

PRESCHOOL BOOK READING: TEACHER, CHILD, AND TEXT  
CONTRIBUTIONS TO VOCABULARY GROWTH

By

Betsy G. Watson

Dissertation

Submitted to the Faculty of the  
Graduate School of Vanderbilt University  
in partial fulfillment of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

in

Teaching and Learning

May, 2008

Nashville, Tennessee

Approved by:

Professor Dale Farran

Professor David Dickinson

Professor Mark Lipsey

Professor Deborah W. Rowe

To the little boy growing inside of me-Your flutters and activity have been a constant reminder of joy during this rite of passage. I can't wait for you to get here so I can love you up!

and

To Joseph- It just gets better every day. I love you.

## ACKNOWLEDGEMENTS

*Be strong and courageous. Do not be terrified; do not be discouraged, for the Lord your God will be with you wherever you go. ~ Joshua 1:9*

Thank you, God, for every opportunity to learn what I must know to follow Your will for my life. All good things come from You; please help me to be thankful. Thank you, Joseph, for marshaling a level of patience and support even beyond your usual wonderful self. You take such good care of me. Every day with you makes me happy. Thank you, Dale, for giving me so much of your time and energy. No one has ever caused me to think and reflect on my work as much as you have. I am also grateful for all the experiences you provided for me in Wayne County and for the chance-of-a-lifetime trip to Finland. Thank you, David Dickinson, Mark Lipsey, and Debbie Rowe for serving on my committee and providing valuable feedback through each step of the dissertation process. I am honored to have benefited from your expertise. I appreciate the support of the seven teachers who made this dissertation possible by allowing me to spend time in their classrooms collecting data. Also, thanks to all the children who “played games” with me and let me do my work in their classrooms. Jennifer Hathaway, thank you for always listening and being constantly supportive and positive; your eye for detail saved me many times. I am so grateful to know you. You cannot imagine how much I will miss you. My personal HLM team, Kerry Hofer and Canan Aydogan, you know I would not have been able to finish without you. You were so patient with me; you are both excellent teachers. Sarah Shufelt, I wish I could take you with me for the rest of my life. Your friendship is one of the happiest surprises of the end of my graduate school career. Carol Bilbrey, Nancy Richardson, Mackenzie Richardson, and Shin Ji Kang, thank you for your encouragement, help, and friendship. When I work with students and

teachers in the future, I will remember your optimism and pass it along. Thank you to the *Focus on Early Learning* team for answering endless questions, listening to me, covering my work schedule, and sending all the kind emails and notes. To my Woodmont family, thank you for your prayers. To Mother and Daddy, thank you for coming to my rescue with asparagus and bananas, and thank you for taking care of so many details. Mother, *now* I am finished with my dissertation. I look forward to moving into our next step of life together. It is one of my life's best blessings that I can know you as Mother and GiGi. Thank you for loving me.

## TABLE OF CONTENTS

	Page
DEDICATION .....	ii
ACKNOWLEDGEMENTS .....	iii
LIST OF TABLES .....	viii
LIST OF FIGURES.....	x
Chapter	
I. INTRODUCTION.....	1
Statement of the Problem .....	1
Sociocognitive Perspective .....	3
Contributions of the Teacher and the Child .....	3
Contributions of the Text .....	5
Objectives .....	5
II. REVIEW OF THE LITERATURE.....	7
Introduction .....	7
Theoretical Perspectives on Word Learning .....	8
Theories of Acquisition of First Words.....	9
Building Schema .....	12
Features of Classroom-Based Book Reading Related to Word Learning.....	14
Multiple Exposures and Elaboration of Word Meanings.....	14
Adult Book Reading Style.....	31
Child Engagement.....	36
Reader Stance.....	38
Tensions Surrounding Procedures.....	40
Including Informational Texts in Preschool Book Reading.....	43
Genre Descriptions.....	44
History of Genre Use.....	47
Recommendations for Narrative Texts .....	48
Benefits of and Preference for Informational Text .....	49
Lack of Informational Text Availability and Use .....	52
Summary .....	55
Conclusion and Hypotheses .....	57
III. RESEARCH DESIGN AND PROCEDURES.....	60

Research Site and Participants .....	60
Research Site.....	60
Participants.....	61
Book Reading Procedure.....	62
Instruments.....	63
Procedures.....	69
Hypothesis Testing.....	72
IV. RESULTS .....	77
Initial Analyses.....	77
Descriptive Results for Quantitative Analyses.....	77
Hypothesis Testing.....	86
Contributions of the Teacher.....	90
Contributions of the Child.....	99
Contributions of the Text .....	105
Secondary Analyses .....	108
Results for Qualitative Analyses.....	108
Illustrations of Teachers' and Text Contributions to Word Learning.....	109
Examples of Best Practice.....	109
Examples of Less-than-Effective Practice .....	116
Teachers' Differential Reading of Text by Genre.....	118
V. SUMMARY, DISCUSSION, AND CONCLUSIONS.....	123
Summary of Hypotheses .....	123
Contributions of the Teacher.....	123
Contributions of the Child.....	123
Contributions of the Text .....	124
Summary of Qualitative Analyses .....	124
Issues.....	125
Measuring and Effecting Child Vocabulary Gain.....	125
Possible Negative Effects from High Rates of Teacher Talk.....	126
Teacher Preparation for Vocabulary Facilitation.....	128
Group Size.....	129
Effecting Proximal Vocabulary Gain.....	130
Strengths.....	132
In-depth Data.....	132
Multi-faceted Data.....	133
Shared Curriculum .....	133
Limitations .....	133
Sample Size.....	133
Design Flaws.....	134

Target Vocabulary Measure .....	134
Lack of Variation among Teachers .....	134
Short Duration .....	135

Conclusion.....	135
-----------------	-----

## Appendix

A. Guess My Word Assessment.....	138
B. Child Observation in Prekindergarten OWL Revised.....	140
C. Bibliography of Children’s Books .....	141
D. Book Information .....	142
E. Reading Log .....	143
F. Timeline of Study.....	144
G. Teacher Interview I .....	145
H. Teacher Interview II .....	146
I. Child and Teacher Variable Information .....	147
J. Code Book.....	148
K. Multilevel Modeling Equations.....	149
L. Target Words per Book .....	154

REFERENCES.....	155
-----------------	-----

## LIST OF TABLES

Table	Page
1. Descriptive Statistics for Target Vocabulary Assessment .....	65
2. Descriptive Statistics for Distal Vocabulary Assessments.....	66
3. Descriptive Statistics for Child Involvement .....	67
4. Descriptive Statistics for Child Target Production .....	68
5. Descriptive Statistics for Frequency of All Book Reading by Genre .....	69
6. Teacher Language Per Book Overall and Per Genre .....	71
7. Percentage of Utterance Type for All Books, Nonfiction Books, and Fiction Books ..	73
8. Spearman Correlations among Four Initial Teacher Variables.....	75
9. Results for the Influence of All Teacher Vocabulary Utterances on the Target Vocabulary Outcome .....	78
10. Results for the Influence of All Teacher Vocabulary Utterances on the PPVT Outcome	79
11. Results for the Influence of All Teacher Vocabulary Utterances on the Picture Vocabulary Outcome .....	80
12. Results for the Influence of Teacher Target Vocabulary Elaboration Utterances on the Target Vocabulary Outcome.....	82
13. Results for the Influence of Sophisticated Word Use on the Target Vocabulary Outcome .....	83
14. Results for the Influence of Sophisticated Word Use on the PPVT Outcome.....	84
15. Results for the Influence of Sophisticated Word Use on the Picture Vocabulary Outcome	85

16. Results for the Interaction of Child Involvement and Teacher Vocabulary Utterances on the Target Vocabulary Outcome .....	87
17. Results for the Interaction of Child Involvement and Teacher Vocabulary Utterances on the PPVT Outcome .....	88
18. Results for the Interaction of Child Involvement and Teacher Vocabulary Utterances on the Picture Vocabulary Outcome .....	90
19. Results for the Interaction of Child Target Vocabulary Production and Teacher Vocabulary Utterances on the Target Vocabulary Outcome .....	92
20. Descriptive Statistics for Teacher Vocabulary Utterances per Genre.....	93
21. Results for the Influence of the Number of Nonfiction Books Read on the PPVT Outcome	94
22. Results for the Influence of the Number of Nonfiction Books Read on the Picture Vocabulary Outcome .....	95

## LIST OF FIGURES

Figure	Page
1. Interaction graph for all teacher vocabulary utterances and child involvement .....	89

# CHAPTER I

## INTRODUCTION

### Statement of the Problem

Children enter preschool with different-sized vocabularies (Hart & Risley, 1995). By age five, children have acquired an estimated 8,000 to 15,000 words (Anderson & Freebody, 1981). The types of language experiences children have with others influence their vocabulary growth (Heath, 1983; Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991). Several factors affect differences in the size of children's vocabularies, including maternal language abilities, socio-economic levels, and language input from family members and caregivers. The reason that the vocabulary gap is an important issue is because vocabulary is a strong predictor of later reading and school success (Anderson & Freebody, 1981).

Studies have shown that a strong relationship exists between knowledge of word meaning and ability to comprehend passages containing those words. The causal relation between vocabulary and later reading outcomes is not often shown due to the correlational nature of much reading research. However, some research has shown that vocabulary knowledge in the preschool years predicts later reading beyond the variance accounted for by socioeconomic status (Walker, Greenwood, Hart & Carta, 1994). Because vocabulary is related to later school success, there are various educational attempts to address the differences in children's vocabulary size.

The years before kindergarten entry are becoming the outlet for a language and literacy intervention on a national scale (Barnett, Brown, & Shore, 2004). One purpose of preschool education is to ensure future achievement by bolstering early language and literacy growth

(United States Department of Education, 2002). Vocabulary learning is one area of language growth that receives attention in many districts and programs. Especially in programs that serve children from low income families, the challenge of closing the vocabulary gap is becoming an important goal. However, many studies of prekindergarten programs show that it is difficult to influence change in vocabulary growth. Some skills, such as letter identification and phonemic awareness, have seen strong gains in preschool, but not vocabulary (U.S. Department of Health and Human Services, 2005). Nevertheless, researchers and educators continue to seek ways to affect vocabulary growth in young children.

