.** Although the fidelity protocol checklist used during intervention observations provided information concerning how well the sixth grade students were able to facilitate DBR following the training and over time, conducting more specific observations before training and directly following training would strengthen fidelity claims about training. The latter would also help standardize training procedures over several replications because the analysis of this information could lead to improving and legitimizing the training. However, the observations did document that the training and subsequent scaffolds allowed the students to use DBR with varying degrees of fidelity that improved over time. As with the treatment design, this study incorporated all considerations noted for treatment training, allowing for successful implementation and positive outcomes in delivery fidelity and vocabulary gains.
**Delivery of intervention.** Six pairs were randomly selected for data collection in early February. The selected older students participated in the pre intervention interview at this time. The pairs of older students and Head Start students spent two weeks introducing and providing one read each of six books: Growing Vegetable Soup, Harry the Dirty Dog, How Does a Dinosaur Go to School, The Runaway Bunny, Is Your Mama a Llama, and Corduroy. The preschool student then chose three books they wanted to use during the intervention period (M. Mastropieri, personal communication, June 22, 2009). Finally, a unique vocabulary measure was developed for each of the six preschool students based on their book selections by late February (M. Mastropieri, personal communication, June 22, 2009). Bookmarks were created to scaffold and target the vocabulary words using the DBR protocol. An example of a bookmark for one story is included in Appendix C.

The intervention period used the following format. Each pair worked with the selected books for five weeks. One of the three selected titles was reintroduced each of the first three weeks. The pairs were required to read the targeted book for the week at least once each day. The pairs read one to two books per reading session, so the targeted book was read every day during that week plus another book. The targeted book was kept in a book box delegated for the pair after it was reintroduced so that the pairs could use it again in subsequent weeks if they so chose. Each preschool student was administered the vocabulary measure once a week during the five week period. The six pairs were organized into three distinct groups. The start time for each group’s five-week intervention period was staggered every two weeks.
A graphic display of the timeline for the intervention and data collection can be found in Appendix D. Each bar represents a pair. The bar is divided into five sections, one section for each week. The dates for the week, the title of the book introduced, the targeted words for that book, and the dates for the vocabulary probe and fidelity observation are noted in each section. There was a total of nine weeks of data collection during the intervention phase.

**Fidelity to delivery of intervention.** Each of the six pairs was observed at least once a week during the nine-week data collection period during March, April, and the first two weeks of May. This period provided eight fidelity checks for each pair. Each observation was audio recorded as the checklist was applied. The fidelity protocol checklists were analyzed for each pair. This analysis focused on the number of complete DBR cycles per observation and a notation of the components neglected. A visual graph representing the fidelity measure was constructed for each set of dyads. These graphs and the analyses are included in Appendix E.

A summary of the individual visual analyses of the fidelity graphs for pairs one through six consists of two different trends, number of available components used per DBR cycle and number of completed cycles. Lizzie and Sashi, Jenny and Jeremy, Ferrel and Don, and Julia and Paige showed an upward trend in the number of components used for each DBR cycle. Lizzie and Sashi demonstrated this trend only when supported with the additional bookmark scaffold that targeted vocabulary. Ashley and Maria and Noora and Marion showed an upward trend in completed cycles. Figure 3 shows these two trends in terms of the percentage of available components used and percentage of
completed cycles per observation with and without the bookmark scaffold. The training and scaffolds supported students’ use of DBR in varying degrees, but most trends showed that continued practice could lead to higher fidelity over time.

![Bar chart showing percentage of available DBR components used and completed cycles with and without bookmark scaffold for different pairs of participants.]

Figure 3 Percentage of Available DBR Components Used and Completed Cycles

**Participants.** The following section describing the participants is separated into two subsections. The first provides details about the selection pool of participants. The second subsection details the participants selected for data collection.

**Participant pool.** The study took place in a small, diverse, suburban public elementary school that served Head Start through sixth grade. According to the school system’s demographic information, the school membership during the 2009-10 school year included 463 students. Forty-five percent of the population was female and 55% was male. Student demographic characteristics broke down into the following ethnic
categories: 0.2% American Indian, 6.7% Asian, 10.7% African American, 26.6% Hispanic, 8.0% Multiracial, 47.7% Caucasian (Fairfax County Public Schools, 2011). Approximately 20% of the student population received English language support. Roughly 28.61% of the school population participated in the free and reduced lunch program.

The participant pool consisted of 17 sixth grade and 15 Head Start students. The students represented a diverse range of socio-economic, linguistic, and cultural backgrounds that mirrored that of the school membership. Ten sixth grade students were female and seven were male. Six Head Start students were female and nine were male.

The ethnic backgrounds of the sixth grade students broke down into the following categories: one Asian student, two African American students, six Hispanic students, two Multi-racial students, and six Caucasian students. The ethnic backgrounds of the Head Start students broke down into the following categories: three Asian students, four African American students, six Hispanic students, and two Multi-racial students. The language background of the sixth grade students broke down into the following categories: 10 students spoke English only, four students spoke Spanish and received English language services at school, two students were bilingual in Spanish and English, one student was bilingual in Urdu and English. The language used in the homes of the Head Start students broke down into the following categories: three students spoke English only; three students spoke predominantly English but had one parent that spoke Spanish; five students spoke Spanish; one student spoke French and English at home; one student spoke Turkish at home; one student spoke Urdu at home; and one spoke Arabic at
home. The average age of the sixth grade students in November of 2009 was 11 years and nine months. The average age of the preschool students in November of 2009 was four years and zero months.

The participant pool was organized into 14 pairs and one trio. The dominant language spoken was matched for seven pairs—three pairs spoke English and four pairs spoke Spanish. Five pairs and one trio consisted of females. Six pairs consisted of males. Three pairs consisted of a male and a female. The pairs began DR in November after the sixth grade students received an eight-week training in the process. This time also allowed for the Head Start students to adjust to the school routines.

Two pairs were removed from the selection pool (but continued with DBR in the class) due to special education and behavioral modification needs. Additionally, one African American sixth grade boy was removed by his classroom teacher and replaced with an Asian boy during the month of December. Finally, one Caucasian sixth grade girl chose to withdraw from the trio of girls in March. The latter two withdrawals did not impact the observations of the six pairs selected for data collection.

Selected participants. Six pairs were randomly selected for data collection. The pairs were identified on individual pieces of paper and placed in one of two containers representing two sub pools, English or Spanish. Four pairs were selected from the English sub pool and two were selected from the Spanish sub pool. The selected pairs are described using numbers and pseudonyms. A summary of their demographic information is shown in Table 3. More extensive descriptions of each pair follow the table.
Pair number one consisted of two females, Ashley (a Caucasian sixth grade student) and Maria (an African American and Hispanic Head Start student). Ashley was 12 years of age, spoke English, and was considered on or above grade level in language arts. Qualitative observational data collected during fidelity checks noted that she exhibited calm and deliberate mannerisms. Maria was four years and 10 months of age and in her second year of Head Start. She had one sibling, her twin sister. She spoke English in the home; however, her mother was learning English and spoke to her in

<table>
<thead>
<tr>
<th>Pair</th>
<th>Student 1</th>
<th>Age (yr.m)</th>
<th>Race or Ethnicity</th>
<th>Language Spoken in Home</th>
<th>Language Used for DBR</th>
<th>Language Used for Vocabulary Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ashley</td>
<td>12.0</td>
<td>Caucasian</td>
<td>English</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Maria</td>
<td>4.10</td>
<td>African American</td>
<td>English with some Spanish</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td>2</td>
<td>Lizzie</td>
<td>12.4</td>
<td>Caucasian</td>
<td>English</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Sashi</td>
<td>4.2</td>
<td>North African</td>
<td>Arabic</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td>3</td>
<td>Jenny</td>
<td>11.2</td>
<td>African American</td>
<td>Bilingual (English &amp; Spanish)</td>
<td>English &amp; Spanish</td>
<td>Spanish</td>
</tr>
<tr>
<td></td>
<td>Jeremy</td>
<td>4.9</td>
<td>Hispanic</td>
<td>Spanish</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Ferrel</td>
<td>11.5</td>
<td>Caucasian</td>
<td>English</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Don</td>
<td>4.11</td>
<td>African American</td>
<td>Bilingual (English &amp; French)</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td>5</td>
<td>Noora</td>
<td>13.2</td>
<td>Hispanic</td>
<td>Spanish</td>
<td>English &amp; Spanish</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Marion</td>
<td>4.9</td>
<td>Hispanic</td>
<td>English with some Spanish</td>
<td>Spanish</td>
<td>English</td>
</tr>
<tr>
<td>6</td>
<td>Julia</td>
<td>11.9</td>
<td>African American</td>
<td>English</td>
<td>English</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>Paige</td>
<td>5.1</td>
<td>African American</td>
<td>English</td>
<td>English</td>
<td>English</td>
</tr>
</tbody>
</table>
Spanish. Ashley exhibited quiet and obedient mannerisms during DBR sessions. Pair number one used English during DBR.

Pair number two consisted two females, Lizzie (a Caucasian sixth grade student) and Sashi (an North African Head Start student from Egypt). Lizzie was 12 years and four months of age, and spoke English. She was considered on grade level in reading, but received special education support for writing. Qualitative observational data collected during fidelity checks noted that Lizzie exhibited animated or expressive mannerisms and often needed to refocus Sashi. Sashi was four years and two months of age and in her first year of Head Start. She had one younger sibling. She spoke Arabic in the home. Sashi exhibited inattentive and playful mannerisms during DBR sessions. Pair number two used English during DBR.

Pair number three consisted of one female and one male, Jenny (an African American and Hispanic sixth grade student) and Jeremy (a Hispanic Head Start student). Jenny was 11 years and two months of age. She was bilingual and bi-literate in English and Spanish, and she did not receive any English language support at school. She was considered on or above grade level in language arts. Qualitative data collected during fidelity checks noted that Jenny was mild mannered and a little unsure of herself with Jeremy in some instances. Jeremy was four years and nine months of age and in his first year of Head Start. He had three older female siblings, all in elementary school. He spoke Spanish at home. Jeremy exhibited attentive, quiet and comedic mannerisms during DBR sessions. Pair number three used English and Spanish during DBR. Jenny read in English or Spanish and they dialogued predominantly in Spanish.
Pair number four consisted of two males, Ferrel (a Caucasian sixth grade student) and Don (an African American Head Start student). Ferrel was 11 years and five months of age, spoke English, and was considered on grade level in language arts. Qualitative data collected during fidelity checks noted that Ferrel exhibited very deliberate mannerisms and was oriented towards leadership. Don was four years and 11 months of age and in his second year of preschool. He had no siblings. He spoke English and French in the home. Don exhibited attentive and energetic mannerisms during DBR sessions. Pair number four used English during DBR.

Pair number five consisted of two females, Noora (a Hispanic sixth grade student) and Marion (a Hispanic Head Start student). Noora was 13 years and two months of age. She spoke Spanish, received English language support in school, and was considered below grade level in language arts. Qualitative data collected during fidelity checks noted that Noora exhibited focused, but playful mannerisms. Marion was four years and nine months of age and in her first year of Head Start. She had no siblings. She spoke English and Spanish in the home. Marion exhibited attentive and obedient mannerisms during DBR sessions. Pair number five used English and Spanish during DBR, but tended to use more English based on Marion’s preference.

Pair number six consisted of two females, Julia (an African American sixth grade student) and Paige (an African American Head Start student). Julia was 11 years and nine months of age, spoke English, and was considered below grade level in language arts. Qualitative data collected during fidelity checks noted that Julia exhibited animated and focused mannerisms. Paige was five years and one month of age and in her first hear
of Head Start. She spoke English. She exhibited attentive, deliberate, and inhibited mannerisms during DBR sessions. Pair number six used English during DBR.

**Measures.** The following three subsections describe the measures used to collect data. The first subsection provides details about the vocabulary measures. The second subsection provides information about the measurement of sustainability. The third subsection shares details about the tools used to measure fidelity.

**Receptive and expressive vocabulary measures.** A near transfer measure of receptive and expressive vocabulary was developed and used by the researcher. An example can be found in Appendix F. A set of four pictures consisted of a target word and three detractors. The four pictures were placed in front of the Head Start student. The student was given a sequence of three prompts:

1. Give me the picture that shows _____. (Response was recorded using a check or minus and the picture is returned to the group.)
2. Tell me what you know about the word ______. (Response was recorded next to the check or minus.)
3. (Given only if the response to prompt number one was incorrect.) Give me the picture that shows the word______. (Response was recorded next to the dictated response to prompt number two using a check or minus.)

The younger student was given two opportunities to provide a correct response to the prompt intended to measure receptive vocabulary (prompts one and three). Expressive vocabulary was measured based on the student’s ability to correctly define or provide an example of the target word (prompt number two). The second receptive vocabulary
prompt was provided because talking about the target word might help the student recall it’s actual meaning and select the proper example from the set of pictures. A point was given for each correct answer. Separate receptive and expressive scores were determined by tallying the points for each component. The receptive score represented one point for each picture correctly identified for each receptive prompt. The expressive score represented one point for a correct definition or a correct example for each expressive prompt. In addition the particular word, the expressive response was noted for each point scored.

The measure was used in two phases, a baseline phase and a multiple probe phase. First, eight target words were selected from three storybooks to create a pre intervention baseline for the measure for each Head Start student. Each word for which the student showed no receptive and expressive knowledge was placed into a word selection pool. Four words were selected for each story, attempting to ensure that the words appeared in different parts of each story. The 12 selected words created a unique multiple probe measure for each preschool participant. Each student had a baseline measure of zero for both the receptive and expressive components of the multiple probe measure. The multiple probe was given once a week over the five weeks of data collection for each Head Start participant.

**Sustainability measures.** Semi structured interviews with the teacher and the six sixth grade students selected for data collection were conducted to determine the appropriateness of the intervention and its effects for the context being studied. The sixth grade students participated in a post training/pre-intervention and a post intervention
The teacher participated in a post-intervention interview. The interview protocol (Appendix G) included the following questions:

1. Tell me how dialogic buddy reading will work/worked for you and your buddy?
2. What do you think you will like/did you like most about dialogic buddy reading?
3. What concerns do you have about dialogic buddy reading?
4. (Post intervention only) What would you change about dialogic buddy reading?
5. (For teachers only) Describe how you feel your students’ home literacy experiences influence their book interactions at school?

**Fidelity measures.** Fidelity considerations and measures are integrated throughout the design of this study. Consideration of findings in the research concerning language development, emergent literacy, dialogic reading, and the pilot study informed the study design and its training opportunities. Fidelity to delivery, receipt, and enactment were directly measured through observations, the vocabulary probes, and the interview respectively.

The administration of the vocabulary probes and interview protocol is described in the previous subsection. As for observation of delivery, pairs were observed for approximately five to seven minutes per observation session using a fidelity protocol checklist (Appendix B). The fidelity protocol checklist noted the type of prompt used (completion prompts, recall prompts, open ended prompts, wh- prompts, distance questions and the components of DBR used (prompt, evaluate, extend, repeat) during
each DBR cycle. A DBR cycle begins with a prompt and ends with a repeat. Therefore, each observation denoted the number of DBR cycles initiated and the degree to which each component of a cycle was used during a seven to 10 minute period.

The five components that make up treatment fidelity are design, training, delivery, receipt, and enactment (Smith et al., 2007). A table displaying a checklist of these components in terms of measuring fidelity (Borrelli et al., 2005), instruments used, and sources of data is included in Appendix H. Borrelli et al. (2005) indicated that strong treatment fidelity is attained when .80 of the criteria in each of the defined dimensions are met. The ratio is determined by dividing the number of criteria met by the number of criteria applicable to the study. This study successfully addressed a minimum of .80 of criteria in design (1.0), training (1.0), delivery (.80), and enactment (1.0); but it fell short in receipt (.75). Fidelity directly influences the validity and implications of this study and will be discussed further in the design and validity sections of this chapter and in the discussion of outcomes in chapter five.

**Data analysis.** The following section is separated according to the different analysis considerations. Analytic procedures used to evaluate various forms of fidelity are reported following the related intervention data. For example, *Analysis of vocabulary measures* is followed by *Fidelity to receipt*.

**Analysis of vocabulary measures.** Analysis of the vocabulary measure involved visual analysis of data collection points for expressive and receptive vocabulary scores. The six selected preschool students participated in a five-week follow-up assessment that used the same vocabulary measure developed for his or her unique multiple probe. The
date of the follow up was based on the date of the fifth multiple probe during the five week reading period for each pair.

Two visual graphs were constructed for each of these measures for each set of dyads and these can be found in chapter four (Figure 4, Figure 5, Figure 6 and Figure 7). Figure 5 and Figure 7 are followed by a series of tables (Tables 5 through 7 and Tables 9 through 11) that note the words that were learned by the students. Finally, Table 12 was constructed in order to compare the words attained and the expressive responses provided with the dialog and expressions used by the pair during DBR fidelity checks. The graphs of vocabulary effects and fidelity to delivery (found in Appendix E) and the comparative table provided an opportunity for integrative analysis (J. C. Greene, 2007), leading to causal inferences regarding outcomes associated with fidelity to DBR and vocabulary gains.

**Fidelity to receipt.** Treatment receipt determines how well the participants, the preschool students in this study, learned the targeted skills. Analysis of the data gathered by the multi probe established that vocabulary gains occurred as a result of DBR. It may be that repeated readings of the chosen books helped improve the vocabulary. However, the number of repeated readings for the stories read was not collected or related to learned vocabulary. Additionally, creating ways of improving performance during and beyond the intervention might have led to higher numbers of words learned. Despite these limitations, most strategies focused on treatment receipt aid in substantiating the relationship between DBR, fidelity to intervention, and vocabulary gains.
**Analysis of sustainability interviews.** The teacher and student interviews were analyzed to determine the participants’ perspectives regarding the practicality and sustainability of the intervention. The interview protocols are included in Appendix B. The interviews were recorded and transcribed by the researcher. The results were derived using a categorical coding strategy, which consisted of organizational, substantive, and theoretical categories (Maxwell, 2005). The codes were developed by the researcher and maintained the actual words of the participants through the organizational and substantive phases. The structure of the coding followed the pre and post interview format during each stage of the coding process.

First, all lines of the transcript were numbered and all lines were placed in a four column chart. The headings for each column were Transcript, Categorical Coding, Substantive Coding, and Theoretical Coding. During the categorical coding phase, the researcher marked each word or phrase that communicated a single unit of meaning. These units and respective line numbers were then copied and listed in the column labeled, Categorical Coding. The substantive coding phase involved color-coding, sorting, and labeling the units of meaning. The researcher read each unit highlighting key words. The words or short phrases were then color coded for similarities in meaning. The words and phrases were then grouped into substantive categories according to their colors. For example, the quotes, “knows a lot of words, but not the higher more detailed words” and “understand more of the harder words” were color coded blue. During the theoretical coding phase of analysis, the researcher developed themes based on how the quotes related to one another. For example, the quotes provided in the previous example
combined with the others in the blue coded substantive category and related to one another in terms of the theoretical category, word learning. These themes were then aligned within the parameters of social value and practicality of procedures. For example, the theme, word learning, indicates an outcome that has social value due to its association with literacy development. Finally, the coding was member checked by a colleague with knowledge and experience in qualitative research.

**Fidelity to enactment.** Treatment enactment examines how well the participant uses the new learning in new contexts. An example would be a preschool student using words learned at a dramatic play center in the room. This study did not incorporate any measures to collect spontaneous use of new vocabulary. However, interview data revealed that DBR lead to other positive effects outside the DBR sessions. First, students increased attention to stories in larger groups during class as reported by the teacher. Also, parents reported to the teacher that they were reading with their children more at home because the students were requesting it, an act that the teacher attributed to the DBR practices in the classroom.

**Validity.** Validity is discussed in the following four subsections. First, internal validity is described; and this is followed by a description of inter-rater agreement. The third subsection provides details about considerations of external validity. Finally, the section concludes with a discussion of social validity, which is characteristic of single subject research and is closely tied to fidelity and sustainability.

**Internal validity.** Internal validity is achieved when the researchers and consumers of research are assured that the outcomes are a direct result of the intervention
(Neuman & McCormick, 1995). History and repeated testing created two validity threats to this study (Palincsar & Parecki, 1995). History of a study often poses a threat to internal validity because single subject designs generally run over many weeks or months. The longer an intervention runs the higher the risk of other intervening variables impacting results. Therefore, the multi-probe vocabulary measures used over the five-week data collection period became a threat to internal validity because of the need for repeated measures. The students may have become accustomed to the measures and this may have impacted the score. Two ways to address this threat are the careful timing the start of the intervention and the examination of data for reactive responses occurring for reasons other than the use of the independent variable (Palincsar & Parecki, 1995). Therefore, the independent variable was not administered until after the individual baselines for each young student was determined; and the data was analyzed to delineate between correct responses that occurred after the baseline but before DBR and correct responses that occurred only after reading using DBR techniques. Finally, the comparative table that linked the fidelity of treatment to the scores on the vocabulary measures strengthened the internal validity of this study.

**Inter-Rater agreement.** Inter-rater agreement was calculated for the fidelity measure and for the expressive vocabulary measure. First, the process for developing inter-rater agreement for the fidelity measure will be described. Second, the process for developing inter-rater agreement with the expressive vocabulary will be outlined. An Inter-rater agreement ratio was calculated by dividing the total number of agreements between the researcher and the observations provided by an outside analyst divided by
the number of agreements plus the number of disagreements, and multiplying that number by 100 (Briesch et al., 2008). This inter-rater agreement was calculated in order to ensure accuracy of the measures.

Twenty-five percent of the 48 fidelity observations were selected. Two observation checklists were randomly pulled for each pair. The audio recordings of these sessions were transcribed. Another researcher familiar with DBR applied a fidelity checklist to each of the transcripts. The checklists completed by the outside researcher were compared with those of the researcher in order to tabulate the number of agreements and disagreements. The inter-rater agreement ratio was .71 for the fidelity measure.

Twenty-five percent of the vocabulary probes were randomly selected to develop inter-rater agreement for expressive vocabulary measure. First, one probe was selected from each pair’s pool of probes. Then the remaining probes were grouped together and three more probes were randomly selected. An outside researcher scored the expressive measures. The expressive components of these probes were compared with the researcher’s data in order to tabulate the number of agreements and disagreements. The inter-rater agreement ratio was .89 for the expressive vocabulary measure.

External validity. Generalizability is a threat to single subject design. However, validity can be increased if random selection and replication occur within the design, showing that the intervention works across diverse subjects. Maintaining a straightforward design with explicit connections between measures and dependent variables and rich description of the intervention will allow for additional replications in other contexts, with subjects of differing characteristics, and perhaps using different
measures of the dependent variables (R. H. Horner et al., 2005). The current study included a thorough description of diverse participants and two opportunities for replication within the design. Additionally, replication within the study design addresses threats to external validity (R. H. Horner et al., 2005). This study design included two opportunities for replication of effects by staggering the start of the use of DBR techniques across dyads, with each dyad consisting of two buddy pairs. Additionally, fidelity measures discussed in the previous subsections involving fidelity further substantiated causal inferences connecting outcomes to the intervention, therefore increasing the potential for future replication across different contexts.

**Social validity.** Social validity is an important characteristic of single-subject research and is related to the sustainability of DBR in school settings. Social validity addresses the possibility of a focus on the intervention over purpose, weakening the practicality of the results (R. H. Horner et al., 2005). Horner et al. (2005) stipulates that studies increase social validity by addressing the following factors:

- Dependent variables exhibiting social significance.
- Independent variables that can be applied by teachers or parents with a high degree of fidelity.
- Teacher or parent agreement regarding important implications of results and conclusions and choosing to continue using the instructional practice after formal observations are terminated.
- Connection between the intervention and a clear need in practice.

This study addresses each of the tenets of social validity.
The dependent variables (expressive vocabulary, receptive vocabulary, and sustainability of DBR) all relate to the variability clinical research is finding in reading acquisition and further development (Lonigan, 2007; Lonigan & Whitehurst, 1998; Senechal & Ouellette, 2006), especially for those children typically found to be at risk of achieving lower literacy levels. The intervention may be a technique that can be used within a daily buddy reading program with students attending the same school to increase vocabulary and listening comprehension. Finally, the intervention is of social value because it satisfies the practical need for flexibility to match varying language and cultural characteristics inherent in any one context by using the internal school human resources, the students.

The question of practicality of DBR and continued use of the intervention with a high degree of fidelity was addressed in the analysis of the teacher and student satisfaction interviews (Neuman & McCormick, 1995). The categorical analysis of the interview data revealed four themes related to the practicality of DBR and fidelity to its processes. These themes are thoughtful decision-making, managing distractions, choice, and misinterpretations of DBR intentions. Each student’s connection to these themes were analyzed separately, leading to a cross case summary which includes a more thorough discussion of the themes articulated through the data analysis. This analysis is located in Appendix I and is summarized in Table 4.
Table 4

Practical Considerations Associated with DBR

<table>
<thead>
<tr>
<th>Participant</th>
<th>Thoughtful Decision Making</th>
<th>Managing Distractions</th>
<th>Choice</th>
<th>Misinterpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashley</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Lizzie</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jenny</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ferrel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Julia</td>
<td></td>
<td></td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
<tr>
<td>Teacher</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

Summary of Method

A single subject multiple probe design was used to explore the impact of DBR on vocabulary and to determine the sustainability of DBR. A vocabulary measure and interview protocol to gather data was developed. Additionally, fidelity was measured according to design, training, delivery, receipt, and enactment. Fidelity findings indicate that this study reached a high degree of fidelity, although there is a need to increase fidelity. Fidelity will be discussed further in chapter five. The results concerning vocabulary and sustainability will be discussed in chapter four.
4. RESULTS

The chapter that follows will present the data analysis described in chapter three. The single subject, mixed method design used in this study set out to answer the following questions:

1. How is a preschool student’s expressive and receptive vocabulary affected by routine dialogic buddy reading, facilitated by a sixth grade student using the primary language of the preschool student?

2. How sustainable is dialogic buddy reading in a school setting?

The single subject design employed a mixed method approach to data collection and analysis. Empirical data were gathered to define the level of fidelity that was attained by each pair. Empirical and qualitative data were integrated to discuss the influence of Dialogic Buddy Reading (DBR) on the expressive and receptive vocabulary learning of the younger students. Finally, qualitative data informed the question of sustainability.

The analysis will be discussed in a sequence that aligns question one with the replication characteristics of the design. The six participants are arranged into three dyads, with each dyad staggering their start of the DBR intervention: pairs one (Ashley and Maria) and two (Lizzie and Sashi), pairs three (Jenny and Jeremy) and four (Ferrel and Don), and pairs five (Noora and Marion) and six (Julia and Paige). The results surrounding question one are analyzed combining visual analysis and qualitative
examples of responses. Visual analysis will involve examining the data displayed on graphs and in tables to determine the changes that occurred, the magnitude of the change, the trend of the change, the cause of the change, and the reliability of the change (Neuman & McCormick, 1995). Finally, the qualitative data for question two will be discussed for each participant and across cases. A summary of the results for each question concludes the chapter.

**Question One**

The question concerning the impact of DBR on the receptive and expressive vocabulary of the preschool students is addressed in this section. The question is: How is a preschool student’s expressive and receptive vocabularies affected by routine dialogic buddy reading facilitated by a sixth grade student using the primary language of the preschool student? First, performance on the receptive vocabulary measure is displayed two ways. The initial series of figures indicate overall trends in words learned. The second series of figures separates words learned before DBR introduction and words learned after DBR. Results concerning receptive vocabulary are followed by the results in expressive vocabulary, using the same format for display and analysis. Finally, a summary of the results that reflect trends in receptive and expressive vocabulary scores and DBR is presented.

**Overall Trends in Receptive Vocabulary Learning.** Figure 4 (located on page 86) provides the trends in overall receptive vocabulary learning. The three graphs plot the results of the receptive vocabulary measure for each of the three dyads as they occurred over the ten week-data collection period. Each graph also shows a trend line
extending from the baseline score to the follow up score. Taken together, these graphs depict the trends in word learning and the replication of the results.

Dyad one consisted of pairs one (Ashley and Maria) and two (Lizzie and Sashi). Vocabulary data was gathered during weeks one through five, representing the first phase of vocabulary data collection. The trend line for each preschool student shows upward movement for words correct on the measure. The following two paragraphs provide more detail on each pair.

Ashley and Maria used English during DBR. Maria spoke English with her father and Spanish with her mother at home. The probe was given in English. Maria showed an increase in words learned from a baseline of zero to five on probe one and seven on probe two. Then the scores took a downward turn to five words on probe three to four words on probe four to two words on probe five. In spite of the downward trend on probes three through five, Maria showed positive growth on the six week follow up probe with a score of six.

Lizzie and Sashi also used English during DBR, although Sashi spoke Arabic at home. The probe was also delivered using English. Sashi showed an increase in words learned from a baseline of zero to two, four, and six on probes one, two, and three respectively. There was a downward turn on probe four, with a score of three. However, the score on probe five was back up to five and the six week follow up showed continued growth with a score of six.

Dyad two consisted of pairs three (Jenny and Jeremy) and four (Ferrel and Don). Vocabulary data was gathered during weeks three through seven, providing a staggered
start and the second phase of vocabulary collection. The trend line for each preschool student in dyad two indicates upward movement for words correct on the measure, thus replicating the positive tendency experienced by the students in dyad one. More detail for each pair is provided in the following paragraphs.

Jenny and Jeremy used primarily Spanish during DBR. They often read English versions of the stories, but the discussions using DBR were predominantly in Spanish. The probes were also provided using Spanish. Jeremy showed growth between the baseline of zero and eight on probe one. This score decreased to seven on probe two. The score moved up to 10 words correct on probe three only to return to seven on probe four. The score returned to 10 on probe five and remained at ten on the six week follow up.

Ferrel and Don used English during DBR, although Don spoke English and French at home. Don showed a continuous positive trend moving from the base line of zero to scores of eight, 10, 10, 11, and 11 on probes one through five. There was a slight decrease to 10 words correct on the six-week follow up probe.

Dyad three consisted of pair five (Noora and Marion) and pair six (Julia and Paige). Data on receptive vocabulary growth was collected during weeks six through 10 of the study, creating a second opportunity for replication of results within the study. The trend line for each preschool student shows an increase in words learned. These trends replicate those of dyad one and dyad two. More detail for each student is provided in the following paragraph.
Figure 4. Receptive Vocabulary--Number of Words Learned Across Dyads
Noora and Marion used Spanish and/or English during DBR depending on Marion’s preference. The vocabulary probes were conducted in English. Marion showed continuous positive growth up until a slight decrease on the five-week follow-up probe. The base line score of zero increased to two and three for probe one and two respectively. The score remained at three for probes three and four and then increased to four on probe five. The score decreased to three on the five-week follow-up probe. Julia and Paige used English during DBR. The plotted line moves from a baseline of zero to a score of seven for probes one and two. The scores fluctuated from six to seven and back to six on probes three, four, and five. The score remained at six on the five-week follow up probe.

There were three types of paths from the baseline through the five probes to the overall gains that were reflected in the follow-up scores accomplished by each preschool student. One pattern started with a steady increase only to drop off on the last three probes. A second pattern revealed an overall upward trend, but the score increased and decreased as it led to the eventual gains. The third pattern showed a consistent upward trend throughout the first six probes.