Instructional decisions for vocabulary learning depend on the conceptualization of what it means to know a word. The ideas in this paper take an incremental view of word learning, which states that children learn about the meanings of words over time. Through experiences, children may be learning concurrently about the meanings of many words (Carey, 1978; Nagy & Scott, 2004). Children may know about words and be able to use words at different levels during initial word learning. For example, often the development of receptive vocabulary, or the words that children understand, occurs before the development of expressive vocabulary, or the words children can produce (Karmiloff & Karmiloff-Smith, 2001). Once a child can produce a word, his use of the word in communication changes as his understanding of the word's meaning incrementally increases. The notion of incremental word learning is a critical idea for thinking about vocabulary growth. It has implications for explaining how vocabulary knowledge is acquired and what preschool teachers can do to encourage vocabulary growth in classroom contexts such as whole group book reading.

## Sociocognitive Perspective

A sociocognitive perspective will be used in this paper as a theoretical framework for thinking about preschool vocabulary learning. A sociocognitive perspective on word learning regards the impact of social interactions on cognition. The interactions of the teacher, the child, and the text will be considered as factors that influence vocabulary growth. Meaning negotiation occurs within the classroom context at the intersection of the teacher, the child, and the text (Ruddell & Unrau, 2004). As an organizational and theoretical tool, the contributions of the teacher, the child, and the text will be used throughout the paper to arrange the sections and guide thinking about vocabulary learning in preschool. Further discussion of using a sociocognitive perspective as a theoretical framework for thinking about vocabulary learning in preschool is included in Chapter II.

## Contributions of the Teacher and the Child

Information about how vocabulary develops in young children is available from studies of parent-child interactions and family home environments. Research has shown that amount of mothers' talk heavily influences children's vocabulary (Hart & Risley, 1995; Huttenlocher et al., 1991). Teachers' influences on vocabulary may encourage vocabulary growth to a much lesser extent because the insights derived from parent and home studies may not be transferable to classrooms settings where the adult-child interactions and ratio differ from the home setting. However, preschool is often viewed as an early language intervention (United States Department of Education, 2002), so it is important to examine ways that teachers can affect vocabulary growth. Because there is such a range in children's vocabularies upon school entry, many school

systems emphasize fostering vocabulary growth in their preschool programs in order to lessen the vocabulary gap among children before they reach formal school years.

The vocabulary gap is recognized by many researchers and educators; however, differing instructional solutions exist. Although opinions differ on how instruction can impact the huge corpus of words children need to know (Anderson & Nagy, 1992; Biemiller, 2001), school experiences can influence vocabulary learning in three ways, with incidental learning, explicit instruction, or a combination of both methods. Incidental learning (Elley, 1989; Robbins & Ehri, 1994) includes learning from books and play experiences and conversations and with peers and teachers. Explicit instruction (Stahl & Fairbanks, 1986) includes direct teaching of vocabulary. A combination of incidental and explicit methods (Elley, 1989; Penno, Wilkinson, & Moore, 2002) includes learning from play and experiences in addition to direct teaching of words. One area of preschool instruction in which teachers can focus on vocabulary growth is whole group book reading. Whole group book reading occurs when all the children sit together and listen to the teacher read out loud from one book. This type of grouping differs from one-on-one or small group book reading. Regardless of group size, teachers can use incidental and explicit vocabulary teaching methods during book reading to introduce words and concepts to children. However, many teachers utilize whole group time for book reading.

Differences in teachers' behaviors during book reading shape children's experiences with vocabulary words. During book reading, several factors, including the adult's reading style and the number of exposures and elaboration of words play a role in vocabulary facilitation (Dickinson & Smith, 1994; Elley, 1989; Ewers & Brownson, 1999; Hofer, 2007; Justice, Meier, & Walpole, 2005; Wasik, Bond, & Hindman, 2006).

As for the contribution of the child to word learning, the child's level of involvement during book reading and his or her participation in the book reading, including the production of target words, influences vocabulary growth (Dickinson & Smith, 1994; Elley, 1989; Ewers & Brownson, 1999; Hofer, 2007; Justice et al., 2005).

### Contributions of the Text

In addition to contributions of the teacher and the child, the genre of the book may influence opportunities for vocabulary growth. Traditionally, book reading in preschools focuses mainly on narrative texts. Also, most research on the effects of book reading on vocabulary acquisition reflects the dominant use of narrative texts. However, informational texts also provide opportunities for rich vocabulary exposure, introduction to another text structure, and possibilities for discussion of concepts. Chapter II will examine reasons informational text may have been neglected as a source of vocabulary development in preschools and its possibilities for influencing vocabulary growth. Although informational texts are used less often than narrative texts in schools, some preschools are now choosing curricula that integrate narrative and informational texts into thematic learning units and across the components of the preschool day.

### Objectives

The primary purpose of this study is to investigate the ways that the teacher, the child, and the text facilitate children's vocabulary learning during whole group book reading. Features of book reading that will be examined include the influence of the frequency of reading, multiple elaborations of and exposures to words, aspects of adult reading style, child engagement, and genre. Considering the tension between procedures that influence word learning gains in

vocabulary intervention studies and how those procedures must change in order to facilitate vocabulary learning in a whole group classroom situation, it is valuable to examine current vocabulary teaching in preschool classrooms that focus on vocabulary as one component of early language and literacy instruction.

The central questions in this study relate to the relationship between teacher and child behaviors during whole group book reading and children's vocabulary growth. They are organized according to the contributions of the teacher, the child, and the text to vocabulary gain. More specifically, the first question relates to examining how the naturally occurring variation in the rate of teachers' vocabulary facilitation during book reading is linked to growth in children's vocabulary outcomes. The second question focuses on the influence of children's involvement during book reading on vocabulary growth. The final question involves the effect of genre on the rate of teachers' vocabulary facilitation during book reading.

## CHAPTER II

### REVIEW OF THE LITERATURE

#### Introduction

This chapter reviews literature that is pertinent to vocabulary learning during book reading. The beginning of the chapter introduces the rationale and theoretical frameworks for vocabulary learning in preschool. The second section describes how word learning features fit into classroom-based, whole group preschool book reading. First, aspects of book reading that influence vocabulary learning are reviewed. These aspects include elaboration of and exposure to target words, adult book reading styles, child engagement levels, and reader stance. These studies suggest that the way books are shared with children, in conjunction with the child's level of involvement during shared reading, may have a great influence on vocabulary growth.

Finally, informational texts are discussed. Descriptions of narrative and informational text structures are briefly described in order to demonstrate that both methods offer varied opportunities for vocabulary learning. Children may need support to utilize the two text structures because narrative and information texts are read for different purposes, read in different ways, and contain different kinds of content. Although recently narrative texts are used more than informational texts in schools, this was not always the case in American education. This information is valuable because it shows that differential use of text structures varies according to outside influences, including policy trends.

Before reviewing the details of vocabulary learning in whole group book reading, theoretical frameworks for conceptualizing vocabulary learning through preschool will be

discussed. In order to take into account the interrelationship of the teachers, students, and text, a sociocognitive perspective on vocabulary learning will be used. Also, theories of acquisition of first words will be presented and of the ways that vocabulary learning changes in preschool.

### Theoretical Perspectives on Word Learning

In this paper, preschool vocabulary learning during whole group book reading is considered from a sociocognitive viewpoint. A sociocognitive perspective on word learning focuses on the influences of social interactions on cognitive processes, such as knowledge of language, knowledge of the world, and how children learn new words (Ruddell & Unrau, 2004). From a sociocognitive perspective, when preschoolers' word learning occurs in a classroom, the social context consists of the interactions of the teacher, students, and text.

A sociocognitive perspective can be used as a framework for considering the impact of whole group book reading in preschool on the cognitive processes of word learning. In this view, many factors, including the text, the teacher's comments about the text and targeted vocabulary words, the social environment of book reading, and the child's prior knowledge of ideas related to the text interact to encourage word learning. Meaning negotiation occurs at the intersection of the child, the teacher, the classroom context, and the text (Ruddell & Unrau, 2004).

A sociocognitive perspective is appropriate for thinking about word learning in preschool because of its emphasis on the role of the teacher in the meaning negotiation process. The teacher's role is one of a more knowledgeable other who supports, or scaffolds the child's word learning within the social context (Vygotsky, 1978). When the adult scaffolds the child's learning, she builds on the child's existing knowledge and helps the child develop vocabulary in a way that he could not have done alone.

The teacher's instructional choices for scaffolding learning influence meaning negotiation during whole group book reading. The situation itself is negotiated meaning, since the whole condition is a new interaction for preschoolers. Because whole group book reading in classrooms is usually an event in which the teacher reads aloud and the children listen, a large part of the meaning negotiation process may be heavily guided by the teacher. During whole group book reading the child hears the text read by the teacher since most preschool children are not yet reading conventionally. Therefore, meaning construction during whole group book reading is even more of a co-construction process than during independent reading because of the teacher's immediate input that comes to the child at the same time as the text. This way of receiving the text does not allow the child to separate the text from the teacher's extratextual comments. Also, the way the teacher chooses to scaffold learning by guiding the purpose and stance for book reading may influence meaning negotiation more than the teacher's role during independent reading. A sociocognitive perspective grounds the examination of preschool word learning. To better understand vocabulary growth in preschool, it is important to examine initial as well as preschool language acquisition.

### *Theories of Acquisition of First Words*

There is ample literature discussing the acquisition of first words for children in their first years of life (Bloom, 2000; Karmiloff & Karmiloff-Smith, 2001). One issue central to the question of language acquisition is how children learn to choose appropriate referents for spoken words. This question is referred to as Quine's problem (Quine, 1960). Quine's problem is that there are an infinite number of possible referents for a word. The classic example, cited in Bloom, 2000, is the linguist who watches the native adult and young child as a rabbit hops by and the

adult says “gavagai.” How does the native child know that the word “gavagai” refers to the whole rabbit and not a part of the rabbit, the color, the adult’s feeling, or another of the infinite possibilities?