The data in Table 4 demonstrates the relationship between these three patterns and indicates whether or not the preschool student’s language or languages were matched during DBR. Jeremy and Paige matched language and exhibited pattern two (increases and decreases in scores, with an overall upward trend). Marion also matched the languages used during DBR and exhibited pattern three (steady, continuous increase). Sashi and Don did not match on language and also exhibited patterns two and three respectively. María did not match on language and exhibited pattern one, a downward
Table 5

<table>
<thead>
<tr>
<th>Language</th>
<th>Pattern One (Dropped Off)</th>
<th>Pattern Two (Increases and Decreases)</th>
<th>Pattern Three (Continuous Increases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matched</td>
<td>Jenny and Jeremy</td>
<td>Noora and Marion</td>
<td></td>
</tr>
<tr>
<td>Not Matched</td>
<td>Ashley and Maria</td>
<td>Lizzie and Sashi</td>
<td>Ferrel and Don</td>
</tr>
</tbody>
</table>

The vocabulary measure indicates a positive overall trend in increasing receptive vocabulary for each of the dyads, although the paths to these gains varied. Five of the six students took a more positive path regardless of whether the language or languages used during DBR matched the home language(s) of the preschool student. However, one student did not experience DBR in the language used to communicate with her mother and demonstrated a more negative trend. These results indicate that replication of this continuous progress in various contexts using various languages is plausible.

A closer study of the words correct on each probe is provided to determine the degree to which increases can be attributed to DBR. All students started at a baseline of zero, however each student also began to show knowledge of particular words before these words were introduced during storybook reading with DBR. The next section will examine word gains that can be connected with the use of DBR.
**Words Learned Before Versus Words Learned After DBR Introduction.**

Individual vocabulary multi-probes were developed for each preschool student. The words on each probe were chosen from a pool of words unknown to the students after an initial reading of the stories that contained them. This initial reading did not employ the DBR protocol. Then, as each book was reintroduced in sequential weeks using the DBR protocol, the multi-probe was re-administered. There was an overall positive trend in growth for receptive vocabulary, which was replicated two times within the study design. However, each student began to indicate growing knowledge of particular words before the DBR protocol was employed on subsequent readings. Additional analyses were needed to determine the number of words learned due to students’ use of DBR.

Figure 5 (located on pages 91 and 92) shows trends in the number of words correct on the measures for each dyad and student. Figure 5 also displays the number of words learned before DBR introduction and after DBR for each student. A stacked line was used to analyze the breakdown of words for each probe. The layout of the graphs mirrors the staggered design of the study. Tables 5 through 7 follow on pages 92, 94, and 95 respectively, and display analyses that identify specific words learned.

Dyad one consisted of Maria and Sashi. Maria demonstrated knowledge of three words before DBR introduction on probes one, three, and four. She scored correctly on four word prompts on probe two before DBR introduction. She then demonstrated knowledge of only one word on probe five before DBR. Sashi demonstrated a flat plot line, with a score of two for words correct before DBR introduction. However additional words were gained after DBR, with an upward trend in scores, ranging from a score of
zero on probe one to three on probe five. Both students demonstrated an increase in words learned after DBR. This increase was maintained on the follow-up probe with a score of four for each student.

Dyad two demonstrated a similar trend to that of dyad one in words correct before DBR introduction and after DBR. Jeremy demonstrated knowledge of five words before DBR introduction on four of the five probes. The number of words learned after DBR increased over probes three, four and five. For Don, the scores for words correct before DBR introduction were flat across the five probes with a value of two. However, the scores for words learned after DBR are greater than words correct before; and, there is an upward trend in these scores. For the follow-up probe, Jeremy achieved a score of five words learned after using DBR, while Don learned nine words after DBR.

Dyad three repeated the trend found with dyads one and two. Marion scored a two for words learned before DBR introduction on each of the five probes. The scores for words learned after DBR indicated a slight and gradual increase, ranging from zero to two. The scores for words learned before DBR introduction for Paige decreased from six to a score of three for probes three through five. Paige’s scores for words learned after DBR demonstrated a slow and gradual increase starting at one, peaking at four, and moving to three on probe five. On the follow-up probe, Marion learned one word after DBR and Paige learned four words after DBR.

Three conclusions emerged from this data analysis. First, the line representing words learned before being introduced through DBR maintained a flat or decreasing trajectory for all students in each dyad for probes one through five. Second, observation
notes indicated that the line representing the scores for words correct after being discussed using DBR increases for the students in each dyad. Third, the follow up probe indicated that the number of words learned after using DBR for students Maria, Sashi, Jeremy, Don, and Paige stayed the same or increased. However, it is unknown whether or not the words known were consistent from probe to probe.
Figure 5. Receptive Words Correct Before and After DBR Across Dyads
Tables 6, 7 and 8 specify the words introduced and the words correct on each probe for each student. The purpose of this analysis was to determine if the words learned were the same from probe to probe or if the measure lacked consistency. Constancy in the specific words learned would further validate the trends outlined in the data analysis.

Table 6 displays the results for words correct before DBR introduction and after DBR for dyad one. Maria scored correctly on four words before BDR introduction: gardener, trapeze, catch, and stream. Three of these words (gardener, trapeze, and catch) were correct across four or more probes. Maria scored correctly on five words after DBR: buried, ladle, hand basket, cabbage, and begging. Four of these words (buried, ladle, hand basket, and begging) were correct across three or more probes. Only two of the nine words, stream and cabbage, lacked consistency across probes before or after DBR. Moreover, the remaining seven words were correct on the follow up probe. Therefore, the words learned before DBR introduction remained the same, and the words learned after DBR increased over time for Maria.

Sashi showed a similar trend. She scored correctly on two words, escalator and sofa, before DBR introduction. Both words were correct across five or more probes. She scored correctly on seven words after DBR: grazes, seal, fuss, leaps, whiskers, palace, and roughhouse. Two of these words (seal and fuss) were correct on four and three probes respectively. Two words (leaps and roughhouse) were correct on two probes including the follow-up probe, suggesting that Sashi incorporated these words into her oral vocabulary. However, three words (grazes, whiskers, and palace) were correct on
only one probe. The results indicated that the words correct before DBR introduction remained constant across most probes, and the words learned after DBR increased over time.

Table 6

<table>
<thead>
<tr>
<th>Student Words Introduced</th>
<th>Word Correct</th>
<th>Before DBR</th>
<th>After DBR</th>
<th>Probe Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Maria Buried, begging, following, gate ladle, hand basket, cabbage, hoe, gardener, stream, trapeze, catch</td>
<td>Gardener</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Trapeze</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Catch</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Stream</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Buried</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>ladle</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Hand basket</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Cabbage</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Begging</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Sashi Growl, roughhouse, leaps, fuss, lashes, whiskers, grazes, seal, overalls, palace, escalator, sofa</td>
<td>Escalator</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Sofa</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>grazes</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>seal</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Fuss</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>leaps</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Whiskers</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Palace</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Roughhouse</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>

Table 7 displays the words introduced and words correct before and after DBR introduction for dyad two. Jeremy gave a correct response on six words before DBR introduction: overalls, escalator, leaps, fuss, toppled, and growls. Five of these six words (overalls, escalator, leaps, fuss, and toppled) were correct across four or more probes. He correctly identified six different words after DBR; hidden, following, dashed, buried, buried,
palace, and roughhouse. Five of these words (hidden following, dashed, buried, and roughhouse) were correct on three or more probes. Only two words, growls and palace, lacked consistency across probes before or after DBR. Additionally, the five words consistently scored correctly after DBR were also correct on the follow-up probe.

Therefore, the words learned before DBR introduction remained constant for Jeremy, while the words learned after DBR were increasing as time allowed for repeated readings.

Table 7

Words Introduced and Words Correct on Receptive Measure--Dyad Two

<table>
<thead>
<tr>
<th>Student</th>
<th>Words Correct</th>
<th>Before DBR</th>
<th>After DBR</th>
<th>Probe Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Jeremy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>buried, hidden,</td>
<td>Overalls</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>following, dashed,</td>
<td>escalator</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>overalls, palace,</td>
<td>leaps</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>escalator, topped,</td>
<td>fuss</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>leaps, fuss,</td>
<td>topped</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>roughhouse, growls</td>
<td>Growls</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hidden</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Following</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>dashed</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>buried</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Palace</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roughhouse</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don</td>
<td>steam</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>hidden, railroad,</td>
<td>soil</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>flipped, begging,</td>
<td>hidden</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tail, leaps, fuss, chalk,</td>
<td>flipped</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sprout, steam, soil,</td>
<td>Tail</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>trowel</td>
<td>Chalk</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>begging</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Railroad</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>leaps</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fuss</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sprout</td>
<td>√</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Don showed similar trends to those of students Maria, Sashi, and Jeremy. He provided a correct response on two words, stem and soil, before DBR introduction. These words were correct on all probes. He responded correctly on nine words after DBR: hidden, flipped, tail, chalk, begging, railroad, leaps, fuss and sprout. Eight of these words (hidden, flipped, tail, chalk, begging, railroad, leaps, and fuss) were correct across four or more probes, including the follow-up probe. One word (sprout) was correct on two probes, but not on the follow-up probe. Therefore, the words known before DBR introduction remained constant and the words learned after DBR increased over time.

Table 8 summarizes the words learned for dyad three. Marion provided the correct response for two words, escalator and evening, before DBR introduction. Marion’s responses for the words remained correct across all probes. She correctly identified three words after DBR: hidden, dashed, and ladle. One word (hidden) was correct on three probes, including the follow-up probe. Another word (ladle) was correct on two probes, however Marion did not respond correctly on the follow-up probe. The third word (dashed) was only correct on one probe. As with the other students, the words known before DBR introduction remained constant, and there was a small increase in the words Marion knew after DBR. However, there may be a lack of consistency in this increase as found in the low score on the follow-up probe.

Paige provided the correct response for six words before DBR introduction: hidden, begging, buried, chute, roughhouse, and projects. Three of these words (begging, buried, and chute) were correct on three or more probes. Three words (hidden, roughhouse, and projects) were correct on only two probes. She responded correctly to
four words after DBR; bud, trowel, hoe, and interrupt. Three of these words (bud, trowel, and hoe) were correct across five or more probes, including the follow-up probe. One word (interrupts) was correct on two probes, including the follow-up probe. Therefore, Paige shared the same trend as the students in dyads one and two: the score for the words known before DBR introduction were constant; whereas the words learned after DBR increased steadily over time.

Table 8

<table>
<thead>
<tr>
<th>Student Words Introduced</th>
<th>Words Correct</th>
<th>Before DBR</th>
<th>After DBR</th>
<th>Probe Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marion</td>
<td>escalator</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>evening</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>hidden</td>
<td>√</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dashed</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ladle</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paige</td>
<td>Hidden</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>begging</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>buried</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>chute</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>roughhouse</td>
<td>√</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td></td>
<td>projects</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bud</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>trowel</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>hoe</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>interrupt</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This section studied the validity of attributing the growth trends in receptive vocabulary shown in Figure 10 to the use of DBR. Words learned before DBR introduction versus words learned after DBR were analyzed for constancy in number and specificity to substantiate positive influence of DBR. This analysis showed one trend in dyad one, which was replicated in varying degrees in dyads two and three. This tendency indicated that the words correct before DBR introduction remained constant in specificity and number, whereas the words learned after DBR increased in number and were constant across probes. Therefore, DBR appears to have provided a scaffold that enabled preschool students to demonstrate gains in receptive vocabulary.

**Overall Trends in Expressive Vocabulary Learning.** Figure 6 (located on page 99) presents the trends in overall expressive vocabulary learning. The three graphs display the results on the expressive vocabulary measure for each of the three dyads as they occurred over the ten week-data collection period. Each graph includes a trend line extending from the baseline score to the follow up score. Taken together, these graphs depict the trends in expressive word learning and the replication of these trends.

The graph for dyad one indicates that Maria and Sashi achieved different outcomes during the first phase of data collection. The trend line for Maria moves upward, representing an increase in expressive vocabulary. However, the trend line for Sashi has a slight downward trend stretching from the baseline to the follow up probe due to a lack of expressive vocabulary growth. The following paragraph provides more detail for Maria and Sashi.
Maria increased from a score of one on the first probe to a score of four on the second. This increase was followed by a decrease to two and one on probes three and four respectively. The upward trend was regained with a score of three and four on probe five and the follow-up probe respectively. Sashi did achieve a score of one on the first probe; however the score returned to zero on probe two and remained there across the remaining probes. Both, Maria and Sashi, were using English during DBR and both used other languages in the home.

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Figure 6. Expressive Vocabulary--Number of Words Learned Across Dyads
The second of the three phases of data collection involved dyad two. Both pairs in dyad two present positive trends similar to that of Ashley and Maria in dyad one. The trend line for Jeremy takes a steeper incline representing more words learned, increasing consistently across most probes. The trend line for Don mirrors that of Maria with a positive trend. The following paragraphs detail the growth for Jeremy and Don.

Jeremy increased from a baseline score of zero to a score of four on probe one. The score dropped to a two on probe two. However, this decrease dissipated and the scores increased to four, five, and seven on probes three, four, and five. Jeremy also scored a seven on the follow up probe. Jenny and Jeremy used English and Spanish during DBR. Don also experienced growth in expressive vocabulary during this second phase of data collection. He increased his score from a two on probe one to a three and four on probes two and three. His score of four repeated on probes four and five and on the follow-up probe. Ferrel and Jeremy used English during DBR, although Don spoke English and French with his family.

Dyad three followed the trends set by both Jeremy and Don in dyad two and Maria in dyad one. Additionally, Marion and Paige produced overlapping trend lines. Marion scored zero, two and zero on probes one, two and three, respectively. She increased to one and four on probes four and five. However, her score decreased to two on the follow-up probe. Noora and Marion used Spanish and English during DBR. Paige increased her score from a three on probe one to a four and five on probes two and three. Her score dropped back to a three on probe four, but returned to five on the probe five. Paige scored a four on the follow-up probe. Julia and Paige used English during DBR.
and Paige spoke English in her home. Julia spoke both Spanish and English in her home, depending on the parent she conversed with.

To summarize, the expressive vocabulary growth trends for dyads two and three repeated the positive trend set by Maria in dyad one. The growth patterns of Maria, Jeremy, Marion and Paige include increases followed by decreases; whereas, the pattern for Don indicated a steady increase followed by a plateau. Maria, Jeremy, and Don maintained their growth on the follow-up probe. However, the scores for Marion and Paige dropped by two words and one word respectively. One student, Sashi, in dyad one showed no growth in expressive vocabulary. Three growth patterns emerge from the expressive vocabulary data. One pattern indicates a downward trend. A second pattern points to an upward trend with a steady increase that ended in a plateau. The third pattern is another upward trend consisting of increases and decreases in scores between probes.

The data in Table 9 shows the relationship between these three patterns and whether or not the preschool student’s language or languages were matched during DBR. Four students followed growth pattern three, with three DBR pairs using the same language (Jenny and Jeremy, Noora and Marion, and Julia and Paige). One student, Don, hit a plateau, and used English during DBR although he spoke English and French at home. Finally, Sashi experienced the downward trend, and she did not use the same primary language as her DBR partner.

The vocabulary measure indicated a positive overall trend in increasing expressive vocabulary for five of the students. These five students followed a positive path regardless of whether the language or languages used during DBR were the same as
the home language(s) of the preschool student. However, Sashi showed no growth in expressive vocabulary and the language used during DBR (English) was not the same as her primary language.

Table 9

<table>
<thead>
<tr>
<th>Language Match</th>
<th>Pattern One (Downward Trend)</th>
<th>Pattern Two (Upward Trend Ending in a Plateau)</th>
<th>Pattern Three (Upward Trend with Increases and Decreases)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matched</td>
<td>Jenny and Jeremy</td>
<td>Noora and Marion</td>
<td>Julia and Paige</td>
</tr>
<tr>
<td>Not Matched</td>
<td>Lizzie and Sashi</td>
<td>Ferrel and Don</td>
<td>Ashley and Maria</td>
</tr>
</tbody>
</table>

The words correct on each probe were analyzed to determine the degree to which increases expressive knowledge for specific words can be attributed to DBR. As with the receptive vocabulary scores, all students started at a baseline of zero. The next section will examine word gains that can be connected with the use of DBR by considering the words gained before and after DBR. Additionally, examples of students’ responses to the expressive prompts used on the probes are connected to the same students’ responses during DBR conversations to examine the impact of DBR.

**Words Learned Before Versus Words Learned After DBR Introduction.**

Dyads two and three replicated the positive growth in expressive vocabulary experienced by Maria in dyad one. The words learned by each student were analyzed to determine the degree to which this increase in expressive vocabulary was due to DBR. Trends in the
number of words correct before DBR introduction and after DBR for each dyad are found in Figure 7 (located on pages 104 and 105). Tables 10 through 12 (located on pages 108, 110, and 111 respectively) provide detail on specific words learned. Finally, tables 13 and 14 provide examples of evidence connecting participant responses on the probes included in the DBR discussions facilitated by the sixth grade students.

Figure 7 displays the number of words learned before DBR introduction and after DBR for each preschool student within each dyad. A stacked line is used to display the breakdown of words for each probe. Each student is represented on an individual graph. The layout of the graphs demarks the design of the study by showing the staggered starts in implementation of DBR and data collection. The horizontal axis crosses the vertical axis at negative two in order to allow a clear view of the lower scores.

Maria and Sashi from dyad one are displayed in the top two graphs. Maria shows a growing expressive knowledge of words both before DBR introduction and after DBR. She demonstrated knowledge of one word before DBR introduction on probes one through four and knowledge of two words prior to DBR introduction on probe five. Scores after DBR are inconsistent with a score of zero on probe one followed by a three on probe two. However, the score drops to one and back to zero on probe three and four; but, it increases again to a one on probe five and two words on the follow-up probe. Sashi maintained a score of zero both before DBR introduction and after DBR, except for a score of one after DBR on probe one.
Number of Words Correct

Week-Probe

Maria

Sashi

Jeremy

Don

Dyad 1

Dyad 2

Number of Words Correct After Introduced Via DBR

Number of Words Correct Before Introduced Via DBR

Week-Probe

Dyad 1

Dyad 2
Both students in dyad two scored higher for words learned after DBR than for words learned before DBR introduction. Jeremy consistently achieved a score of one word correct before DBR introduction on probes one through the follow-up. He responded correctly for three words after DBR on probe one, one word on probe two, and increased to three, four, and six on probes three, four, and five respectively. He maintained a score of six words correct after DBR and on the follow-up probe. Don also scored higher for words after DBR than for words before DBR introduction. The score for words correct before DBR introduction was zero across all probes. Whereas the score
for words learned after DBR were two, three, and four on probes one through three. The score remained at four on probes four and five and on the follow-up probes.

Scores for Marion and Paige are found on the bottom two graphs in Figure 7. Marion fluctuated between zero and two words correct before DBR introduction. She did not respond correctly to words after DBR until probe four with a score of one and probe five with a score of two. However, this score returned to zero on the follow-up probe. Paige obtained a higher score on words correct before DBR introduction (fluctuated between two and three) than she did on words correct after DBR (fluctuated between one and two). The follow-up scores for words learned before DBR introduction and after DBR were both two.

The data analysis leads to three conclusions about expressive vocabulary growth. First, the number of words correct before DBR introduction for all students remained fairly consistent with a small amount of fluctuation across all probes. Second, the words correct after DBR introduction for five of the students (Maria, Jeremy, Don, Marion and Paige) increased gradually. These trends include increases and decreases in scores (Maria, Jeremy, Marion and Paige) or end in a plateau (Don). Finally, the follow-up probe data for words correct after DBR introduction indicate that two students had no expressive gains (Sashi and Marion), two students gained two words (Maria and Paige), one student gained four words (Don), and one student gained six words after DBR introduction (Jeremy).

Tables 10, 11 and 12 specify the words introduced and the words correct on each probe for each student. Analyses of this data determined the degree of consistency of
responses from probe to probe. As with the analysis of receptive vocabulary, constancy in the specific expressive words learned before DBR introduction and after DBR would further validate the trends outlined for dyads thus far.

Table 10 displays the results for expressive words correct before and after DBR for dyad one. Maria responded correctly on two words—catch and gardener—prior to DBR introduction. These words were correct across four or more probes. She scored correctly on four words after DBR; buried, following, hand basket, and ladle. Three of these words (buried, hand basket, and ladle) were correct on two probes. One word (following) was correct on only one word. The words learned after the DBR do not appear to be consistent across probes, however two words (hand basket and ladle) were retained on the follow-up probe. Maria’s responses varied between one-word responses and complete sentences on each probe. For example, the prompt, “Tell me what you know about the word buried”, was followed by “He’s down in the sand,” on probe two and “digging” on probe four. Her responses to the prompt, “Tell me what you know about the word ladle”, were “knife” on probe one, “I don’t know what it’s called” on probe two, and “spoon” on probe three. These examples provide additional evidence of a growing awareness of words and ability to discuss the meanings they embody, although the actual score for number of words expressed is quite low.

Sashi in dyad one did not respond correctly to any words before DBR introduction. She responded to one word, roughhouse, after DBR. The word was correct on only probe one. Her response was “play” when prompted to share what she knew about the word, roughhouse. Her responses to most other expressive prompts across all
probes were limited to random letter names, even when the prompt was reworded to say, “Tell me what the word _____ means.” Taken together, the lack of correct responses and the limitation of responses to include letter names indicated that Sashi confused names of letters with word meanings. It is possible that Sashi needs to develop a more meaning-based concept of words.

Table 10

<table>
<thead>
<tr>
<th>Student Words Introduced</th>
<th>Word Correct</th>
<th>Before DBR</th>
<th>After DBR</th>
<th>Probe Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maria Buried, begging, following, gate ladle, hand basket, cabbage, hoe, gardener, stream, trapeze, catch</td>
<td>catch</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>gardener</td>
<td>√</td>
<td></td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Buried</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Following</td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hand basket</td>
<td></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Ladle</td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Sashi Growl, roughhouse, leaps, fuss, lashes, whiskers, grazes, seal, overalls, palace, escalator, sofa</td>
<td>roughhouse</td>
<td></td>
<td>√</td>
<td></td>
</tr>
</tbody>
</table>

Table 11 displays the words introduced and words correct before and after DBR for dyad two. Jeremy responded correctly on one word—leaps—before DBR introduction. This word was correct across all probes. He responded correctly to six words after DBR; hidden, following, dashed, roughhouse, buried, and toppled. Three
words (hidden, following, and dashed) were correct across four or more probes. One word (roughhouse) was correct on the final three consecutive probes, including the follow-up probe. One word (buried) was correct on the final two consecutive probes. One word (toppled) was correct only on the follow-up probe. Finally, all words were retained on the follow-up probe. Jeremy’s responses varied from phrases to complete sentences and either described the picture or gave a direction. For example, the prompt, “Tell me what you know about the word dashed”, was followed by “Run to her house” on probe one, “Run slow or you will fall” on probe two, and “if you run really fast” on probe three. Similar to Maria, these examples indicate that Jeremy developed a greater ability to discuss word meanings; however, Jeremy demonstrated this growing awareness more consistently for a greater number of words.

Don did not respond correctly to any words before DBR introduction. He correctly responded to five words—railroad, leaps, fuss, steam, and chalk—after DBR. Four words (railroad, leaps, fuss, and chalk) were correct across four or more probes, including the follow-up probe. One word (steam) was only correct on probe three. Don’s responses to the expressive prompts ranged from long phrases to complete sentences that described the word or used it in a sentence. For example, the prompt “Tell me what you know about the word railroad” was followed by “That’s where the trains drive on.” on probe one, “The train is driving on the tracks and the train get dirty” on probe two, “that means a train is driving a railroad…” on probe three, and “trains driving on it” on probe four. These suggest that Don has a strong understanding that words carry meaning.
Table 12 displays the words introduced and words correct before and after DBR for dyad three. Marion scored correctly on two words, escalator and evening, before DBR introduction. These words were correct on three probes, including the follow-up probe. Marion correctly responded to two words, ladle and bud, after DBR. One word (ladle) was correct on two probes and one word (bud) was only correct on one probe. Neither word was correct on the follow-up probe. Marion’s responses were in complete sentences that attempted to explain the object or action in the picture she selected. For example, the prompt “Tell me what you know about the word, “ladle” was followed by “They just put a table cloth for the spoons” on probe one, “Knives and forks, you need to
be careful about those because they always cut the finger” on probe two, and “cook soup or something and they like get food on their plates with a ladle” on probe four. Based on this data analysis, Marion seemed to be developing awareness of word meanings and an ability to use these words; however, she was not able to retain these words over time.

Table 12

<table>
<thead>
<tr>
<th>Student Words Introduced</th>
<th>Words Correct Before DBR</th>
<th>Words Correct After DBR</th>
<th>Probe Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marion dashed, hidden, buried, begging, trowel, bud, ladle, bushel, escalator, gasped, evening, yanked</td>
<td>Escalator</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>evening</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Ladle</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>bud</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Paige bud, trowel, hoe, stake, leaps, roughhouse, interrupt, projects, hidden, buried, begging, chute</td>
<td>Interrupt</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>projects</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>Buried</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>trowel</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>hoe</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td></td>
<td>roughhouse</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>

Paige correctly responded to three words before DBR introduction; interrupt, projects, and buried. These words were correct across four or more probes, but only one word (buried) was correct on the follow-up probe. She correctly scored on three words after DBR: trowel, hoe, and roughhouse. One word (trowel) was correct on five probes.
One word (hoe) was correct on two probes. One word (roughhouse) was correct on only one probe. Two of the words, trowel and roughhouse, learned after DBR were also correct on the follow-up probe. Paige’s verbal responses to the expressive prompts initially involved random letters. However, after the prompt was reworded to “Tell me what the word _____ means” she responded with phrases and complete sentences that described the picture she selected after the receptive prompt. Attempts to explain the meaning of the word, trowel, included “You can rake something with a shovel, like a rake” on probe one, “dig something or make a fruit” on probe two, and “Trowel means you can dig with something like a shovel” on probe three. Paige seemed to understand that words carried meaning and she was developing a more accurate ability to explain these meanings, although some words were not retained on the follow-up probe.

The data provided in Tables 10 through 12 and the example responses presented for the three dyads suggest that DBR directly influenced expressive word learning, although the number of words retained varied. Maria, from dyad one, developed the ability to express word meanings although only two words are connected to DBR and were retained on the follow-up probe. This finding was repeated for both students in dyad two, however these students showed a growing ability with a greater number of words. Finally, this finding was replicated again with the third dyad, although student five did not retain the new words on the follow-up probe.

The next series of tables includes examples of shifts in the students’ responses to expressive probes and examples of the discussions facilitated by the sixth grade students using DBR. The data collection design did not include audio recordings of all the
meetings between the buddies, so only a few examples are available. These examples come from the work of Ashley (the sixth grade student in the pair) and Maria and Jenny (sixth grade student) and Jeremy.

Table 13 presents evidence that Ashley’s use of DBR influenced Maria’s understanding and ability to express knowledge of the words, hand basket and ladle, Maria responded correctly to the hand basket prompt on two probes, with the second response including specific phrasing that connects with Ashley’s extension during DBR. Additionally, Maria’s responses to the hand basket prompt on two probes, with the second response including specific phrasing prompt during DBR moved from a one word answer (“cupcake”) to specificity without accuracy (“corn” and “digging” and “play”). However, Ashley’s extending statement included a defining phrase (i.e. “It doesn’t dig. It holds all the vegetables.”). Maria’s response on the follow-up probe regarding hand basket grew in sophistication to “Hand basket. You put fruits in there—fruits and vegetables.” A similar path is evident using the word ladle when Maria states that the ladle “scoops up soup,” which connects to Ashley’s extending statement, “It scoops up the soup” in observations two, three, and four.
Table 13
Evidence Connecting Probe Responses to DBR for Ashley and Maria

<table>
<thead>
<tr>
<th>Word</th>
<th>Probe</th>
<th>Probe Response</th>
<th>(Observation Number) Connecting Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>&quot;Digging&quot;</td>
<td></td>
</tr>
</tbody>
</table>
Table 14 presents data from Jenny and Jeremy. Initially, Jeremy provided incorrect responses to the probe regarding the word toppled. For example, his response on probe one was “walk” and on probe two, “walk down the stairs.” The word was introduced in week three of the second data collection phase. Initially, he had no response to the DBR prompt for the word toppled during observation five. However, he repeated effectively during this observation (“He toppled.”). He provided his phrasing to define toppled during observation six. Finally, Jeremy explained what was happening in the picture that represented toppled by using the word “fall.”

Table 14

<table>
<thead>
<tr>
<th>Word Correct After DBR</th>
<th>Probe</th>
<th>Younger Student Probe Response</th>
<th>Observation Number and Connecting Evidence</th>
</tr>
</thead>
</table>

The preceding section examined the validity of attributing the growth in expressive vocabulary to the use of DBR. Analysis showed a trend for Maria in dyad one, which was replicated in varying degrees in dyads two and three. The trend indicated that DBR exhibited a positive influence on expressive word learning, although the number of words learned varied from one to six among the individual preschool students.
Therefore, sixth grade students were able to consistently and successfully facilitate DBR, which enabled preschool students to grow in expressive vocabulary.

**Summary Statement for Question One Results.** Question one explored the influence of DBR on the receptive and expressive vocabularies of preschool students. The vocabulary measure indicated a positive overall trend in increasing receptive vocabulary for each of the dyads, although the paths to these gains varied. Words learned before DBR introduction versus words learned after DBR were analyzed for the number of specific words retained by the preschool students after DBR to substantiate positive influence of DBR. This analysis showed one trend in dyad one, which was replicated in varying degrees in dyads two and three. The trend indicated that the words correct before DBR introduction remained constant in specificity and number, whereas the words learned after DBR increased in number and were constant across probes. Therefore, DBR appears to have provided a scaffold that enabled preschool students to grow in receptive vocabulary.

The results on the vocabulary measure also indicated a positive overall trend in increasing expressive vocabulary for five of the students. Words learned before DBR introduction versus words learned after DBR, as well as shifts in the students’ responses, were analyzed for constancy in number and specific words to substantiate positive influence of DBR. This analysis demonstrated a trend for student one in dyad one, which was replicated in varying degrees in dyads two and three. The trend indicated that DBR did exhibit a positive influence on expressive word learning, although the number of words learned varied from one to six among the individual preschool students.
Therefore, sixth grade students were able to consistently and successfully facilitate DBR, which enabled preschool students to grow in expressive vocabulary.

Finally, the relationship between receptive and expressive vocabulary growth patterns and whether or not the preschool student’s language or languages were matched during DBR was examined. One student (Maria) seemed to take a downward turn during data collection on receptive words learned and a different student (Sashi) did not experience any expressive vocabulary growth. The older students in these pairs did not use the preschool student’s home language during DBR. Five students (Sashi, Jeremy, Don, Marion, and Paige) took a more positive path regardless of whether the language or languages used during DBR matched the home language(s) of the preschool student. Five students (Maria, Jeremy, Don, Marion, and Paige) also experienced positive expressive vocabulary growth regardless of whether the language or languages of the pair matched. These results indicate that sixth grade students can facilitate DBR with preschool students in a way that leads to continuous progress in the development of receptive and expressive vocabularies of preschool students. Additionally, the replication of these results in various contexts using different languages is plausible, although progress may be inhibited or slowed when the home language of the preschool students is not the same as the older student tutor.

**Question Two**

Question two focused on the practical aspects of DBR: How sustainable is DBR in school settings? Sustainability was viewed through the lens of social validity, which is described in terms of the social value of the effects of an intervention and the practicality
of its procedures (R. H. Horner et al., 2005). Therefore, the interview data gathered was organized in order to describe the social validity of DBR.

Five of the six sixth grade students were interviewed after the training and the initial “settling in” phase of DBR, the time when the older and younger student were getting to know each other through DBR and after the intervention was complete. In addition, the pre-school teacher was interviewed after the intervention was complete. A categorical coding strategy using organizational, substantive and theoretical categories was used to analyze the data (Maxwell, 2005).