The developmental achievement of overcoming Quine’s problem and correctly matching spoken words and their referents is a topic of much debate and theoretical discussion. Three main theories of word learning that explain how children learn their first words and their referents involve lexical constraints, social pragmatics, and associationism (Bloom, 2000; Karmiloff & Karmiloff-Smith, 2001). The lexical constraints theories state that children have several innate constraints or biases that help them make some assumptions over others in order to link referents and words. One constraint is the whole object bias, or the fact that children are innately biased in favor of labels for whole objects over parts and actions. The whole object bias explains that when children hear a word and see an object for which they do not have a label, they innately conclude that the word refers to the whole object, rather than its parts or the action it is completing. Other constraints include ideas that words stand for objects, actions, and events; new words refer to unknown objects; words extend to objects other than just the one unknown object that is seen; words are arbitrary terms that the community has agreed upon; words are linked by conceptual categories and not perceptual similarity; and a new word often maps to an unknown item (Bloom, 2000; Hollich, Hirsh-Pasek, & Golinkoff, 2000; Karmiloff & Karmiloff-Smith, 2001). The constraints theories account for the ways that children narrow the infinite possibilities in order to choose the correct referent for a word.

Another line of theory emphasizes the adult’s guidance of children’s word learning. The focus of the social pragmatists’ view is that the adult aids the child’s word learning by limiting the number of possible referents. The adult watches the child, notices what the child is attending

to, and provides the label for the unknown object the child is observing. Children are aware of the social cues given by adults that provide information about words and referents.

The third line of theory is the associationist account of word learning that states that children learn words by seeing which salient objects and labels co-occur the most often. The word that is spoken the most often in conjunction with seeing an unknown object must be the label for that object. The associationist account of word learning reduces mapping to a straightforward process of correlation and frequency.

In summary, three main theories of first word acquisition explain how children limit the number of possible referents for a spoken word in different ways. Associationist theory limits the referents by stating that children notice that some words occur more often than others in conjunction with unknown objects. Constraints theory explains that children may have innate capacities for narrowing the choices of referents. In addition to the narrowing of referents explained by associationist and constraints theories, the social pragmatic theory explains that adult interactions also narrow the choices of referents because parents watch children and provide labels for objects to which children are most attentive, and children gain information about words from adults' social cues. Children's word learning may be explained by all three theories. All the theories work to account for how the infinite choice of referents is narrowed by co-occurrence of spoken words, children's capacities for selecting referents from others' spoken language, and adults' guidance in language acquisition.

Thus, Hollich et al. (2000) propose that these three lines of theory- lexical constraints, social pragmatics, and associationism- all focus on single mechanisms for word learning and individually cannot account for the complex phenomenon that is word learning. They posit that considering all three theories in one approach acknowledges that multiple cues are necessary to

understand more completely how young children acquire their first words. Their model is called the *emergentist coalition model*, and it recognizes the utility of each of the three theories in explaining word learning from different perspectives and at different points in development. In the emergentist coalition model, children rely on differentially weighted multiple cues as their principles of word learning shift from an immature to a mature state (Hollich et al., 2000). For example, children rely on perceptual salience more heavily in initial word learning; later they attend more to social cues from adults to map words and referents. The emergentist coalition perspective uses the three main theories to explain different aspects of the initial acquisition of language and word learning into the second year of life.

### *Building Schema*

Knowledge about concepts, events, and objects is stored in memory in organized units called schemata (Rumelhart, 1980). One example of schemata used in the literature is the expensive restaurant schema (Anderson, 2004). Concepts, events, and objects related to eating in an expensive restaurant are stored together in memory in an organized way, rather than as a random list of information. When one thinks of eating in a fancy restaurant, several concepts and objects come to mind, such as ordering from an extensive menu, specifying preparation of meat, waiting for the meal to be prepared and brought to the table, heavy silverware, crystal stemware, and thick tablecloths. While schemata are organized units and may be arranged hierarchically, they are flexible structures that can utilize chunks of knowledge to build new meaning. “The reader’s schemata are probably best understood as networks of associated knowledge that are activated and instantiated or as knowledge clusters that can be tapped for pieces of information that the reader reassembles to form new schemata.” (Ruddell and Unrau, p. 1477).

Children create schemata from birth. Through varied experiences and encounters with others, children begin building schemata before they learn to talk. Through their experiences they are creating schemata as they learn about concepts and properties in the world, how things work, and relationships between objects and entities. As they break the language barrier, they hear and produce words for things that exist in their mental schemata. This learning occurs before conventional reading. Connecting ideas about the acquisition of first words with ideas about building conceptual knowledge is valuable in explaining how preschoolers learn meanings of words during book reading. In preschool, when children are exposed to vocabulary during book reading, they incorporate the new information into an existing schema, thereby expanding their conceptual knowledge, or they create a new schema for an unknown concept. The benefit of vocabulary learning before conventional reading is to increase and expand conceptual knowledge by building schemata through experiences such as whole group book reading. Then, once decoding begins, comprehension is facilitated because children can more quickly comprehend decoded words that are connected to existing schemata.

Word learning in preschool is a process of language and knowledge acquisition and involves both learning referents for spoken words and creating and expanding schemata. Because the teacher has such a strong role during preschool book reading, the instructional choices she makes during book reading may affect vocabulary learning. In the next section, features of classroom-based, whole group book reading that may influence word learning will be described and linked to research and theory.

## Features of Classroom-Based Book Reading Related to Word Learning

One element of a sociocognitive perspective on word learning involves the interrelation of the roles of the teacher, child, text, and social context in constructing meaning. The teacher's instructional decisions and her influence on the materials, context, and interactions during book reading shape the process of meaning negotiation. During book reading, the teacher's role is to intentionally incorporate features that relate to word learning into her instructional decisions. The child's role in meaning construction involves participation and involvement during book reading. The influence of the text in preschool book reading may be related to genre. One way to explore the roles of the teacher and children during book reading is to consider successful features from vocabulary intervention studies. However, the role of genre may be more difficult to explore because most book reading research on vocabulary learning involves narrative texts.

Useful features of classroom-based book reading that affect word learning may be found in vocabulary intervention studies. These features include multiple readings of stories, multiple exposures to words, elaboration of words during reading, use of a reading style that facilitates analytic and vocabulary talk, and encouragement of children to produce words. The following sections discuss these issues.

### *Multiple Exposures and Elaboration of Word Meanings*

One feature of classroom-based book reading that may link to word learning is the provision of multiple exposures to words and elaborating the meanings of those words. Providing multiple exposures to elaborated words during book reading with individuals and small groups of

children produced significant word learning gains in intervention studies (Elley, 1989; Justice et al., 2005; Penno et al., 2002).

The effectiveness of providing multiple exposures to words through repeated readings of stories can be explained by the associationist theory of word learning in that children learn words as the spoken words co-occur with the novel object or concept that is presented. This is one justification for multiple exposures to words. Children may need to hear labels for unknown objects or actions more than once in order to be able to associate the word and the referent. Another explanation for providing multiple exposures to words is that words are learned incrementally (Nagy & Scott, 2004).

Support for incremental word learning lies in Carey's (1978) work with fast and gradual mapping. These terms refer to the amount and type of information that children acquire from initial and subsequent exposures to new words. Carey's (1978) study found that once a new word was introduced, children immediately began gradually restructuring lexical and conceptual domains. In a study with 14 three- to four-year-olds, the children were asked to "Bring me the chromium tray, not the blue one, the chromium one." Tests of the children's comprehension and production of the novel word, "chromium" for the color olive green provided insight into the ways that children initially map novel words and their meanings. In the study, some semantic and syntactic aspects related to the word were fast mapped. In other words, partial mappings of the word between the lexical and conceptual domains occurred after a single exposure in a neutral context. Initial fast mapping includes some syntactic and semantic properties and allows children to begin restructuring the lexical and conceptual domains. For example, in the "chromium" study, children fast mapped the notion that chromium was a new word. They also knew that none of the other color words that they knew and had referents for would work to

describe the chromium object. Full mapping is a gradual process in which children use further experiences with words to come to greater semantic and syntactic understanding. In the chromium study, it took some children more than 18 weeks to reach a more complete mapping of the word. If the estimate for learning a new word is six months, then at a rate of nine words per day, children are concurrently working out the meanings for over 1,600 words at a time (Carey, 1978).

Ideas about fast mapping relate to word learning in book reading in that multiple exposures to elaborated words allow for successive partial mappings that gradually contribute to more complete mappings of new words between the lexical and conceptual domains. As the teacher, who is the more knowledgeable word learner, gives repeated readings of a book and elaborates vocabulary words, she scaffolds the child's learning by linking new information to the child's current knowledge. During whole group book reading in preschool, teachers may choose to elaborate words by employing multiple strategies, such as providing a synonym, role playing with the word, pointing to an illustration, giving a definition, or using the word in an example sentence (Elley, 1989; Justice et al., 2005). Through book reading experiences such as these, vocabulary growth occurs, and children build conceptual knowledge and expand schemata. Several experimental intervention studies have found that incidental exposure and multiple exposures to elaborated word meanings influence vocabulary growth.

*Incidental and Elaborated Exposure.* This section focuses on the ways that exposure to and elaboration of target words effect vocabulary growth. In the intervention studies reviewed here, researchers manipulated target vocabulary words according to number and type of exposures and number of elaborations. Number of exposures refers to the number of times the child heard the target word in a story and the number of times the child heard the story. Type of

exposure refers to how the word was presented, incidentally or with elaboration. Incidental exposure involved reading the text as written, with context clues providing meaning. In elaborated exposure, the researcher gave one or more explanations for each word. Number of elaboration refers to how many times explanations, or meaning supports, were provided for each target word. Across the studies, the variables that appeared to be most beneficial for word learning gains were target words that appeared more often in the text, exposure to multiple repeated readings of the story, and elaborations of target words (instead of only incidental exposure).