Data was initially organized with social value and practicality in mind; and the participants’ words were maintained in order to create emic, substantive categories. Examples of highlighted phrases from organizational coding include: “she knows a lot of words but not the higher more detailed words” and “try to help her understand where she needs to be.” The most significant words and phrases from the organizational coding were then fractured as they were lifted, sorted and color-coded according to similarities in order to develop substantive categories. Examples of similar words and phrases that were grouped together in substantive categories include: “like my buddy, funny, we’re learning” and “Like his answers, creative, connections.” Finally, the researcher developed themes based on these substantive categories. For example, the theme that came from the grouped words and phrases provided in the substantive illustration above is relationships. Table 15 displays the substantive categories and the theoretical categories in terms of the effects of DBR.
### Table 15

#### Substantive and Theoretical Analysis Considering Social Value of Effects

<table>
<thead>
<tr>
<th>Pre</th>
<th>Examples of Substantive Categories</th>
<th>Theoretical Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>knows a lot of words, but not the higher more detailed words; understand more of the harder words; she knows all the words</td>
<td>Word Learning</td>
</tr>
<tr>
<td>Post</td>
<td>understand difficult words; hard to get her to understand the word; helped her understand difficult words; I would keep going and going and it would help her with the words; about words; hard to get her to understand a word</td>
<td></td>
</tr>
<tr>
<td></td>
<td>it’s starting to help her understand; she’s more in tune with the big words; help her understand me a little bit better from where I’m coming from and where she needs to be; help her be more in sync with me instead of going off; when she gets used to DBR she can understand it; he pays attention;</td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>She would understand what I was asking instead of looking all around; It worked for us; it got me more talkative with her and just getting her to talk more; he would start listening; more focus and engagement; focused, deliberate, with a purpose;</td>
<td>Joint Attention</td>
</tr>
<tr>
<td>Post</td>
<td>I get to help my buddy read; just helping them is great; I help him learn; even though she is having fun she is also learning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I want to spend my time buddy reading; he could definitely read a book by the end of first grade; five days a week so I can get in more practice; older kids wanted more time</td>
<td>Service</td>
</tr>
<tr>
<td></td>
<td>push off into what they need to do growing up and knowing that I am part of that is cool</td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>I am getting to teach about things in the book; I know it so it’s like I am the teacher kind of; it’s just a really good feeling; older kids improved in reading</td>
<td>Accomplishment</td>
</tr>
<tr>
<td>Post</td>
<td>try to get her to understand; help me get her talking more and understanding; talks more and instead of just nodding he gives the right answer; when I read with him we’re learning; he comes up with creative answers; he’ll make sentences and refer to things that happen before;</td>
<td>Thinking</td>
</tr>
<tr>
<td></td>
<td>Most of the books she had no clue about what we were reading about so with the dialogic reading it helped her a lot; it got her thinking; his responses because he had some creative things to say; she learned a lot of stuff but then she was teaching me a lot of stuff; more independence</td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>like my buddy; I give him a high five and he likes that; like being with my buddy when he laughs; he makes jokes; I like being with him</td>
<td>Relationships</td>
</tr>
<tr>
<td>Post</td>
<td>You get to see your buddy every day; he got used to me; I like asking him questions because he usually gave a funny answer; I hope he liked my buddy reading;</td>
<td></td>
</tr>
</tbody>
</table>
The results are described in terms of the social value of its effects (R. H. Horner et al., 2005). The findings are presented in two sections: Social Value and Sustainability. The themes shared in the first section, Social Value, are discussed through a pre-post intervention interview cross analysis of the five students and the single post interview with the preschool teacher. The individual cases are discussed and followed by an integrated summary. The final section, Sustainability, synthesizes the social value findings with the fidelity findings (discussed in the methods section and Appendix I) by placing them in a system showing how the themes interact to describe the sustainability of DBR in school settings.

**Social Value.** The pre and post intervention interview data analysis attributed many positive effects to DBR. These effects appear to benefit the younger students, the older students, or both. Two effects, word learning and joint attention, appeared to benefit the younger students. Two outcomes appeared to benefit the older students, sense of service and accomplishment. Finally, two effects appeared to benefit both the younger and older students, thinking and relationships. The analysis leading to these themes will be discussed for each student and then synthesized across cases to summarize the social value of DBR.

Ashley commented on word learning, joint attention, and relationships during the pre intervention interview, but she spoke in general terms. Most of Ashley’s comments focused on word learning: “So she’s not thinking and saying more things about the little words. She’s more in tune with the big words.” She mentioned these effects, as well as thinking, during the post intervention interview; however, she specifically described how
DBR provided a scaffold for the conversations that led to these outcomes: “…on most of the books she had no clue about what we were reading about so with the dialogic reading, it helped her a lot.” Additionally, Ashley spoke of a sense of service and accomplishment:

> I like that I am getting to teach the little one about other things in the book, about the words and stuff and some of the words that she doesn’t know. It’s kind of fun that I know it so it feels like I’m the teacher kind of.

Lizzie spoke about joint attention, service, and the mutual benefits of thinking and relationships during the pre intervention interview Lizzie emphasized joint attention by saying, “I think it will also help her understand me a little bit better from where I’m coming from and where she needs to be.” Like Ashley, Lizzie shifted from talking about these benefits in general terms to attributing them to the use of the DBR scaffold during the post intervention interview:

> It [DBR] worked for us because it got her thinking and it got me more talkative with her and just her to talk more because she was a little shy and after we did that she started talking and wanted to do more.

Additionally, she emphasized the mutual benefit of building a relationship through the DBR interactions: “You get to see your buddy every day and they come up to you and say, ‘Heeyyy,’ when you walk in there. It’s just a really good feeling. I like that a lot.”

Jenny named increased thinking and relationships as mutual benefits during the pre intervention interview: “I like being with my buddy and when he laughs. Sometimes he makes jokes and it’s funny sometimes. I like being with him, like when I read with
him, we’re learning.” During the post intervention interview, Jenny continued to focus on the relationship she developed with Jeremy: “I liked asking him questions because he usually gave me a funny answer.” Finally, she also highlighted service: “It’s pretty good because, like, I want to use my time buddy reading.”

Ferrel singled out the sense of service and joint attention, as well as the mutual benefit of thinking during the pre intervention interview. He emphasized service and joint attention by saying, “I help him learn. I like the way he pays attention and comments he makes.” Thinking was also highlighted: “He comes up with creative answers, and different answers sometimes. And also sometimes he’ll make sentences or he refers to something that happened before—I saw my mom take out the trash.”

Ferrel mentioned service and thinking during the post interview, and he expanded his responses to include accomplishment, word learning, and relationships. He stated, “I think it helped him understand difficult words that he couldn’t and I think he could definitely read a book by at least first grade.” Ferrel valued his relationship with Don by sayings, “…he had some creative things to say and I just liked it” and “I hope he liked buddy reading.”

Julia mentioned word learning and service during the pre intervention interview. Julia attributed word learning to repeated readings of books with rhythmic language:

I think it’s working really good because when we work with nursery rhyme books or books that are sort of a singy song then she really gets it. And a few times after you read it she knows all the words.
Julia described a sense of service by saying, “I like the fact that my buddy, you know, even though she’s sort of having fun she’s also learning a lot.” Her comments shifted to focus more on the mutual benefit of thinking during the post interview: “Well, I like the fact that she learned a lot of stuff, but then also she was teaching me a lot of stuff.” She continued to explain by saying, “Sometimes I’d come across something and I would just read it and sometimes she’d point to a picture and I am like, ‘Oh, yeah, I didn’t really notice that.’”

Analysis of the post intervention interview with the preschool teacher related to the effects noted by the older students. Her comments touched on joint attention, service and progress (which could include word learning and/or thinking). She felt the younger students showed more interest and engagement:

I noticed more parents are reading because the children are encouraging them to read…I will ask when I am on home visits [why the parents are reading books sent home more often] and they will say, ‘I am reading to them because they are asking me to read to them.’

This joint attention to reading was made easier for the parents possibly due to the deliberate nature of the process that was scaffolded through the DBR protocol used by the older reading buddies. The teacher noted the older students’ sense of service along with their deliberateness: “I enjoyed it [DBR] because it was deliberate and had a good set of focused goals. It [buddy reading] wasn’t about skipping out on class. The older kids were focused. The younger kids were more engaged.” Finally, she also noted progress
made by both the older and younger students. For example, she observed gains in the younger students’ early literacy behaviors:

They got more interested in books. They want more reading time [in the classroom during the school day]. In fact, sometimes I saw independence of reading. Even Joe—he’d get a book. There were certain books he always wanted to read. So I saw a lot of independence that relates to the act [of reading]…A majority were at a level of early emergent, but they increased as the year went on. I did see a lot of progress.

Additionally, the teacher commented on progress being made by the older students. This progress was noted in reading and in confidence, which connected to older students’ sense of accomplishment:

One child [older student], in particular, I saw a lot of improvement in. When she first came here she was like, ‘Uhh, what are we doing?’ She was one that opened up more. I was on a home visit [for her younger cousin in the preschool class] and I was giving him books. Jocelyn got the book first and started reading through it—preparing herself. I know she was glad and the book I gave was in Spanish and English. I had her in Head Start, too.

Table 16 summarizes the social value of DBR across five students and the teacher. The pre and post intervention interview data analysis led to the description of many positive effects as a result of DBR: word learning, joint attention, service, accomplishment, thinking, and relationships. The themes that appeared to influence the younger students are word learning and joint attention. Four participants commented on
word learning and five participants discussed joint attention. Two themes, sense of service and accomplishment, benefited the older students. All participants described a sense of service and two participants touched on accomplishment. Finally, thinking (mentioned by all participants) and relationships (mentioned by four participants) benefited both the younger and older students. To conclude, service and thinking were the most credited effects, followed by joint attention (with five references), then word learning and relationships (with four references), and accomplishment (two references). All of these benefits carry social value in that each effect is foundational to either the development of literacy or civic responsibility. These connections will be discussed further in the section, Sustainability.

Table 16

Positive Effects of DBR

<table>
<thead>
<tr>
<th>Participant</th>
<th>Word Learning</th>
<th>Joint Attention</th>
<th>Service</th>
<th>Accomplishment</th>
<th>Thinking</th>
<th>Relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ashley</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Lizzie</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Jenny</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ferrel</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Julia</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Teacher</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foundational</td>
<td>Early Literacy</td>
<td>Early Literacy</td>
<td>Civic Responsibility</td>
<td>Civic Duty</td>
<td>Literacy</td>
<td>Civic Responsibility</td>
</tr>
</tbody>
</table>

**Sustainability.** How sustainable is DBR in school settings? Sustainability is based on the level of fidelity to DBR that can be attained and maintained over time.
Therefore, sustainability is a function of social validity, which is comprised of the social value of the intervention’s effects and the practicality of the intervention’s procedures (R. H. Horner et al., 2005). Figure 8 depicts the relationship between the highlighted effects and procedural considerations as a system of interdependent components.

Figure 8. The Social Value and Sustainability of DBR.

Systems thinking (Senge, 1994) explains actions through interrelated components. Understanding the interrelated components of a system allows for the development of strategic changes to be made to the system in order to develop and maintain the system’s production of wanted outcomes. These strategic changes are usually made at the leverage point of the system, often located at the delay (a point in the system that is underdeveloped), which create a sustainable program.
Figure 8 indicates that the effects develop literacy and civic responsibility in the participants. The practicality of the procedures involves fidelity to DBR and the focus of the students. Literacy and civic responsibility can be viewed as connected to fidelity through the use of the DBR protocol.

The analysis of the interview data indicated that the DBR protocol appears to promote joint attention, word learning, thinking, relationships and accomplishment. The DBR protocol also appears to facilitate the decision-making that leads to those noted outcomes. However, misconceptions regarding the purpose of DBR and distractions interrupted the influence of decision-making on fidelity, choice and the use of the protocol for some of the participants. The participants voiced one option for addressing one aspect of the delay (distractions), which was to offer more collaborative choice between the older and younger students in book selection. Providing more choices could increase interest, focus and potentially facilitate adherence to the DBR protocol more successfully by supporting decision-making that would sustain the buddy reading pairs through each step of the PEER protocol. Thus, incorporating more choice could begin to leverage the sustainability of DBR, a buddy reading program that has social value and practicality. Other ways to minimize the delay and increase fidelity and focus of the procedures will be discussed in chapter five.

Summary of Results

Question one of this study focused on the impact DBR had on the receptive and expressive vocabulary of preschool participants. Maria and Sashi made gains in receptive vocabulary. This trend was replicated two times as Jeremy and Don made
gains in the second phase of data collection; and Marion and Paige also made gains
during the third phase. The results for expressive vocabulary are similar to that of
receptive vocabulary, although overall gains were smaller. The interview data revealed
an emphasis on word learning; but analysis also indicated the emergence of joint
attention, thinking about text, relationships and a sense of accomplishment. The social
value associated with these outcomes coupled with the practicality of the intervention
combine to suggest that sustainability is achievable, provided issues of fidelity to DBR
are addressed. These considerations are discussed further in chapter five.
5. DISCUSSION, LIMITATIONS, AND IMPLICATIONS

The chapter that follows will discuss how the findings articulated in chapter four relate to previous research in dialogic reading and language development, as well as the limitations and implications of the study. The realist stance takes two aspects of interaction into account to delineate causal explanation of findings. These two aspects involve the interactions among variables and events. Variance theory explores the regularity of the effects of the isolated variables, whereas process theory studies how these variables interact with the context through connected events. Analyzing both the variables and the events can lead to causal explanation of occurrences (Maxwell, 2004). This analysis is facilitated by the components of etiology: isolation of variables x and y; association between variables x and y; and the direction of influence (Marcoulides, 2005).

Etiological claims are discussed for vocabulary gains and sustainability in two separate sections. A summary of fidelity (design, treatment, delivery, receipt, enactment) and the outcomes from the first two sections follows in the third section. The chapter closes with a discussion of the limitations and implications associated with the study.

Discussion of Vocabulary Gains

Question one examined how a preschool student’s vocabulary is affected by routine, dialogic buddy reading facilitated by a sixth grade student. The variables were
isolated as vocabulary (x) and DBR (y). The targeted vocabulary bookmark approximated isolation of variables in two ways. First, the bookmark dictated the vocabulary to be discussed using the DBR protocol, with each bookmark being set up according to the preschool student’s list of unknown words. Therefore, each of the students started at a baseline of zero. Second, each bookmark supported the use of the PEER components (prompt, evaluate, enhance, repeat), which increased fidelity to treatment delivery. Increasing treatment fidelity helped to isolate the independent variable, DBR. The discussion follows in three subsections: receptive vocabulary, expressive vocabulary, and summary of vocabulary outcomes. Each section is structured according to the remaining two elements of etiology, association between variables x and y and direction of influence.

**Receptive Vocabulary.** Each pair increased their receptive word knowledge, although this occurred at varying rates. Given that each started at a baseline of zero, which was determined after one reading of the book without the use of the DBR protocol, it follows that the increase of vocabulary is associated with the use of DBR. The association between receptive vocabulary growth and DBR is further substantiated as the trend was replicated across the dyads two and three. Although, this claim is limited because the multiple probes for dyads two and three were not administered while these pairs waited for their start on the staggered start design. Additionally, a closer look at the data indicated that some words were learned before DBR introduction.

Further analysis indicated that the number of words students learned before experiencing the book with the DBR protocol remained small and constant, but the
number of words learned after reading with a DBR focus on the targeted vocabulary increased over time. For example, on each probe, Don scored accurately for the same two previously unknown words before his buddy, Ferrel, used DBR to introduce them. However, seven words were learned only after Ferrel introduced and discussed them using DBR. Each of the words learned after being discussed through DBR also remained constant across remaining probes. The constancy of accuracy in identifying pictures representing specific words supports the claim that receptive vocabulary learning and DBR are associated and that it was the use of DBR when reading storybooks that strongly influenced receptive vocabulary growth. The outcomes that connect receptive vocabulary growth to the use of DBR in this study further substantiate findings of increased receptive vocabulary in previous studies (Chow & McBride-Chang, 2003; Fielding-Barnsley & Purdie, 2003; Senechal, 1997).

**Expressive Vocabulary.** One student in dyad one demonstrated growth in expressive vocabulary, which was replicated by both students in dyad two and dyad three. As with receptive vocabulary, expressive vocabulary gains appear to be associated with the use of DBR because each student started with a baseline of zero. This claim is also limited because the multiple probe assessment was not administered weekly for dyads two and three until DBR started.

The analysis of words learned before DBR introduction and those learned after the use of DBR is more dramatic for expressive vocabulary than that of receptive vocabulary. For example, Don provided expressive knowledge of one previously unknown word before DBR introduction, which remained constant across all remaining
probes. However, he provided correct expressive responses for six additional words only after discussing them with his buddy using DBR. The same trend, at varying levels of accuracy, was found for Maria in dyad one, Jeremy in dyad two, and Paige in dyad three. Thorough analysis of expressive knowledge of targeted words leads to the claim that expressive vocabulary is positively influenced by the use of DBR. Therefore, the findings concerning expressive vocabulary and DBR in this study align with the findings in previous studies that link the use of dialogic reading with increased expressive vocabulary (D. H. Arnold et al., 1994; Hargrave & Senechal, 2000; Lonigan & Whitehurst, 1998; Mol et al., 2008; Senechal, 1997; Whitehurst & Arnold, 1994).

**Summary of Vocabulary Outcomes.** Etiology guided the claims that vocabulary growth and DBR are associated and the use of DBR leads to increased vocabulary. Receptive vocabulary gains were higher in number, however increases in expressive word knowledge were more pronounced because most of the probes remained at zero or one until DBR was used. The single subject design and the use of non-standardized vocabulary measurements allowed for the close analysis connecting actual gains to the use of DBR. These findings compliment previous studies’ findings that used pre and post intervention standardized growth measurements like the PPVT-R and the EOWPT (D. H. Arnold et al., 1994; Chow & McBride-Chang, 2003; Hargrave & Senechal, 2000; Lonigan & Whitehurst, 1998; Senechal, 1997; Valdez-Menchaca & Whitehurst, 1992; Whitehurst & Arnold, 1994; Whitehurst et al., 1988).

The isolation and association of vocabulary and DBR variables and the determination of influence of DBR on vocabulary growth also indicate a positive trend
for treatment receipt, that students learned words targeted for DBR discussions. These discussions align with many aspects of language development theory, one of which is the idea that language growth is dependent upon the level of modeling and type of feedback provided to the younger student (Cole et al., 1978). Treatment receipt, as well as treatment delivery, is related to the discussion concerning the sustainability of DBR in the following section.

**Discussion of Sustainability**

Early studies in dialogic reading situated the intervention in the home using parents or daycare providers as facilitators (D. H. Arnold et al., 1994; Huebner, 2000a, 2000b; Jimenez et al., 2006). Other studies examined the effects of conducting dialogic reading in school settings, also using adults as facilitators (Hargrave & Senechal, 2000; Lonigan & Whitehurst, 1998; Lonigan et al., 1999; Valdez-Menchaca & Whitehurst, 1992; Whitehurst & Arnold, 1994). Question two focused the study on the sustainability of DBR in school settings using sixth grade students as DBR facilitators. The question of sustainability involves social value of the intervention’s effects and practicality of the intervention’s procedures. Analysis of the interview data indicated that there were several positive outcomes that are of social value; however only word learning will be considered in this part of the discussion, which is directed at inferring etiological claims regarding sustainability. All other effects will be discussed further in the implications section.

Isolating the variables in question two requires a systems thinking approach. Fidelity to the DBR protocol and the dependent variable for question one, vocabulary
gains, merge into a circle of causality that explains the sustainability of DBR, which is a dependent event for question two. Question two has three isolated, but connected elements that are both causes and effects within the system. Figure 9 displays the foundational elements of this system and their relationship to one another.

Figure 9. Sustainability of DBR in School Settings.

Sustainability of DBR in school settings is the desired goal. Results previously discussed regarding the fidelity of DBR treatment determined that fidelity is attainable in varying degrees, therefore it is a practical intervention. Additionally, results discussed for vocabulary effects of DBR concluded that DBR does have a positive impact on vocabulary development. Given the importance of vocabulary development to continued language and literacy learning because of its association with phonological awareness
(Dickinson, McCabe, & Anastasopoulos, 2003; Lonigan, 2007), it follows that vocabulary growth is a socially valuable effect. It is necessary to note that the associations or relationships within this system are not static and changes in one element impact all others, which work to influence the sustainability of DBR in a classroom.

Analysis of the interview data determined that decision-making was an event that impacted fidelity to the protocol. Therefore, influence flows from sustainability to decision-making to fidelity and back to sustainability. Sustainability also influences vocabulary growth because consistency will generate larger gains, which reinforces sustainability due to its social value.

![Figure 10. Sustainability of DBR.](image)

Figure 10 is a model that shows the direction of influence connecting these feedback loops. The fidelity loop is a stabilizing loop in that the level of fidelity and
sustainability influence word learning. Sustainability and vocabulary growth are part of a reinforcing loop because the social value of the effect. Further analysis of the interview data determined that conceptual misunderstanding about the purpose of DBR and distractions that are inherently part of a preschool classroom interrupted the influence of decision-making on DBR treatment fidelity. This delay is also pictured in the model.

To summarize the discussion for question two, DBR is sustainable in the context of a preschool classroom. Fidelity to treatment delivery is attainable, substantially adding to the practicality of the treatment. Vocabulary gains result from DBR and vocabulary growth is socially important. However, issues relating to the fidelity of treatment need to be addressed in order to increase the likelihood of sustainability and vocabulary gains. These issues include older students’ conceptual understanding of the purpose for DBR and the distractions within the classroom setting. Ways of addressing this delay and, therefore increasing the practicality and value of DBR are discussed in the next section focused on fidelity.

**Discussion of Fidelity to Dialogic Buddy Reading in School Settings**

Previous studies in dialogic reading that reported that although dialogic reading improved language skills of young children, compliance to the components of dialogic reading and how often the participants engaged in the process remained an issue (Chow & McBride-Chang, 2003; Hargrave & Senechal, 2000; Huebner, 2000a; Lonigan & Whitehurst, 1998). The level of fidelity to DBR achieved by a sixth grade preschool pair of students in a school setting varied. Data specific to Lizzie and Sashi, Jenny and Jeremy, Ferrel and Don, and Julia and Paige demonstrated an upward trend in the number
of PEER components used for each DBR cycle. Lizzie and Sashi reflected this trend only when supported with the additional bookmark scaffold that targeted vocabulary. Ashley and Maria and Noora and Marion demonstrated an upward trend in completed cycles. The training and scaffolds found in the DBR protocol supported students’ use of DBR in varying degrees; however, analysis of the interview data for question two (How sustainable in DBR in school settings?) determined that other factors such as misconceptions and distractions influenced the degree to which complete fidelity to the PEER protocol was achieved.

Fidelity to the DBR protocol varied across pairs and the number of words gained in receptive and expressive vocabularies also varied, although an upward trend in word learning was replicated across the three dyads of participants. Words learned after the introduction to DBR increased in number and were constant across probes for both the receptive and expressive vocabulary measures.

Analysis of the interview data for question two (How sustainable is DBR in school settings?) indicated that increased word learning was one of several of the positive outcomes associated with DBR. The additional outcomes include the development of joint attention for younger students, a sense of service and accomplishment on the part of the older students, and the mutual benefits of relationships and thinking about stories. Taken together, these benefits support development of literacy and civic responsibility in the students, two effects that hold considerable social value.
The practicality of the DBR procedures is related to fidelity to the DBR PEER protocol and the focus of the preschool students. Decision-making was supported by the DBR protocol, but misconceptions and distractions created hurdles that influenced fidelity to the PEER cycle. These hurdles were determined through qualitative analysis of the interview data; however, the procedural considerations of decision-making, misconceptions, managing distractions, and choice were also evident based on the data explaining the level of fidelity achieved in terms of number of components of PEER used per cycle initiated and completed PEER cycles (Appendix E). The sixth grade students suggested that more book choice might lead to increased focus, which could facilitate management of the distractions and potentially lead to an increase in fidelity to and the positive effects of DBR. Based on the system that the effects and procedure of DBR combine to create, a system based on the development of literacy and civic responsibility and fueled by continued increase in fidelity to DBR PEER protocol, it appears that DBR in school settings is socially valid and sustainable. This sustainability is a function of continued improvement in fidelity, which is discussed further in the limitations and implications section.

Level of fidelity is related to internal and external validity (Resnick et al., 2005). Internal validity is concerned with the degree to which the outcomes are actually due to the intervention. High fidelity to intervention design and delivery increases internal validity. External validity considers whether or not the design and outcomes can be replicated with different participants in different settings. High levels of fidelity to training and receipt increase external validity because it increases the likelihood of
successful replication. The current study reached high levels of fidelity in design and delivery, strengthening internal validity of claims that DBR supports and training led to fidelity to delivery and that DBR led to increased vocabulary. Examining fidelity in terms of training and receipt indicate that external validity is threatened due to a .75 score on intervention receipt. This threat, as well as other limitations and implications are discussed in the following section.

**Limitations and Implications**

There are several limitations that need to be considered when evaluating this study. These involve implementation of the design, training, delivery, receipt, and enactment. The following subsection reviews these limitations and what they mean for future research and classroom practice. The first section discusses limitations associated with fidelity and implications for replication studies. The second subsection discusses implications for classroom practice and future research.

**Limitations and Implications for Replication Designs.** Limitations need to be addressed in replication designs. Organizing and discussing these limitations in terms of the five components of fidelity will help tighten future efforts by increasing internal and external validity. Therefore, each subsection will detail the relevant limitations and respective implications for future DBR studies. This section will end with a summary of limitations that need to be considered to replicate and extend this study.

**Design limitations and implications.** Limitations included the lack of controls for repeated readings, the lack of controls for understanding current control of language, and mistakes in implementation of the design. First, knowing the number of times each
book was read would help determine how rereading works to build vocabulary.

Outcomes showed that DBR had a positive effect on vocabulary, but it is unknown what effect rereading with DBR had on these scores. One way of measuring rereading and still offering choice to the students is for the sixth grade students to log the titles read each day.

Another limitation in the design was ensuring a match in primary language when possible. The home language of Maria was believed to be English as noted on documents and because English is the primary language of the father. However, later it was learned that the child’s mother was learning English and spoke to her in Spanish. This may have had an impact on this student’s gains in vocabulary. A better understanding of a child’s language background is necessary to not only match languages; but also to potentially explain variations in scores because the degree in which a child learns new vocabulary is dependent on that child’s existing schema for language (Bates & Goodman, 1997; Watson, 2001). Possible solutions include a parent interview to determine the child’s perceived dominant language and to collect a language sample from the child.

Future replication efforts should consider the inclusion of daily logs, parent language interviews (Huebner, 2000b), and collecting pre intervention language samples (Briesch et al., 2008) in order to address current limitations in design. Doing so will strengthen internal validity of claims and help in determining if DBR is an intervention worthy of further study in other contexts. Replication is necessary in order to truly measure the merit of DBR as a pedagogical tool for early childhood teachers.
**Training limitations and implications.** A key limitation was that there was not a way to determine the impact of the training sessions on the sixth grade students’ ability to use DBR and their understanding of how and why it works. Analysis of the data gathered for question three indicated that the limitation of misconceptions and decision-making were two elements that influenced adherence to the DBR protocol. The misconceptions and decision-making impacted external validity in two ways. First, it is uncertain how using DBR while buddy reading differed from not using DBR during buddy reading sessions. Documenting how a program or method is different from existing practice is important in building a case for fidelity (Ruiz-Primo, 2006). Second, the effectiveness of the training in establishing fidelity to the DBR protocol was not determined. More thorough documentation of the impact of training would provide evidence that the intervention is different from typical storybook reading interactions and that the training is successful by improving opportunities for replication and building more external validity.

Using a DBR observation protocol like the Fidelity Checklist (appendix B) and pre-post interviews are two ways to address these limitations. Observing all pairs in the participant pool for three to five buddy reading sessions before training and three to five DBR sessions immediately following the training (but before books targeting specific vocabulary are introduced) would provide information about the impact of training. Additionally, this training data would establish a baseline for fidelity to the DBR protocol, helping to isolate it as a variable. A pre and post training interview about how and why DBR helps to build vocabulary in preschool students would provide information
about the sixth grade students’ conceptual understanding of how the DBR protocol facilitates vocabulary development in the younger children. This conceptual understanding of how and why an intervention is effective, or conceptual fidelity (Stechuk & Burns, 2005), is related to the degree in which the provider of the intervention agrees with the methods used by the intervention protocol (Ruiz-Primo, 2006). Conceptual fidelity and theoretical agreement can be initially developed during training and then improved upon during in-time coaching during delivery, which will be discussed further in the next section.

**Delivery limitations and implications.** A delivery limitation involved the documentation of the DBR. Attendance was not taken during the intervention therefore it is not known if students with lower vocabulary gains had the optimal number of DBR sessions. In addition, the degree to which the sixth grade students used the DBR scaffolds when not being observed to collect fidelity data is unknown. The length of each fidelity observation was not closely monitored, which adversely affected the number of DBR components and the number of completed DBR cycles noted in the data when time did not allow for an entire book to be completed.

Issues related to documenting attendance, use of DBR protocol and accompanying scaffolds during DBR sessions when not being observed can be rectified using a form for self-report (i.e. a reflection checklist). This checklist can be merged with the book log that could be used to document repeated readings. Figure 11 provides a potential example of a DBR reflection log.
Question one of the study focused on whether sixth grade students could use DBR with fidelity to its components. Adherence to the critical components of DBR varied across pairs, which was particularly prominent with the use of the enhance and repeat prompts. This limitation also affected internal validity because it is unknown if more completed DBR cycles would have led to higher vocabulary gains.

Although data gathered to determine fidelity to delivery of the intervention is limited due to inconsistent observation lengths, analysis did indicate that fidelity improved over time with the use of targeted scaffolds. Smith et al. (2005) state that fidelity to training and delivery is strengthened when strategies to improve adherence and theoretical agreement during the implementation of the intervention are included in the design. These authors also suggest that providing opportunities for feedback or coaching during the actual intervention improves the implementation of the critical components. Providing and noting coaching during fidelity observations could help to improve the use of the DBR protocol and build on sixth grade students’ conceptual understanding of the intervention. Coaching in this manner would also help address the misconceptions and improve decision-making, two critical elements in use of DBR noted in the data analysis for question three. Including coaching during fidelity observations would also require
longer observation-feedback time periods, so limiting each 15 time frame to one pair could standardize the collection of data.

**Receipt limitations and implications.** Limitations in receipt included the preschool students understanding of the processes involved in DBR and the vocabulary measure. While training ensured that the sixth grade students understood how to use the DBR protocol, it did not address the younger students’ understanding of how to participate in a conversation about stories. However, data analysis indicated that joint attention and thinking about the stories were two benefits of DBR. Therefore the DBR protocol itself helped the preschool students develop the skills and strategies necessary to talk about stories. Although criteria for this aspect of fidelity are inherent in the activity, the inclusion of coaching as a way to strengthen training could provide a model for the younger students. The inclusion of coaching could possibly accelerate the younger students’ ability to attend to and more readily participate in DBR discussions. Implementing a coaching component could provide increased opportunities for replication and strengthen external validity.

The vocabulary measure used to determine gains in receptive and expressive vocabulary was somewhat limiting to external validity. The reliability of the measure became questionable when the students scored accurately on the receptive prompts for words previously unknown according to the baseline measurement, but then scored correctly for some words on the multiple probe assessment before DBR was initiated for those particular words. Testing in single-subject research inherently contains threats such as fatigue during baseline testing and reactivity (Palincsar & Parecki, 1995). Fatigue
during baseline testing may have occurred during the repeated testing for this study.
Fatigue considers the potential reality that the student was tired due to the assessment
(new expectations) and therefore attained a lower score. The activity involved in the
vocabulary measure, which may have been novel to the students could have required
more strenuous work than in subsequent multi-probes. Consequently, fatigue might have
led to a faulty baseline of zero for the multi-probe. Reactivity refers to the possibility
that the students began to learn the words due to the repeated assessment rather than
DBR.