In an experiment with three book readings that contained incidental exposure to target words, children had a 15% increase in vocabulary gains (Elley, 1989). Elley conducted two experiments in a study of book reading with 7- and 8-year-olds in New Zealand. Children were tested with a 20-item pre- and post-test containing 10 story-specific picture vocabulary items and 10 verbal synonym items. Teachers from the children's school, but not their regular classroom teachers, read the books to students in their regular classroom groups (not random assignment). The seven teachers involved in the study agreed on testing and reading protocols.

Experiment one, involving 157 seven-year-olds in seven classrooms in seven schools, took place over three days. This experiment focused on incidental word learning during three repeated readings of one narrative book, *Gumdrop at Sea*. The text was read as written, with no additional information provided about the target words. Hence, any vocabulary gains were hypothesized to come from incidental exposure to the words. Classrooms of students heard *Gumdrop at Sea* in a whole group setting during three readings in one week. The number of times that target words appeared in the text varied. During the first two readings, no elaboration or discussion occurred. In the third reading, no elaboration occurred but children were allowed to

make comments and predictions at the end of the reading. Finally, the sample was divided into four ability groups based on pre-test scores, so that gains could be examined according to pre-test vocabulary level. With incidental exposure only, students had a mean vocabulary increase of 15%. The results of experiment one are valuable because they show that word learning can occur with incidental exposure during repeated book readings.

In an experiment of the same type of incidental word learning as Elley (1989), target words occurred two to four times in each text during two readings of a story; the probability of word learning increased as number of text occurrences increased (Robbins & Ehri, 1994). Robbins and Ehri (1994) conducted a study demonstrating that multiple exposure to vocabulary words modestly influenced children's vocabulary growth. Thirty-three kindergarteners individually heard a story read twice by a researcher and were tested on the meanings of unfamiliar words, half of which were included in the story. The purpose of the study was to see if incidental exposure to words would influence children's vocabulary learning and if that learning would be differential according to initial vocabulary levels. The procedure included incidental exposure to the words within the context of the story without additional elaboration or explanation.

This study employed a unique post-test-only design, in the form of a detective game, so that children would not be informed of the target words prior to the readings. The researchers determined that a pre-test was unnecessary by pilot testing the words with kindergarteners and first graders and surveying teachers to verify that the targets were low-frequency words unknown to kindergarteners. In the post-test, the researcher described four picture choices and then manipulated a puppet to give a clue about one of the pictures. For example, the researcher said, "In picture 1 a girl washes her hands; in picture 2 a girl eats a lot; in picture 3 a girl swings on a

rope; in picture 4 a girl reads a book.” Then, the puppet said “I see a girl consume. Which picture am I thinking of?” Students pointed to the correct picture. This format differs from other types of multiple-choice tests of receptive vocabulary, which often ask children to “show me consume” when presented with four picture choices.

The results of the study indicated that children knew significantly more meanings for words that were included in the story, and children with larger initial vocabularies made greater gains. This finding differed from Elley’s study, where children with lower initial vocabularies made greater gains. The number of times each word appeared in the story varied from one to two exposures, so across both readings, the words were heard two to four times. Analysis of the probability of learning the words according to the number of exposures showed that as words were repeated, the probability for learning them increased. Words that were heard four times had higher acquisition rates than words that were heard twice. Overall, the children showed moderate vocabulary gains, with a mean gain for words heard in stories of 1.24 words, which was 16% of the maximum gain possible. The results of Elley’s (1989) and Robbins and Ehri’s (1994) studies indicate that incidental exposure to words influences moderate word learning, and the number of exposures to unknown vocabulary words influences vocabulary growth. Other studies focused on elaboration of target words during multiple readings of books.

Building on his first experiment, Elley (1989) conducted a second experiment to confirm the previous findings on incidental word learning using two different books and a larger sample, and he expanded the procedures to test elaborated exposure to target words. Elaboration of target words during repeated readings of texts produced greater receptive vocabulary gains than non-elaborated incidental exposure (Elley, 1989). The term *elaboration* meant that teachers could do one of three things to provide additional information about word meanings: 1) give a phrase with

a synonym of the target word, 2) role-play using tone of voice and gesture, or 3) point to an illustration.

In this experiment, a 36-item pre- and post-test of the same format from experiment one (story-specific picture vocabulary items and verbal synonym items) was used. The treatment group consisted of 127 eight-year-olds in six classes. There were two groups, Group A and Group B, of treatment children. Group A consisted of 72 children in three classes, and Group B consisted of 55 children in three classes. In contrast to experiment one, this experiment included a control group of two classrooms of 51 children who were similar in age and background to the treatment group. Children in treatment classrooms were read books by a teacher in one of two ways: *elaborated reading*, which was reading with additional information about word meanings; or *non-elaborated reading*, which was incidental exposure, or straight reading of just the text. Two narrative books, *Rapscallion Jones* and *The White Crane* were read. Each book was read three times. The control group heard neither story. The two treatments (*elaborated* and *non-elaborated*) were crossed with the two stories for the two experimental groups. In the *non-elaborated* reading, with incidental exposure only, students had a mean vocabulary increase of 15% for *Rapscallion Jones* and 5% for *The White Crane*. Because of the difference in gains between the two stories, the question of critical story features remains. In the *elaborated* reading, students gained 40% with *Rapscallion Jones* and 17% for *The White Crane*. The no reading group, who heard neither story but were tested on the story vocabulary words, showed gains of less than 2% for *Rapscallion Jones*, and no results were reported for this group for *The White Crane*. Again, the group with the lowest pre-test scores gained the most (22%). Three months after the intervention, a delayed post-test for one story was administered to one class in each treatment group; both treatment classes showed less than a 3% drop.

Another study continued to explore elaboration of target words while additionally examining word learning of non-target generalization words, which were incidental words not elaborated by the researchers. In a study of 47 children in New Zealand, researchers read narrative stories three times, with and without elaboration of target words, to small groups of 11-12 children during a nine-week intervention (Penno et al., 2002). Children in each of two classrooms were randomly assigned to one of two groups that differed by order of story and order of elaboration versus no elaboration, for a total of four groups of 11-12 students.

In class A, both groups first heard a story with elaboration, then a story without elaboration. Group 1 heard story 1 first; group 2 heard story 2 first. In class B, both groups first heard a story without elaboration, then a story with elaboration. Group 3 heard story 1 first; group 4 heard story 2 first. As in Elley's (1989) study, each group heard each story three times. The procedures in this study also followed Elley's (1989) guidelines for elaborating target words: giving a definition using a synonym, role playing with gestures or sounds, or pointing to the picture. Following each reading, children were asked to retell the story using the illustrations. The children, age 5-8 years, were able to use more target words in each successive retelling of the story. Students made significantly greater vocabulary gains when words were elaborated than in the no-elaboration condition.

The unique component of this study was examination of children's acquisition of generalization words, which were unfamiliar incidental words not elaborated by the researchers. The generalization words were included due to the hypothesis that explanation of target words might alert children to other unfamiliar words and their meanings derived from context. Although there was no significant overall effect for generalization words on the multiple choice post-test, children with higher initial vocabularies made significantly greater gains on the

generalization words. Also, in the repeated retelling measure, students made significantly more accurate use of the generalization words with each retelling. However, the authors cautioned that ceiling effects may have influenced the result since there were only five generalization words and 20% of the children knew all of those words at pre-test. The finding that children can learn generalization words connects to hypotheses that talking to children about words and word meanings may increase their awareness of unfamiliar words (Dickinson and Smith, 1994; Nagy, 1992).

The last study in this section increased the number of book readings and the number of elaborations per word. Three elaborations of words during four storybook readings aided acquisition of vocabulary in a study of at-risk kindergartners (Justice et al., 2005). Justice et al. (2005) investigated the extent to which at-risk kindergartners acquire new vocabulary words through small-group storybook reading sessions using an intervention that involved elaborated and non-elaborated exposure to new vocabulary. Fifty-seven low-income, ethnically diverse kindergartners who were considered to be at-risk for reading failure were pre-tested on 60 target vocabulary words from ten fictional storybooks. The pre-test and post-test assessments involved eliciting definitions for the words through the prompt, “Do you know what (target) means?”

The children were randomly assigned to treatment or control groups. The treatment children heard each book read aloud by a researcher four times in two small-group reading sessions per week for ten weeks. The 60 words from the books were randomly assigned to an elaboration (30 words) or non-elaboration (30 words) condition. Experimenters provided three supports for each of the 30 elaborated words- the word in text, a definition of the word, and the word in the context of an example sentence. The non-elaborated words were read as they appeared in the text. The control group received the regular kindergarten curriculum.

The results showed that non-elaborated exposure produced some gains in word learning but they were not significant. The treatment group showed significantly greater gains for word learning than the control group. Interestingly and similar to Elley's (1989) results, low-scorers in the treatment group made greater gains on elaborated words compared to low scorers in the control group. There was an overall average gain of six words per child, with control children gaining approximately 4 words and treatment children gaining approximately 9 words. These results are impressive for a ten week study, in that previous studies (Penno et al., 2002; Senechal, 1997) have shown gains of 1-3 words. Seventy-two percent of the treatment group had meaningful gains of four or more words compared to 46% of control group. Children with lower vocabulary scores made greater gains in treatment than control.

One unique component of this study relates to the large gains in light of stringent testing procedures. Many vocabulary intervention studies use tests that assess children's receptive vocabulary, often requiring them to point to an illustration of a word spoken by the test administrator. In this study, the children had to generate verbal definitions for words spoken by the test administrator. The authors note that this procedure may have sensitized word learning gains, but it is interesting that over the course of a ten week intervention children could generate definitions for 4 to 9 previously unknown words.

In consideration of the impressive word gains, it is worthy to note that this study included more book readings, more elaborations for each target word, and a longer intervention duration than the other studies reviewed in this section.

These studies showed that multiple exposures to words and elaboration of unknown words influenced vocabulary growth. Other intervention efforts have investigated exposure to target words during book reading and other contexts during the day, in addition to providing

opportunities to play with toys and materials related to the vocabulary words that facilitated word learning.

*Exposure across the day.* Multiple exposures to target vocabulary words during book reading and across the day influenced vocabulary acquisition in a 15-week intervention study with 121 preschool students (Wasik & Bond, 2001). Wasik and Bond (2001) examined the effects of a classroom-based book reading approach on the language skills of at-risk preschool students. Teachers were randomly assigned to either intervention or control condition. The treatment teachers were provided boxes that contained trade books and materials, related to a common theme, for book reading and center activities.

For training, experienced teachers modeled interactive book reading procedures for the teachers in the treatment group. The procedures modeled for the teachers included: 1) introducing vocabulary by labeling physical objects before and after reading, and giving children opportunities to use the vocabulary, 2) asking open-ended questions and allowing children to talk beyond a yes/no response, and 3) creating situations for children to talk and be heard. The teachers followed a four-day sequence for each theme, during which they introduced the books, props and vocabulary, conducted small groups or centers that reinforced the new words, re-read one of the trade books, and provided opportunities for the children to play with and talk about the picture cards, books, and props. The control group teachers received only the same books as the treatment teachers. They did not receive training for interactive book reading, instruction for centers or small group activities related to the stories, or book props. The teachers in both groups were observed twice to see if they used the vocabulary words in contexts other than book reading. In addition, each teacher was observed reading two books.

The results of the study showed that children in the treatment group, whose teachers provided multiple opportunities to interact with vocabulary words learned more book-related vocabulary compared with children in the control group, whose teachers read the books but did not have book props for centers or small group activities. The children in the treatment group scored significantly better than children in the control group on Peabody Picture Vocabulary Test-III (Dunn & Dunn, 1997b) and other measures of receptive and expressive language (Wasik & Bond, 2001). The researchers observed and the teachers reported that children in the intervention group became more comfortable asking teachers to explain a word they did not know and asking questions about a story. Wasik and Bond's (2001) procedures provided integration of elaborated target vocabulary, repeated exposures to target words introduced through book reading, and multiple exposures to those target words throughout the day, with manipulative toys, and in small group settings and centers. Their research involved teacher training of procedures carried out within the normal classroom environment for an intervention that increased vocabulary gains for students.

Elley's (1989) study provided evidence for vocabulary growth through an intervention that focused on multiple exposures to texts. Wasik and Bond (2001) showed the benefits of exposure to words during reading and across the day combined with play with toys and objects that related to vocabulary words. In addition to multiple exposures to texts and target words, other intervention studies have explored the role of different types of adult questions during book reading.

#### *Adult Questioning*

In addition to varying the number of word exposures and including elaborated information about the target word, another way that adults can influence vocabulary learning in

book reading is by asking questions about words or labeling words. Some of the questions adults use during book reading interactions with children include yes/no questions, “wh” questions (addressing who, what, where, when, or why), requests for labeling illustrations, and requests for information about the story (Dickinson & Smith, 1994; Hargrave & Senechal, 2000; Harrop & Swinson, 2003; M. Senechal, 2002). Questions may be perceptual (lower cognitive demand) or conceptual (higher cognitive demand) and may be asked in response to a child’s comment or initiated by the adult.

Classroom teachers use questions in various ways during book reading. This section reviews research on the effects of adult questions on vocabulary growth.

When adult mediation during shared book reading was manipulated according to adults’ perceptual or conceptual questioning versus labeling, children made greater receptive vocabulary gains in the labeling condition in one intervention study (Justice, 2002). Twenty-three preschoolers, ages 3 to 5 years old, heard a narrative story two times in an individual setting and were assessed with receptive and expressive vocabulary measures on 10 target words that were unknown to them at pre-test (Justice, 2002). The purpose of the study was to examine the effects of questioning versus labeling on target vocabulary learning. In addition, the researcher wanted to determine the influence of perceptual questions, which focused on lower-level material aspects of the target word, and conceptual questions, which focused on higher-level predictions and inferences related to the target word.

One unique aspect of this study was implemented in order to make sure there was no learning bias for individual words. The target words appeared only once in the illustrations, *not* in the text, and the meaning was not provided by context clues. When the researcher came to an illustration in the story, she pointed to it and either asked a question, “What color is the *oriole*?”

or supplied a label, “That is an *oriole*.” This design feature contrasts with previous work (Robbins and Ehri, 1994) in which target word meanings were provided only by context clues and work in which target word meanings were provided by elaboration (Elley, 1989; Penno et al., 2002).

The study results indicated that receptive vocabulary growth was significantly greater for the labeling condition than for questioning. These findings were not consistent with previous research in which questioning conditions produced greater gains (Ewers & Brownson, 1999; Senechal, 1997). The researcher cautioned that questioning actually might produce greater word learning than labeling but that the conditions of the experiment may have prevented the effect. Possibly, modifications of the storybook, target words, or duration of exposure might produce findings more commensurate with previous work.

Neither condition influenced expressive word learning measured by a 10-item test of story vocabulary in which children had to label illustrations shown on cards. Interestingly, there was also no significant difference in word learning for perceptual versus conceptual questions. Overall, very little expressive word learning occurred. Of the 23 children, 13 children generated zero targets after two exposures, suggesting that two exposures were not adequate for expressive word learning. Receptive vocabulary gains were modest. Eighteen children learned three or more words and 11 children learned four or more words. These results could be due to the difficulty of the words, children’s lack of prior knowledge (the story featured target words related to birds and flowers, such as *cardinal*, *wren*, *finch*, *flicker*, *forsythia*, *petunia*), or the lack of context clues and explanations.

The intervention procedures for this study lacked design features included in the previously reviewed studies, such as increased target word exposure and elaboration of target

words (Elley, 1989; Robbins and Ehri, 1994; Penno et al., 2002). Although the researcher was interested in the distinction between questioning and labeling, the lack of multiple exposures and elaboration may have influenced the word learning gains.

Senechal's (1997) results contrast with the findings reported above. The use of adult questioning during storybook reading helped preschoolers recognize and generate novel labels for known concepts in an intervention study with 60 preschoolers. Children were pre-tested using a story-specific receptive vocabulary test similar to the PPVT. The intervention involved ten target vocabulary words (nouns, adjectives, and verbs) from a narrative storybook used in a previous study. Children participated in one of three reading conditions: single reading, repeated reading, and repeated reading with questioning.

After the reading condition, children were post-tested with an expressive test in which they generated labels for illustrations from the book and with a story-specific receptive vocabulary test. Children in the questioning condition who heard the story three times and were asked what- or where-questions that resulted in the child generating the target word significantly outperformed children who heard the multiple readings of the story without questions and those who heard the story only once on measures of receptive and expressive vocabulary.

The results showed that children in the two repeated reading conditions (repeated reading only and repeated reading with questioning) outperformed children in the single reading condition. Children in the questioning condition outperformed children in the repeated reading only condition. Children recognized and generated more words in the questioning condition. The number of times the child spoke the word during the readings did not relate to the ability to recognize the word in the receptive post-test but did relate to the ability to generate the word. The questioning condition was most effective for generating words in the expressive post-test.

This study provides evidence that adult questioning enhanced expressive vocabulary more than receptive vocabulary. Senechal's (1997) study extends previous work by being one of the first experimental studies to measure both expressive and receptive vocabulary, and by including preschoolers in book reading investigations.

Another study used questioning to encourage children to generate target words (Ewers & Brownson, 1999). Children who answered questions that involved generating target words learned more vocabulary words than children who only listened to an adult use the target word in a New York intervention study. Sixty-six kindergarten children in two conditions listened to a researcher read a narrative text one time in an individual setting (Ewers & Brownson, 1999). The children were pre-tested for initial vocabulary level, knowledge of target words, and phonological working memory level, or the ability to remember novel phonological sequences. Children with higher working memory levels were hypothesized to be able to learn more vocabulary words from the story. Children were categorized as high or lower vocabulary skill and then randomly assigned to the active or passive participation groups.

Children in the active participation condition answered a what or where question after hearing each target word. The question required them to generate the target vocabulary word. In the passive participation condition, children listened to the researcher give a recast, or modified repeat, of the sentence that included a synonym of the target word. Children were post-tested with receptive and expressive measures of words from the story. Children in the active participation condition learned significantly more words. The authors posit that the gains were possibly due to focused attention and generating the target word may have strengthened the link between short-term and long-term memory. This supposition presents the idea that the child's attention level during book reading may influence word learning. Interestingly, phonological

working memory levels did not influence vocabulary acquisition. The authors claimed that possibly neither condition was difficult enough to result in differences for children with low- and high- working memory levels. The results of this study provide evidence that the choices adults make when reading aloud, such as whether to ask a question that elicits the target word from the children or to use an additional sentence that includes a synonym of the word, may influence children's word learning.

The studies reviewed that employed adult questioning during book reading showed that questions requiring the child's active participation during book reading may influence word learning. In Justice's (2002) study, overall word learning gains were small and expressive word learning was extremely limited. This study included only two exposures to each word and no additional meaning support other than the illustrations. Students may have had little background knowledge to connect to the very difficult target words. Also, students were not required to generate the targets during book reading, which was a strategy that supported word learning in the other studies (Ewers & Brownson, 1999; Senechal, 1997). In Senechal's (1997) study, the children had three exposures to the words and the opportunity to generate the targets during book reading. Also, in Ewers and Brownson's (1999) study, the children were required to generate the target. Providing opportunities for children to generate target words during book reading (Ewers & Brownson, 1999; Senechal, 1997) and at other times during the day (Wasik & Bond, 2001) may be one of the key strategies from these studies that influences word learning and that can be integrated into preschool book reading in classrooms.