Two ways of addressing these threats include familiarizing the preschool students
with the administration of the measure, thus creating a less intrusive context, and
analyzing the data in a way that would define potential fatigue or reactive effects
(Palincsar & Parecki, 1995). Improvements in replication designs could include a pre
assessment phase that introduces the activity using known words. Additionally, once the
individualized multi-probe is developed based on the chosen books, administering it three
to five times before DBR is initiated would help remove the words that will be gained
due to repeated exposure to the measure from the assessment tool. A threat due to
reactive effects would remain because the measurement is used repeatedly during the
intervention. However, there would be pre DBR data to support the subsequent analysis
to determine if the outcomes on the measure are due to DBR. For the present study, data
analysis addressed the isolation of words that may have been learned as a reactive effect
rather than words learned as a result of DBR. This analysis, leading to the inferring of
causality of outcomes, could have been substantiated further if more reliable baselines were found for each student before the intervention began.

**Enactment limitations and implications.** The documentation of the preschool students’ use of the targeted words outside of the intervention is a limitation of this study. Although analysis of the interview data confirmed that students asked for more reading at home and attended to stories more fully during story time at school, little is known about the students’ abilities to use the words outside the prompts provided during DBR and the vocabulary measure. Although DBR is given credit by the teacher and parents as having a positive impact on the reading experiences, ways of measuring enactment could be developed to extend the study design.

**Summary of replication considerations.** Although fidelity was fairly strong in this study, there were several limitations that should be considered when designing replication efforts. Considerations for internal validity include DBR session logs, determining the dominant language of the preschool students, standardizing observation time frames and including coaching during the delivery phase of the intervention. External validity could possibly increase with the use of pre and post training reading session observations using a DBR protocol checklist, pre and post training and post intervention interviews to assess sixth grade students’ conceptual understanding of DBR, acclimating the preschool students to the vocabulary activity, and establishing a baseline once each individualized multi-probe is developed and before the intervention begins. Addressing the issues with fidelity outlined in this section may enhance replication
efforts in different contexts and bolster etiological claims that sixth grade students can facilitate DBR in a way that leads to vocabulary gains for younger children over time.

**Implications for Practice and Future Research.** Implications for practice and future research emerge from this project. Dialogic buddy reading has been shown to be successful pedagogical practice at home (D. H. Arnold et al., 1994; Huebner, 2000a, 2000b; Jimenez et al., 2006) and at school (Hargrave & Senechal, 2000; Lonigan & Whitehurst, 1998; Lonigan et al., 1999; Valdez-Menchaca & Whitehurst, 1992) that builds on the existing vocabulary of young children. Trends in the data indicate that fidelity to the DBR protocol and vocabulary can increase over time. These findings align with several research points synthesized in the Linguistics and Oral Language and Emergent Literacy sections in chapter two, which will be summarized with classroom practice and future research in the following paragraphs.

Dialogic Buddy Reading incorporates many important language factors into interactions connected to storybook reading. Namely, the social interactions with a more able student scaffolded by the PEER protocol with a focus on the language and vocabulary in stories might build linguistic and semantic schemata (Cole et al., 1978). Consequently, control of sentence structure and meaning based on input and previous experience may be increased (Bates & Goodman, 1997). Building on these schemas would enable young children to add more words and phrases that they experience in storybook reading into their language, creating a generative language learning system for the children to access in a variety of school or emergent literacy activities (Watson, 2001).
Additional research that examines the social interactions that facilitate or inhibit these processes within the context of DBR with sixth grade students needs to be defined and studied. Potential variables to consider could include aspects of syntax (as well as vocabulary) and fidelity. Processes that could be addressed include decision-making during the DBR process, the building of experiences for the interaction activation model needed for language development through storybook reading, and conversations facilitated by the DBR protocol. For example, questions asking how providing feedback through coaching during fidelity observations influence decision making, linguistic and semantic schemata, and vocabulary could be posed. Examining the processes that interact with the variables that lead to literacy (i.e. definitional vocabulary as a precursor to phonological awareness) could help enhance external validity in practices that build vocabulary and enable replications across socio economic and linguistic contexts.

Although not directly studied in this project, results indicated that DBR might strengthen other emergent literacy skills such as establishing joint attention and relating to stories in a personal way. Joint attention is another process that impacts the students’ use of input and past experience to build more schema for language and learning. It would also be helpful to know if in building schema and vocabulary over time, the use of DBR could facilitate the shift from contextualized language to more de-contextualized language in the primary language of young children. Finding ways to define the social processes involved in these language shifts may help practitioners better understand how to implement pedagogical routines like DBR that establish relationships between students and facilitate the development of language and literacy skills in classrooms.
Undoubtedly, variables such as vocabulary, language structure, and fidelity are greatly influenced by socially based events like decision-making and joint attention. The results of this study indicate that the relationship that developed between the older and younger students increased joint attention and improved the older students’ decisions while using the PEER protocol. A realist lens like the one used in this study frames variables (e.g. vocabulary) and social processes (e.g. joint attention, decision making); and both variables and processes need to be studied further to better understand how students build schema in classroom settings.

Additional research efforts using a realist lens to align designs with the three elements of etiology are paramount in applied research focused on language and literacy acquisition. However, Marcoulides (2005) warns that many contextual elements pose threats to causal claims; therefore research needs to be designed, analyzed, and disseminated in a way that allows for replication in a variety of settings and sources of data. Grounding applied classroom research in the elements of etiology and fidelity may facilitate the replication efforts needed to effectively scale up pedagogical frameworks in the literacy instruction for young children. Research that works to more clearly define the system that drives emergent literacy and is conducted in such a way that it can be replicated across settings could provide teachers with a powerful, generative pedagogical force that could enable all children to succeed in our “schools of the future.”

DBR is proving itself to be valuable characteristic of our “schools of the future.” The results of this study add to the body of research findings that demonstrate that consistent use of dialogic reading increases vocabulary. Additionally, dialogic reading
can be conducted by sixth grade students using the younger students’ primary languages. Applied replication efforts are needed in order to encourage schools to incorporate DBR instructional routines in a way that allows all students to use their language as tools for their success in learning to read. Such efforts will work towards developing classroom environments that recognize that “children do well if they can” and ensure that all children can read well.
APPENDICES
**APPENDIX A—PEER GUIDE**

**FIRST:** Read the story in three sessions without using the peer and crowd guide.

**NEXT:** Plan the CROWD prompts you will use with the PEER guide.

Step 1: Think about the child’s understanding of the words noted inside the cover of the book. Choose 6 – 8 words.

Step 2: Review the CROWD prompts for the vocabulary words you chose. Decide which prompts will work best for your buddy and place the stickies on the pages where the words are used.

Step 3: Read with your buddy using the PEER guide for each sticky.

**LAST:** Congratulate yourself and your classmates for a job well done!

<table>
<thead>
<tr>
<th>C</th>
<th>R</th>
<th>O</th>
<th>W</th>
<th>D</th>
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<tbody>
<tr>
<td><strong>P = PROMPT</strong></td>
<td>...said the great, huge bear, in his great, <strong>loud</strong> voice.</td>
<td>Tell me what the great huge bear said when he saw his chair.  <em>She is in my chair.</em></td>
<td>Why is the great, huge bear’s voice so <strong>rough</strong>? <em>He is big.</em></td>
<td>Who has a <strong>rough</strong> and <strong>gruff</strong> voice? <em>The bear.</em></td>
</tr>
<tr>
<td><strong>E = EVALUATE</strong></td>
<td>It probably was <strong>loud</strong> and <strong>rough</strong>, too!</td>
<td>Goldilocks did sit in his chair!</td>
<td>Yes, he is big and he looks strong.</td>
<td>Yes, one of the bears has a <strong>rough</strong> and <strong>gruff</strong> voice.</td>
</tr>
<tr>
<td><strong>E = ENHANCE</strong></td>
<td>A <strong>rough</strong> voice will sound scratchy like this…. How do you think the great, huge bear sounded?</td>
<td>He said, “Somebody has been sitting in my chair” in a great, <strong>rough</strong>, <strong>gruff</strong> voice.</td>
<td>His voice isn’t always <strong>rough</strong>, though. It’s <strong>rough</strong> because he is big, strong and angry! Listen to my angry voice. Show me your angry voice.</td>
<td>The great, huge bear has a <strong>rough</strong> and <strong>gruff</strong> voice. He must have sounded like this…. You try to sound <strong>rough</strong> like the great, huge bear.</td>
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<tr>
<td><strong>R = REPEAT</strong></td>
<td>The great, huge bear talks in a great, <strong>_____</strong> voice.</td>
<td>What did the great, huge bear say when he saw his chair?</td>
<td>Why do you think the great, huge bear’s voice is so <strong>rough</strong>?</td>
<td>Who has a <strong>rough</strong> and <strong>gruff</strong> voice?</td>
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</table>
**CROWD** Together With Goldilocks and the Three Bears

C = Complete

“Someone has been sitting in my chair!” said the great, huge bear, in his great, ________, gruff voice.

R = Recall (Retell)

Tell me what the great, huge bear said when he saw his chair.

O = Open-ended (Deep Questions)

Why is the great, huge bear’s voice so rough?

W = Wh- questions (Shallow Questions)

Who has a rough and gruff voice?

D = Distance (Connections)

Tell me about a time you used a rough voice?
# Fidelity To Treatment/Process During Training and Delivery

**Dialogic Buddy Reading**

<table>
<thead>
<tr>
<th>References To Bookmark (Talk)</th>
<th>Date:</th>
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<tbody>
<tr>
<td></td>
<td>Encouraged Storytelling</td>
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<td>Engaged in Vocabulary Dialogue Prompted Using</td>
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<td>[CROWD] [CROWD] [CROWD] [CROWD] [CROWD] [CROWD]</td>
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<tr>
<td>Enhanced</td>
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<td>Repeated</td>
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Additional Notes:

C = Cloze  R = Recall  O = Open ended  W = Wh questions  D = Distance  E = Embedded correction  P = Praise
APPENDIX C—EXAMPLE BOOKMARK

**trowel**
Choose one prompt. Use PEER in a way that encourages your buddy to use the target word.

**Cloze**
Gardeners dig little holes with a _______.

**Recall**
What does a gardener use to dig the little holes for the sprouts?

**Open Ended**
What is going on in this picture? (Use PEER to guide the student to use the word, trowel.)

**WH- Questions**
What is this called? What is it used for? (point to the trowel)

**Distance (Connections)**
I remember using a trowel to help plant flowers with my mom. Tell me about a time when you planted something. (Try to guide student to use “trowel” trough PEER).
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<tbody>
<tr>
<td><strong>Pair 1</strong></td>
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<tr>
<td><strong>Title</strong></td>
<td>Harry the Dirty Dog</td>
<td>Growing Vegetable Soup</td>
<td>The Runaway Bunny</td>
<td>Retreads / choice</td>
<td>Retreads / choice</td>
<td>choice</td>
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<td>choice</td>
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<tr>
<td><strong>Words</strong></td>
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<td>lidle, hand basket, cabbage, hoe</td>
<td>Gardener, stream, trapure, catch</td>
<td>no new words</td>
<td>no new words</td>
<td>no new words</td>
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<td><strong>Title</strong></td>
<td>How Does a Dinosaur...School</td>
<td>Is Your Mama a Llama?</td>
<td>Cordunury</td>
<td>Retreads / choice</td>
<td>Retreads / choice</td>
<td>Choice</td>
<td>Choice</td>
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<tr>
<td><strong>Words</strong></td>
<td>Growl, roughhouse, keaps, fuss</td>
<td>Lashes, whiskers, grazes, soul</td>
<td>overalls, palace, escalator, sofa</td>
<td>no new words</td>
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<td><strong>Title</strong></td>
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<td>Choice</td>
<td>Harry the Dirty Dog</td>
<td>Cordunury</td>
<td>How Does a Dinosaur...School</td>
<td>Retreads / choice</td>
<td>Retreads / choice</td>
<td>Choice</td>
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<tr>
<td><strong>Words</strong></td>
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<td>no new words</td>
<td>buried, hidden, following, dashed</td>
<td>Overalls, palace, escalator, toppled</td>
<td>keaps, fuss, roughhouse, growls</td>
<td>no new words</td>
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<td>How Does a Dinosaur...School</td>
<td>Growing Vegetable Soup</td>
<td>Retreads / choice</td>
<td>Retreads / choice</td>
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<tr>
<td><strong>Words</strong></td>
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<td>No new words</td>
<td>Hidden, railroad, flippod, begging</td>
<td>Taill, keaps, fuss, chalk</td>
<td>Sprout, steam, soil, trowel</td>
<td>no new words</td>
<td>no new words</td>
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<td>Title Words</td>
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<td>Choice</td>
<td>Choice</td>
<td>Choice</td>
<td>Choice</td>
<td>Harry the Dirty Dog Dashed, hidden, buried, begging</td>
<td>Growing Vegetable Soup Trowel, bud, ladle, bushel</td>
<td>Corduray Escalator, gasped evening, yanked,</td>
<td>Rereads/choice no new words</td>
<td>Rereads/choice no new words</td>
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<tr>
<td>Title Words</td>
<td>Choice</td>
<td>Choice</td>
<td>Choice</td>
<td>Choice</td>
<td>Choice</td>
<td>Growing Vegetable Soup Bud, trowel, hoe, stake</td>
<td>How Does a Dinosaur ...School Leap, roughhouse, interrupt, projects</td>
<td>Harry the Dirty Dog Hidden, begging, buried, chute</td>
<td>Rereads/choice no new words</td>
<td>Rereads/choice no new words</td>
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APPENDIX E—FIDELITY OF INTERVENTION DELIVERY ANALYSIS

The level of fidelity to the DBR protocol is discussed for each pair and across dyads. Each fidelity observation is broken down to assess the extent the components of the PEER cycle were used by each pair. Figures 3 through 8 provide a visual analysis of the break down for the use of the PEER components for each pair. The detailed breakdown for fidelity to the different components is then summarized in Figure 9 indicating the percentage of components used and the percentage of completed cycles across pairs, both with and without the use of the more detailed support of the targeted vocabulary bookmark.

Analysis for Dyad One

Pair one consisted of Ashley and Maria. Ashley spoke only English and Maria spoke both English and Spanish; therefore, the pair used English during DBR. Ashley and Maria were observed seven times across nine weeks and they used vocabulary bookmarks to target vocabulary during observations one through five. The more general PEER guide was available for observation six and seven. A total of 29 DBR cycles were initiated, each included an evaluation statement. Ashley extended Maria’s response 26 times, and these extensions were followed by prompts for a repeat 26 times. Pair one achieved a total of 26 completed cycles out of 29 attempts. The incomplete cycles occurred during the first two observations. There were two observations that noted only two cycles (observation five and observation seven) due to the limited time of the
observations, as noted on the fidelity checklist. Visual analysis of Figure 12 indicates a very strong start and an upward trend in completed cycles despite the two short observations.
Pair two consisted of Lizzie and Sashi. The pair was observed eight times across nine weeks, using vocabulary bookmarks to target vocabulary during observations one through five. The more general PEER guide was available for observation six, seven, and eight. A total of 32 DBR cycles were initiated during these observations, and 31 of the cycles included an evaluation statement. Lizzie extended only 19 responses, with only four cycles including the final repeat component. Visual analysis of Figure 13 indicates that more cycles were initiated and more components were used during the five observations that included the bookmarks.

Taken together, the figures for dyad one indicate that fidelity to DBR is attainable for sixth grade students working with preschool children. The number of initiated cycles increases when the older student is able to use a guide. Additionally, the number of complete cycles appears to increase when scaffolded with a visual support.