Another feature that may impact vocabulary growth is variations in adult book reading style.

### *Adult Book Reading Style*

Research employing observations of book reading styles describes the individual teacher behaviors used during book reading and examines the associations between those behaviors and children's language outcomes. Often, the term "style" refers to naturally occurring episodes (without prior training) of classroom book reading. However, research is not limited to naturally-occurring styles. Intervention studies have been used to examine the effects on children's outcomes when researchers, teachers, and parents were trained to use specific styles. For example, in one study, researchers were trained to implement three different reading styles. The relationship between the styles and children's outcomes was examined (Reece & Cox, 1999). In another intervention, teachers and parents were trained to use the specific style of dialogic reading (Whitehurst et al., 1994; Whitehurst et al., 1999).

As for naturally-occurring styles, a longitudinal study by Dickinson and Smith (1994) described three general reading styles and found elements of one style to be related to child vocabulary scores. In 1987, the Home-School Study of Language and Literacy Development (D. K. Dickinson & Tabors, 2001) began as a longitudinal study with 86 low-income preschool children in eastern Massachusetts to investigate relationships between early language experiences and later language and literacy outcomes. One component of the study led to description of adult book reading styles. A broad range of data was collected from children, parents, and teachers through interviews with parents and teachers, classroom observations of children and teachers in activities across the day, and tests of children's skills. Child preschool language data were collected pertaining to narrative production, emergent literacy, receptive vocabulary, comprehension, and word recognition.

One line of analysis from the Home-School Study examined teacher talk in 25 preschool classrooms serving four-year-old children from low-income families (Dickinson and Smith, 1994). Teacher and child utterances during book reading sessions were audio-taped, transcribed, coded, and cluster-analyzed, and the authors described three broad groups of teacher approaches to book reading. In the five classrooms characterized by the *co-constructive* approach, teachers and children interacted with cognitively-challenging talk during reading, with little talk by teachers or children before or after reading. In this approach, teacher-prompted analytic talk was high. In the 10 classrooms characterized by the *didactic-interactional* approach, teachers involved the children through eliciting answers to concrete questions about story details and inviting the children to chime in, or repeat the text as a group. This approach included a high focus on classroom management. The 10 classrooms characterized by the *performance-oriented* approach included less discussion during the reading of the text and more extended pre-reading and follow-up talk. Follow-up discussions were focused on recreating the story events or making connections to children's prior knowledge and experiences. Children in classrooms using the *performance-oriented* approach had higher receptive vocabulary scores than children in *didactic-interactional* or *co-constructive* classrooms. Regression analyses showed that, controlling for total talk by teachers and children during reading, the proportion of analysis, prediction, and vocabulary utterances by teachers and children, which were more prevalent in the *performance-oriented* classrooms, accounted for 51% of the variance in age 5 receptive vocabulary scores.

The findings of the significance of book analytic talk extend to vocabulary outcomes in fourth grade. A follow-up study of 52 children in the Home-School sample examined the influence of preschool child and teacher variables on fourth grade vocabulary outcomes (Dickinson and Porche, 2005). In book reading, moderate positive correlations were found

between the percentage of analytic talk and kindergarten and fourth grade receptive vocabulary scores. The density of teachers' analytic talk during reading was correlated with receptive vocabulary at kindergarten (Pearson  $r=.39$ ,  $p<.01$ ) and fourth grade (Pearson  $r=.30$ ,  $p<.05$ ).

The authors note that a limitation of their study is that, due to the correlational nature of the research, claims of causal relationships cannot be made, and other factors, such as a variation in income for Head Start families beyond what was controlled for, or another factor related to children who did well on kindergarten and fourth grade assessments, may have influenced the results. Another limitation is that this study did not use children's initial skill level as a control; the vocabulary measures were given for the first time in kindergarten. Because of this design feature, the variance attributable to initial skill was unknown. The three adult reading styles that were found and the influence of analytic talk about books are behaviors that warrant further examination in typical preschool classrooms with children's initial skill level as one control.

Another study used three styles that were previously found in naturally-occurring book reading interactions. Researchers were trained to use those styles during a book reading intervention with individual children. The *performance-oriented* style accounted for the most variance (11%) in vocabulary gains for children with stronger vocabulary skills (Reece & Cox, 1999).

In contrast to naturally-occurring observed styles of reading, one style of book reading that is prescribed by a specific intervention is dialogic reading. Dialogic reading is a form of book reading that emphasizes the roles the adult and child play and their interactions with each other and the text during reading (Whitehurst et al., 1994). One of the main purposes of dialogic reading is to reverse the traditional roles of adult as reader and child as listener. The adult's style focuses on involving the child as much as possible in the reading by following the child's

interests, responding to the child's comments, asking open-ended questions, eliciting connections between the book content and the child's experiences, and by encouraging the child's participation in the book reading experience.

Research on dialogic reading has shown language gains in kindergarten, when dialogic reading behaviors occurred at home and at school (Whitehurst et al., 1994). Although language effects did not persist past kindergarten (Whitehurst et al., 1999), dialogic reading provides one model for adult reading style. Modifications of some of the higher-level interactive behaviors, such as asking open-ended questions and making connections may be necessary since those behaviors did not happen frequently in either condition. The importance of reading style is upheld not only by research findings but also by theory.

Aspects of sociocognitive theory support the finding that adults' book reading style influences vocabulary learning. First, the style the teacher uses in book reading influences the interactions in the social context. Those interactions may relate to child language outcomes. As seen in Dickinson and Smith's (1994) study, talk during preschool book reading about vocabulary, analysis, and prediction was related to kindergarten vocabulary scores. Also, the style the teacher uses may provide opportunities for incremental word learning and schema building. In dialogic reading when the adult uses open-ended questions or makes connections between the book and the child's experiences (Whitehurst et al., 1994), talk that results about words and concepts may serve to expand children's vocabulary and conceptual knowledge. Finally, style shapes the meaning negotiation process during book reading by encouraging the child to attend to certain aspects of the reading. This point is also supported by Dickinson and Smith's (1994) study results surrounding talk focused on vocabulary, analysis, and prediction.

Research has shown that adults' reading styles influence children's language outcomes, and sociocognitive theory supports the need to attend to the way that adults read to children. Observational and intervention research suggest that some teachers, either naturally or with training, who use specific elements of reading style encourage language learning in children. The next step is to consider how teachers can incorporate those valuable components of book reading style into regular classroom practice.

Research has shown that effective elements of reading style include talk related to analysis, prediction, and vocabulary; talk that continues the flow of the story and also occurs before and after book reading; and talk that connects children's experiences with the book (Dickinson & Smith, 1994; Dickinson & Porche, 2005; Whitehurst et al., 1994). These elements could also affect the elaboration of vocabulary words since research suggests that it may be important to incorporate many of these elements during short asides, without interrupting the flow of the story. Providing elaboration of vocabulary words in an aside involves giving a brief remark, as with a parenthetical comment. For example, "*She slept in her crib* (that's a bed for babies) *until morning.*" The printed text would read "*She slept in her crib until morning.*" The teacher would add the parenthetical definition of crib in a short aside. The nuances involved in maintaining interest and participation while drawing attention to vocabulary and analysis may be skills that vary widely by teacher and that require extensive teacher support and professional development. In addition to the problem of seamlessly including critical aspects of style during book reading, group size may be another difficulty in incorporating interactive elements of dialogic reading. Much of the research on dialogic reading has been conducted with individuals or small groups of children (Whitehurst et al., 1994; Whitehurst et al., 1999). In regular

classroom practice, book reading often occurs in a whole group setting, which limits the amount of individual interaction the teacher has with each child.

The notion of encouraging the child to take an active role in book reading connects to a third aspect of classrooms that may influence word learning, which is child engagement. While previous discussion has focused on the strong role of the teacher in the meaning negotiation during book reading, the idea of engagement highlights the child's role in the intersection of child, teacher, text, and social context.

### *Child Engagement*

The level of the child's participation, or engagement, is an additional variable that may influence child vocabulary outcomes. In the literature, aspects of engagement are also referred to as *attention* (Samuels & Turnure, 1974) and *involvement* (Farran, Plummer, & Kang, 2003). Engagement, often viewed as a dynamic and selective construct that fluctuates within settings (Imai, Anderson, Wilkinson, & Yi, 1992), is difficult to observe reliably when a child is not speaking, such as in whole group settings. For research purposes, engagement is often defined and measured according to a child's visual focus or overt participation (verbalization or manipulation of materials) in an activity. Thus, both level of involvement and type of participation are components of child engagement. An important question focuses on how children's engagement during book reading is related to word learning.

The child's level of engagement during preschool book reading is not a common variable in correlational and intervention research on vocabulary growth from book reading. However, in a small study of 14 preschool students who listened to two readings of two books, word learning was positively associated with student engagement levels during reading (Hofer, 2007). Students

were pre- and post-tested with a sentence completion task (D. K. Dickinson, 2004) and also post-tested using a retelling task. While the classroom teacher read the book to the whole class according to her normal reading procedures, the researcher coded individual children's involvement levels using the Child Observation in Prekindergarten (COP) (Farran, Kang, & Plummer, 2003). There was a significant correlation between average involvement levels and word learning for each book. Contrary to previous studies (Elley, 1989; Penno et al., 2002), there was no significant difference between the number of exposures of the words and student word learning.

Another feature of engagement is the child's participation during book reading. In another study that guided children to produce target words as a result of questioning, the children who actively participated by generating the target vocabulary word learned significantly more words than the children who passively listened to the story (Ewers & Brownson, 1999). The vocabulary outcomes observed in these study results point to the fact that level of involvement and production of target words are two types of child engagement that may influence word learning.

Attention to engagement is grounded in sociocognitive theory because considering engagement highlights the role of the child in the co-construction of meaning. Meaning negotiation involves the child and his interactions with the teacher, text, and social context. Intervention studies have investigated the effects of engagement on vocabulary growth (Ewers and Brownson, 1999; Hofer, 2007; Senechal, 1997). Methods from intervention research that encouraged child engagement during book reading include asking questions (Senechal, 1997), guiding children to generate vocabulary words (Ewers & Brownson, 1999), and making connections between the book and children's experiences (Whitehurst et al., 1994). These

methods can be incorporated into regular classroom practice in order to increase children's engagement during book reading.

Ideas about child engagement connect to adult reading style. Certain techniques used by adults in their reading style may affect child engagement. Although levels of child engagement were not examined as a separate variable in Dickinson and Smith's (1994) study of adult reading styles, it could be hypothesized that a *performance-oriented* approach might stimulate children's engagement during book reading. As teachers use a more interactive style of book reading, children may be more likely to engage in the reading at higher levels.

### *Reader Stance*

Another feature of classroom-based book reading that may influence vocabulary learning is the stance that the reader adopts and the differences and similarities in the stance that is chosen for fiction and nonfiction texts. In her work on the transactional nature of reading, Rosenblatt (1994) examined the notion of the reader's stance. Her writings outline the aesthetic and the efferent stances, which are two stances that readers can hold that influence the experiences they have with texts (Rosenblatt, 1994). The efferent and the aesthetic stance are not exclusive constructs. Rather, Rosenblatt depicts the two stances on a continuum.

The same text can be read from an efferent and an aesthetic stance; what differs is what readers do when they adopt a stance. From the efferent stance, for example, Rosenblatt proposes that the reader concentrates on what will remain, or what will be "carried away" after the reading. She writes about children taking an outward focus on obtaining information, solving problems, carrying out actions, and acquiring concepts. From the aesthetic stance, Rosenblatt asserts that the reader concentrates on what happens during the actual reading event. There is a focus on

feelings, imaginings, connections, and the reader's relationship with the text. Using the definitions of stance given by Rosenblatt, it may be that adopting an efferent stance with nonfiction texts enhances vocabulary learning because the efferent stance emphasizes acquiring concepts and remembering information. From this perspective, stance may influence the extent that new words are learned.

Rosenblatt states that some people never learn to read aesthetically, and therefore always read with an efferent stance. The idea that readers more often adopt an efferent stance may be an important point, especially in light of the types of reading (and listening) that are emphasized in school. The way that young children are introduced to books and read to in preschool and early grades may influence the type of stance they are encouraged to take with books. Often, children are encouraged to "carry away" something from every reading; teachers may model most readings as efferent readings, regardless of purpose or genre. With fiction texts, teachers may model a stance that includes more efferent than aesthetic qualities, encouraging children to "carry away" ideas about characters and concepts from stories, due to an emphasis on comprehension monitoring.

If every text is approached with an efferent stance, then it seems likely that preschool children could easily become accustomed to nonfiction. However, fiction texts are used more often in preschool than nonfiction texts; the structure and features of the fiction texts that the teacher emphasizes may lead to reliance on those features within the efferent stance. For example, students are often encouraged to "carry away" information and details about characters' actions and story events in fiction texts. The teacher's emphasis on character and story events may make it difficult for young children to know what to attend to in a nonfiction text. This difficulty could negatively influence word learning. Without the familiar features of

fiction texts, such as characters and plot, children may need guidance to know what to “carry away” from the reading. It is important to consider 1) how the structure of the two genres might influence the reader’s stance, 2) how the extent of the reader’s experiences with the genres might influence the stance taken, 3) how the reader’s experience with one stance in a familiar genre might influence the stance taken with a less familiar genre.

In most preschool classrooms children have more experience with fiction than nonfiction texts. Therefore, they may associate the efferent stance with features of fiction texts. It may be beneficial to introduce nonfiction texts in preschool and the types of information that can be learned through adopting an efferent stance with those texts. Modeling an efferent stance with nonfiction texts might increase vocabulary development because nonfiction texts may provide greater breadth and depth of factual and conceptual information about words. Encouraging the efferent stance during whole group book reading of nonfiction texts by focusing on obtaining information about vocabulary words and acquiring concepts may also facilitate vocabulary growth by expanding schemata.

Thus, several features of book reading that affect vocabulary learning- exposure and elaboration of target words, adult reading style, child engagement, and reader stance- may be interrelated in their influences on vocabulary growth. Some of these features have been shown to be effective in intervention studies, but incorporating them into regular classroom practice may pose challenges.

### Tensions Surrounding Procedures

There are several tensions to consider when incorporating successful methods from vocabulary intervention study contexts into regular classroom contexts. Often, intervention

procedures do not reflect the type of settings that occur for most students in preschool. Because of the difference between clinical research settings and regular preschool classrooms, the adult reading behaviors that influenced vocabulary growth in the interventions may be difficult to translate into classroom instructional practice. The positive word learning gains achieved in the intervention studies bring up questions about how the types of behaviors used in the interventions are actually practiced by classroom teachers with whole groups of preschool students. Specifically, procedural differences, such as those related to group size, duration, and the adult reader from intervention to classroom settings may influence child outcomes. The challenge of group size emerges in reference to several features of book reading that generated word learning gains in intervention research but might be difficult to translate into regular preschool classrooms. As for size, in many intervention studies books are read to individuals or small groups. Changes in group size may influence children's engagement levels because in a larger group children have fewer opportunities to receive individual attention and interact with the teacher and peers. Successful methods from studies may produce different effects when implemented with whole groups of preschoolers. One method that can be used in whole group book reading is encouraging the children to repeat target words as a group. Although this strategy is not as individualized as guiding one child to produce a target through questioning (Ewers & Brownson, 1999), it does create the occasion for children to say the target.

In terms of duration, intervention studies range from one ten-minute book reading to multiple readings completed over several weeks. Vocabulary effects may change when methods are implemented over the course of a school year. The balance between group size (from small groups in interventions to larger groups in classrooms) and duration (from shorter duration in

interventions to longer duration in classrooms) may alter children's word learning from book reading.

Finally, changes in the adult reader may influence vocabulary learning. In intervention research, often the researcher is the reader, not the classroom teacher. Frequently, the researcher follows strict protocols for reading the text and making extratextual comments. The combination of smaller group size and the researcher as a reader who follows strict protocols may also result in altered word learning gains.

One possible value of using procedures, such as multiple exposures to texts and multiple elaborations of target words (Justice et al., 2005) is that they are easily used in classrooms. Before research can recommend ways to incorporate vocabulary learning strategies into classroom book reading, additional research, similar to the work conducted by Dickinson & Smith (1994) on naturally-occurring teacher book reading behaviors, may be necessary to examine the book reading behaviors that influence vocabulary growth that already occur in regular classrooms in order to build on teachers' strengths regarding vocabulary interactions during book reading. Research across preschool classrooms that share some similar characteristics may provide information about the types of talk and reading styles that in-service teachers use during book reading to support vocabulary growth.

Many differences in intervention conditions and regular preschool classrooms may affect vocabulary learning during book reading. In addition to the influences of the teacher and children on word learning in preschool, the stance adopted during reading and the genre of the text may influence word learning as well.

This section has included features of classroom-based, whole group book reading that may influence preschoolers' vocabulary growth. Multiple exposures to words and elaboration of

meanings, adult reading style, child engagement, and reader stance are features that preschool teachers can integrate into book reading routines to facilitate children's word learning. Incorporating these features into the social context of book reading may scaffold children's development of language.

In addition to influential teacher behaviors, another variable that may affect vocabulary growth is the genre of the text. As opposed to nonfiction texts, currently, fiction texts are more often used in preschool classrooms. However, incorporating another genre may provide opportunities for growth.

#### Including Informational Texts in Preschool Book Reading

During book reading, adults may vary in the way that they ask questions, make comments about the text, label objects or illustrations, involve children in the reading, and react to children's comments. In addition to those variables, the structure of the text, among other factors, may influence vocabulary gains during book reading. Book reading interactions may effect vocabulary growth, and text structure may influence book reading interactions. Examination of preschool teachers' behaviors during narrative and informational text reading may provide information about the strategies used with each structure. However, the use of informational texts in preschool whole group reading is largely unexplored.

Previously, most vocabulary research has focused on narrative texts only. However, there is an increasing need to examine the value of using informational texts to support vocabulary acquisition. Although narrative texts are the most frequently used in classrooms, informational texts provide resources for vocabulary exposure, concept development, and motivation to read. Also, a renewed interest in informational text use is budding in some early grades. Some of the

preschool curricula chosen by Early Reading First grantees include use of informational texts (Schickedanz & Dickinson, 2005; United States Department of Education, 2002).

In this section, the structures of narrative and informational texts are described. A brief explanation is given to show that the frequency of narrative and informational text use has varied in educational history, according to trends in policy. Then, research on informational text availability and use is reviewed.

### *Genre Descriptions*

It is important to understand general differences between narrative and informational text structures in order to consider how the two structures might support vocabulary growth. Both structures have benefits; the combined use of narrative and informational texts depends on instructional goals. Pappas (1991) describes the basic structure of narrative and information texts in terms of two major characteristics. She states that narrative and informational text structures include different *patterns of texture* and *elements of global organization*. The differences in text structure are important to note because narrative and informational texts place different comprehension demands on children. Also, as children progress into the upper elementary grades, secondary school, and the workplace, they will be required to read more and more informational texts.

*Patterns of texture.* The three patterns of texture are 1) *co-referentiality versus co-classification*, 2) *past versus present tense*, and 3) amount of *relational descriptive processes*. *Co-referentiality versus co-classification* refers to the ways that characters are introduced and addressed. In narrative texts, characters in the story are referred to as individuals using pronouns (*co-referentiality*) to create a chain of meaning. In information texts, the class of the topic (often

objects or animals) introduced at the beginning is referred to using pronouns to create a *co-classification* chain.

For example, in a story, the text might introduce a woodpecker and then use the pronouns *he*, *his*, *you*, *my*, or *I* in reference to that individual bird. However, in an informational text about birds, the woodpecker represents a class of animals. Any use of the pronouns *he* or *his* to reference the woodpecker means the group of animals that is woodpeckers. So, one pattern of texture, *co-referentiality versus co-classification* is that characters or classes of animals or objects are referenced using some of the same types of words (pronouns), but those pronouns are referencing specific characters in narrative texts and classes of animals or objects in informational texts.