**Analysis for Dyad Two**

Pair three consisted of Jenny and Jeremy. The pair was observed eight times across nine weeks, and they used bookmarks to target vocabulary during observations three through seven. The PEER guide was accessible during observations one, two, and eight. Twenty-nine cycles were initiated during the eight observations, with 22 prompts being followed by an evaluation statement. The evaluative statement included an extension five times, and only one DBR cycle was completed with a repeat. Jenny developed more consistent use of the evaluate component while using the bookmarks; and she seemed to extend more after experiencing the support of the bookmarks. Visual
analysis of Figure 14 indicates an upward trend in the number of components used in each initiated DBR cycle, although only one cycle was taken to the repeat component.

Pair four consisted of Ferrel and Don. The pair was observed eight times across nine weeks, using bookmarks to target vocabulary during observations three through seven. The PEER guide was accessible during observations one, two, and eight. Twenty-nine DBR cycles were initiated during the eight observations, with 27 prompts being followed by evaluation statements. Nineteen of these statements extended Don’s initial responses and four DBR cycles were completed with a repeat. Visual analysis of Figure 15 indicates that Ferrel used the extend component more consistently after using the bookmarks and also included a repeat component more often, a trend that continued with new books after the targeted bookmarks were removed.

As with dyad one, the graphs for dyad two indicate that fidelity to DBR is an attainable goal for sixth grade students. The graphs indicate an upward trend in the number of components used in each DBR cycle. Also, pair five began using the extend and repeat components more often in each subsequent check. The increased number of initiations and components began when the students used the bookmarks as a guide, but they also continued once the bookmarks were removed.
Figure 14. Fidelity Graph for Jenny and Jeremy.

Figure 15. Fidelity Graph for Ferrel and Don.
Analysis for Dyad Three

Pair five consisted of Noora and Marion. The pair was observed eight times across 10 weeks, and Noora used bookmarks to target vocabulary during observations six, seven, and eight. The PEER guide was accessible during observations one through five. Thirty-five DBR cycles were initiated during the eight observations and 35 prompts were followed by an evaluation statement. Noora extended the initial responses 22 times, completing 16 DBR cycles with a repeat. Visual analysis of Figure 16 indicates an upward trend in the number of components used and completed cycles for observations one through seven; but this trend takes a downward turn during observations eight and nine.

Pair six consisted of Julia and Paige. The pair was observed eight times across 10 weeks, using bookmarks to target vocabulary during observations six, seven and eight. The PEER guide was accessible during observations one through five. Thirty-three DBR cycles were initiated during the eight observations, with 25 of these prompts being followed by an evaluation statement. Nineteen of these evaluation statements included an extension on Page’s initial response. Visual analysis of Figure 17 indicates an upward trend in the number of initiated DBR cycles taken to the extension component; from two, three, and zero during observations one through three to two, five and four for observations six through eight.

Figures 16 and 17, representing fidelity observation data for dyad three, also indicate that fidelity to DBR is attainable in the elementary school setting. Both pairs improve in
Figure 16. Fidelity Graph for Noora and Marion

Figure 17. Fidelity Graph for Julia and Paige
number of initiations and number of components used across observations. Additionally, the use of the bookmark scaffold results in an increase in fidelity.
A set of four pictures consisted of a target word and three detractors. The four pictures were placed in front of the Head Start student. The student was given a sequence of three prompts:

1. Give me the picture that shows ______. (Response was recorded using a check or minus and the picture is returned to the group.)

2. Tell me what you know about the word ______. (Response was recorded next to the check or minus.)

3. (Given only if the response to prompt number one was incorrect.) Give me the picture that shows the word ______. (Response was recorded using a to the dictated response to prompt number two using a check or minus.)
APPENDIX G—SUSTAINABILITY PRE AND POST INTERVIEW

Post Training/Pre Intervention Interview:

1. Tell me how dialogic buddy reading will work for you and your buddy (or your students).
2. What do you think you will like most about dialogic buddy reading?
3. What concerns you about dialogic buddy reading?

Post Intervention Interview:

1. Tell me how dialogic buddy reading worked for you and your buddy (or your students).
2. What did you like most about dialogic buddy reading?
3. What did you like least about dialogic buddy reading?
4. What would you change about dialogic buddy reading?
5. (For teachers only) Describe the how you feel your students’ home literacy experiences influence their book interactions at school?
APPENDIX H—FIDELITY ANALYSIS CHECKLIST

Borrelli (2005) established that strong treatment fidelity is attained when .80 of the criteria is met in each of the dimensions defined in the table on the following chores. The ratio is determined by dividing the number of criteria met by the number of criteria applicable to the study. This study successfully addressed a minimum of .80 of criteria in design (1.0), training (1.0), delivery (.80), receipt (.75), and enactment (1.0). Although training and enactment received a fidelity score of 1.0, more measures are necessary to fully establish treatment fidelity. These, as well as improvement for delivery and receipt, are discussed in the limitations and implications section. Taking the scores in sum indicate that although many criteria necessary to establish strong fidelity are present, this study falls shy due to the lack of ways to facilitate increased vocabulary outside the intervention. Ideas on how to address this are also shared in the limitations and implications section.
## Table 17
Analysis of Fidelity

<table>
<thead>
<tr>
<th>Component</th>
<th>Strategy/measurement used</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Treatment/Study Design</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provided information about treatment duration in treatment group</td>
<td>15 minutes 4x/wk</td>
<td>Researcher</td>
</tr>
<tr>
<td>Provided information about treatment duration in comparison group</td>
<td>Single subject design</td>
<td>Researcher</td>
</tr>
<tr>
<td>Mention of provider credentials</td>
<td>6th grade students</td>
<td>Researcher</td>
</tr>
<tr>
<td>Mention of theoretical model/guidelines</td>
<td>Literature; Critical components identified</td>
<td>Researcher</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description of training</td>
<td>Procedures</td>
<td>Researcher</td>
</tr>
<tr>
<td>Standardized training</td>
<td>Procedures</td>
<td>Researcher</td>
</tr>
<tr>
<td>Measured provider skill acquisition post training</td>
<td>Observation checklist with audio recordings</td>
<td>Researcher</td>
</tr>
<tr>
<td>Described how providers skills maintained over time</td>
<td>Observation checklist with audio recordings</td>
<td>Researcher</td>
</tr>
<tr>
<td><strong>Delivery of Intervention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Included method used to ensure content of treatment was delivered as specified</td>
<td>Observation checklist with audio recordings; Reliability checks</td>
<td>Researcher</td>
</tr>
<tr>
<td>Included method to record duration</td>
<td></td>
<td>Provider</td>
</tr>
<tr>
<td>Included mechanism to assess provider adherence to intervention plan</td>
<td>Observation checklist with audio recordings; Reliability checks</td>
<td>Researcher</td>
</tr>
<tr>
<td>Assessed nonspecific treatment effects</td>
<td>Interview</td>
<td>Researcher</td>
</tr>
<tr>
<td>Used treatment manual</td>
<td>DBR protocol and bookmarks</td>
<td>Provider</td>
</tr>
<tr>
<td><strong>Receipt</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessed participant comprehension of purpose of intervention</td>
<td>Interview</td>
<td>Participant</td>
</tr>
<tr>
<td>Included ways to improve participant comprehension beyond the intervention</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessed participant’s learning of intended skills during the intervention</td>
<td>Vocabulary measure</td>
<td>Researcher</td>
</tr>
<tr>
<td>Included ways to improve performance during intervention</td>
<td>Repeated readings</td>
<td>Provider</td>
</tr>
<tr>
<td><strong>Enactment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessed participant skills in outside treatment context</td>
<td>Interview</td>
<td>Researcher</td>
</tr>
<tr>
<td>Assessed strategy to improve skills used outside treatment context</td>
<td>Interview</td>
<td>Researcher</td>
</tr>
<tr>
<td><strong>Provider</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Four themes related to the practicality of the DBR processes were found in the interview data. These themes are thoughtful decision-making, managing distractions, choice, and misinterpretations of DBR intentions. Each student’s connection to these themes were analyzed separately, leading to a cross case summary which includes a more thorough discussion of the themes articulated through the data analysis. Table 17 on page 172 displays examples of the substantive and theoretical code associated with the practical aspects of DBR. The table is followed by a description of the analysis.

Ashley made two references to the procedural aspects of DBR during the pre intervention interview—decision-making and managing distractions. She spoke about deciding to work with more sophisticated words using the DBR protocol by stating, “My buddy, she knows a lot of words but not the higher more detailed words. In most of the books we read, I try to get her to understand more of the harder words and it’s starting to help her.” Additionally, Ashley touched on how important book choice was to enjoyment and attention to the process when she said, “I like reading to her and she likes the books we pick. She chooses all the books she likes.”

Ashley discussed decision-making and choice again during the post intervention interview, as well as the issue of distractions. She noted that it was particularly difficult
Table 18

<table>
<thead>
<tr>
<th>Examples of Substantive Categories</th>
<th>Theoretical Categories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre</strong> It’s a balance; try not to correct him; I just kind of go along with it because it’s kind of a cat;</td>
<td>Thoughtful Decision Making</td>
</tr>
<tr>
<td><strong>Post</strong> You have to keep going and it’s hard to do</td>
<td></td>
</tr>
<tr>
<td><strong>Pre</strong> Doesn’t really pay attention because she gets distracted a lot; sometimes he goes off topic; it doesn’t always work; they don’t always work;</td>
<td>Managing Distractions</td>
</tr>
<tr>
<td><strong>Post</strong> Hard to get her to focus and get back; sometimes the buddies did not listen; I didn’t like when she got distracted; he got distracted; they won’t pay attention sometimes and it just didn’t work well;</td>
<td></td>
</tr>
<tr>
<td><strong>Pre</strong> She likes the books we pick and she chooses all the books she likes</td>
<td>Choice</td>
</tr>
<tr>
<td><strong>Post</strong> They should choose some of the books they want because it would be good that they would be interested in the book; give her more choices because sometimes she would just rush over the pages”; collaborative choice maintained in a book box;</td>
<td></td>
</tr>
<tr>
<td><strong>Pre</strong> She’ll look and the word and say, ”Oh, that’s Dad” and every time we read a different book she’ll already know the words; when she came to the word, little, she already knew it;</td>
<td>Misconceptions</td>
</tr>
<tr>
<td><strong>Post</strong> She stumbled over words so we just skipped them. But after we read them a few times and she would just ride over them</td>
<td></td>
</tr>
</tbody>
</table>

to decide how far to push the DBR protocol when the younger student did not seem to be gaining understanding of the target word. This indecision was articulated by stating, “Sometimes it’s really hard to get her to understand one word and you have to keep going and it’s kind of hard to do.” Increased choice in book selection emerged as a needed
change in order to generate more interest and engagement for the younger student.

Ashley commented,

I would change the books kind of because some of the books that they had they weren’t interested in at all…I think they should choose some of the books that they want because it would be good that they would be interested in the book.

Finally, Ashley pointed out that the DBR protocol helped to manage distractions when she said, “It [DBR] was good because she would understand what I was asking her instead of looking all around and being distracted.”

Ashley talked about the practical aspects of DBR in terms of decision-making, choice, and distractions. She noted that using the DBR procedure helped manage distractions and that more book choice may enhance interest and engagement. Another sixth grade student, Lizzie, also mentioned decision-making and distractions during the pre and post intervention interviews.

Lizzie made one reference to decision-making and one reference to distractions during the pre intervention interview. She talked about the way her decisions, when using the DBR protocol, helped her partner understand their purpose. She stated, “I think it [DBR protocol] help Sashi and me learn how I can actually enhance more with her and get her talking more and understanding.” She also pointed out that Sashi’s lack of attention was frustrating by saying, “Sometimes Sashi doesn’t really pay attention because she gets distracted easily.” The concern about distractions was voiced again during the post intervention interview when she commented,
…sometimes the buddies do not listen. I had a little bit of trouble with mine and she would go off and it was hard to get her to focus to get back. That’s what I didn’t like—when she got distracted. Other buddies got her intrigued with what they were saying and so she got into that…

Lizzie planned and used the DBR protocol as a tool to generate focus, which begins to touch on the benefits of DBR, but continued to struggle with the distractions that naturally occur in a room filled with 17 pairs of students reading and talking about texts together.

Jenny’s comments on the practical aspect of DBR were focused on decision-making during the pre intervention interview and on distractions during the post intervention interview. Jenny talked about the way she provided feedback to Jeremy. She stated,

…I don’t know but sometimes he’ll say that like the right thing when it’s like an animal and he calls it a cat and it’s a lion. I’ll say yeah, it’s a lion and he’ll keep saying it’s a cat so I’ll just go along with it because it’s a kind of a cat.

During the post intervention interview, Jenny noted improvement in focus, but distractions remained conscious hurdle when she said, “It [DBR] worked pretty well, but he got distracted. But later on he started listening. Like in the beginning he would get distracted by things like toys. But now it got better.”

Distractions continued as an important theme during the pre and post intervention interviews for student four. During the pre intervention interview, Ferrel stated, “Sometimes he goes off topic” and “It [DBR] doesn’t always work. They don’t always
work. Not all the time, Sometimes they have an off day, but usually it works.” Ferrel pointed out that his buddy was tuned into the book and their conversation, but sometimes the dialogue moved in an unintended direction creating a gap between the pair and the story or target concept. During the post intervention interview, Ferrel commented that it was a bit frustrating when Don didn’t pay attention. He stated, “Probably when they won’t pay attention. That happens sometimes and it just didn’t work well.”

Julia did not speak about decision-making or distractions. Her comments revealed a misinterpretation of the intent of DBR. She stated, “She’ll look at the words and she’ll say, ‘Oh, that’s dad—da—and every time we read a different book she’ll already know what the word is.” Julia was more focused on actual reading or decoding of the target words in addition to or in place of understanding and expressing the word meanings. Another example of this misinterpretation surfaced when said,

Yeah, we’re reading ‘I’m a Little Teapot,’ a lot of the time so when like she will go, ‘I’m a little teapot,’ and when we read nursery rhyme books we read, ‘Hey Diddle Diddle the Cat and the Fiddle,’ and then she saw the word, little, she said, ‘Okay, now I can try.” And when she came to the word, little, she already knew it.

This misinterpretation was also evident during the post intervention interview when she said,

I think it [DBR] worked really good because she learned a lot. Before when we would go over words…she knew a whole bunch of words but she stumbled on some words and she just skipped them. But after we read them a few times and she would just ride over them and it was just tremendously great.
Julia also mentioned the need for more choice in book selection during the post intervention interview as she noted that, “When you give her your books I would give her more choices because a lot of times she would just rush over pages and everything and I don’t think she was really learning.”

The teacher spoke about choice during the post intervention interview. She began brainstorming ways to facilitate collaborative book choice between the older and younger students that would carry over to the parents. The teacher stated,

Sometimes let the older students choose [books]. I like the way you had book boxes for the few [being observed]. Maybe they could have two books a week and let them choose. They [older kids] can go to the library and choose two books to keep in their box for that week.

The teacher also expressed that more multi-lingual books need to be available for selection:

If I have a multi-lingual student I want them to be able to read to them in Spanish.

We need more books in the home languages. One mother was so happy because ‘I am more comfortable reading in Spanish.’

Table 3 summarizes the practical considerations involved in the implementation of DBR. Four participants voiced concerns about distractions. Three participants commented that the decision-making involved in using the DBR protocol helped manage the distractions. Additionally, three participants suggested that more choice in book selection would increase interest, improve focus, and therefore decrease distractions.
Finally, the responses by one participant revealed a misinterpretation about the purpose of DBR, trying to facilitate actual reading of words rather than developing expressive and receptive word knowledge. These considerations are foundational to fidelity and focus.
REFERENCES
REFERENCES


Dickinson, D. K., McCabe, A., & Essex, M. J. (2006). A window of opportunity we must open to all: The case for preschool with high-quality support for language


CURRICULUM VITAE

Mary Jane McIlwain graduated with a Bachelor of Science from Auburn University in 1989. She was employed as a teacher in Alexandria City Public schools for four years before attending George Mason University to earn a Master of Education in Curriculum and Instruction, specializing in literacy. She joined Fairfax County Public Schools in 2000 as a reading specialist and continues to work in that capacity today. Her research interests include emergent literacy, the achievement gap, and self-study in teaching and learning.