The second category of texture refers to *verb tense*. Most narrative texts use more past tense verbs, while information texts use the present verb tense. Narrative texts often recount an event that has already occurred. Informational texts relate facts or data about natural or social phenomena in a fashion that incorporates timeless verbs, such as “Plants *need* the sun to grow and blossom” and generic nouns, such as “*People* travel on *water*, too. *Some* row their *boats*; *others* push with long *poles*.” (N.K. Duke & Kays, 1998).

The third pattern of texture, *relational descriptive processes*, refers to the ways that characters, objects, or animals are described in terms of their attributes (“the squirrel looks happy and mischievous”) and the way they are identified (“the squirrel is a fuzzy small animal”). Although *relational descriptive processes* can be included in narrative texts, they are most often found in nonfiction writing. This type of description is common when presenting facts about classes of natural phenomena, such as “spiders have eight legs.”

The three patterns of texture, *co-referentiality versus co-classification*, *past versus present tense*, and amount of *relational descriptive processes* relate to differences in the texture of language used in both genres. There are also elements of global organization that categorize the “chunks of meaning” in narrative and informational texts (Pappas, 1986, 1991a).

*Elements of global organization.* Building on Hasan’s (1984) classification of the structure of narrative texts (as cited in Pappas, 1991), Pappas outlined six global elements of information books: *topic presentation*, *description of attributes*, *characteristic events*, and *final summary*. Optional elements include *category comparison* and *afterword*. For example, a typical informational book on bears for young children might present the topic of bears, describe physical attributes and tendencies of bears, highlight events such as obtaining food, hibernating, and having bear cubs, and then end with a summary of the information presented. The informational text is presented in a manner that allows the reader to access any portion of the text to get facts about bears; he does not have to read from the beginning to the end to understand the text. In contrast, narrative texts are globally organized by an *initiating event*, a *sequent event*, and a *final event*, with *finale* and *moral* events optionally occurring. For example, in the story of *The Three Bears*, the text begins with the bears’ porridge dilemma, which causes them to take walk. Then Goldilocks comes in and wreaks havoc in the house. Finally, the bears come home and discover their visitor. The text is presented in a sequence, with a beginning, middle, and end.

These global organization features deal with the way that content is presented in narrative and informational texts. The way the texts are structured denotes differences in the types of language and concepts that are included and emphasized in the content. Understanding the global organization of text structures is one of the first steps in realizing that the different ways that the text is presented influences the purpose for reading, the ways to read the text, and the content

included in the text. In sum, narrative and information texts differ in terms of texture, which includes referencing, verb tense, and descriptive processes; and global organization, which involves critical text elements and their sequence in the passage.

The reason to look at the differences in the structure of narrative and informational texts is because informational text reading is required in later schooling and on the job. Also, the text structure may influence several teacher behaviors during book reading. The genre of the text may influence whether the teacher reads the text as printed, reads all the text or just portions of it, on which vocabulary words the teacher chooses to focus, and how the teacher uses the illustrations. Teachers' preferences and teachers' perceptions of students' preferences of text structure may influence the frequency with which teachers choose each type of book. These teacher choices and behaviors may influence children's vocabulary growth. Little is known about these variables related to informational texts in early grades because they are used less often in preschool and primary classrooms. Although few informational texts are available in primary and preschool classrooms currently (N.K. Duke, 2000; Yopp & Yopp, 2006), this has not always been true in American classrooms.

### *History of Genre Use*

Children have less exposure to informational texts than the narrative genre in early grades. The small number of studies that have examined the frequency of informational text reading and use support this claim (N.K. Duke, 2000; Yopp & Yopp, 2006). Interestingly, this has not always been the case in American education. According to Smith's (1986) analyses of children's literature that was available in the 1800's (as cited in Duke, Bennet-Armisted, and Roberts,

2003), informational texts about citizenship, government, and nature were used in children's readers, purportedly included as a result of industrialism and the push for productive workers.

This trend shifted, however, at the end of the 19<sup>th</sup> century when the president of Harvard University argued for a return to classic literature in children's readers, in order to support children's imaginations. In the years following, narrative has held dominance in the world of children's literature in early grades. However, Duke, Bennett-Armistead, and Roberts (2003) cite Lapp's (1986) study which reports that recently informational text is more prevalent in standardized reading tests than in basal readers and observed classroom activities in kindergarten through sixth grade. The amount of informational texts available for young children does not reflect the extent to which children are required to use those texts in tests, in later elementary grades, in secondary education, and later in the workplace. The continued lack of informational texts in classrooms may be due to some ideas about genre in the 1980's.

### *Recommendations for Narrative Texts*

Previous research and writing about children's literacy learning demonstrated the value of using narrative structure in early grades. Egan (1988) believed that teachers should use story structure as much as possible to aid children in remembering any type of academic or social content. His work implied that children are best able to understand material in story format. He advocated that educators should construct "a curriculum of stories" (p. 120) to teach content ideas (Egan, 1988). At about the same time, Wells (1986) advocated for narrative texts (as cited in Pappas, 1993) by stating that the use of story structure was appropriate for any part of curriculum. Finally, in 1990, Adams focused on using stories and story format to help children learn to read and learn academic content (as cited in Pappas, 1993). By focusing only on

narrative and not including recommendations for or benefits of informational text, she endorsed the heavy focus on narrative structure. These researchers sent an implicit message that narrative structure is the most viable format for helping children learn to read and for early learning in general (Pappas, 1993).

### *Benefits of and Preference for Informational Text*

The belief that narrative is primary assumes that children inherently enjoy and connect with narrative texts that tell stories more than with informational texts that convey information. Three reasons for the lack of information text use in classrooms exist in research, theory, and anecdotally from practice. Children cannot understand informational texts, children prefer informational texts less than narrative texts, and children should learn to read first, before they experience informational texts. These claims have no empirical basis but seem to pervade the beliefs of many publishers and teachers of young children (Pappas, 1993).

Early interaction with informational texts may be beneficial to students in later elementary grades. Informational texts, may build prior knowledge, foster attention to rich vocabulary, and draw attention to highly salient print features (N.K Duke & Bennett-Armistead, 2003; Palincsar & Duke, 2004; Weizman & Snow, 2001). Furthermore, interest in reading informational texts may increase some children's motivation to read in general. Nonfiction may serve as a catalyst that gets children excited about reading (Caswell & Duke, 1998). Finally, increasing the use of informational texts may help some students link home and school literacy behaviors, especially when children see their parents engaging in more informational text reading than narrative reading at home (Duke, Bennett-Armistead, and Roberts, 2003).

In fact, some studies have shown not only that children acquire language, structural attributes, and concepts from listening to informational texts, but also that they sometimes prefer to read informational texts, especially some boys (N.K. Duke & Kays, 1998; Pappas, 1991a). Studies with parents and studies in schools have shown benefits of using informational texts in terms of amount of talk, sophisticated word use, and acquisition of different language features of the genres (Hammett, 2005; Hammett, van Kleek, & Huberty, 2003; Huttenlocher et al., 1991; Pappas, 1991a; Weizman & Snow, 2001).

Amount of language input has been associated with vocabulary growth (Huttenlocher et al., 1991), and informational texts may provide interesting opportunities for rich talk between adults and children. In studies with parents of both genres, Hammett (2005) described and compared parents' behaviors during shared book reading of narrative and informational texts with preschoolers. She found that, although there was one group of parents who used lower amounts of talk than the rest of the sample, the amount of talk was significantly higher with informational texts. Also, there were greater amounts of low-frequency vocabulary used with informational texts (Hammett, 2005). These results suggest that informational book reading may generate a larger amount of sophisticated word use than narrative book reading.

Weizman and Snow (2001) also found that informational texts provided opportunities for sophisticated vocabulary exposure during parent-child reading. Their study examined the predictive value of maternal language input to five-year olds on vocabulary development in kindergarten and second grade. Fifty-three mothers from low-income backgrounds were studied in conversations with their 5 year-old children during settings that included narrative and informational book reading. During narrative reading, mothers generated an average of 101 word-tokens per minute, with an average of 7 sophisticated word-tokens per setting. For

informational books, mothers generated 112 word-tokens per minute, with an average of 34 sophisticated word-tokens per setting, and sophisticated tokens predicted later learning. These findings with parents present important comparative information for studying teachers' levels of sophisticated vocabulary use with narrative and informational texts.

Another benefit of reading informational texts is helping children utilize genre-specific language features. Children who heard narrative and informational texts read aloud repeatedly were able to acquire and reproduce language and features of the text distinctive to each genre in a study of kindergarteners (Pappas, 1991b, 1993). Pappas examined three retellings, or "pretend reads" of narrative and informational texts given by 16 kindergarteners. The study took place in three days, with a shared book reading and subsequent student retelling of each text each day. The analysis of the retellings showed that children capably included the unique patterns of texture and elements of organization in their retellings of each text. In addition, they became more sensitive to the texture and organization with each successive retelling of the texts. Pappas (1991) cites the children's self-corrections for clarity and their individually distinctive attempts at the language and usage in the texts as evidence that the children were constructing meaning and were not focused on rote memorization of the content.

The need to focus only on narrative texts in early grades seems unfounded in light of these results, which provide support for the fact that children in kindergarten are capable of processing and using text structure and patterns found in informational books. Another factor in choosing to use informational texts, in addition to children's competency with the structure, is children's preference for narrative or informational text structure.

Teachers may not be aware of children's genre preferences. This may be due to the information disseminated in the late 1980's declaring the benefits of narrative and excluding

recommendations for information text, to teachers' own dislike of the informational genre, or to teachers' and parents' lack of awareness of the variety and quality of available information texts (Yopp & Yopp, 2006). Pappas (1991) provided anecdotal information about teachers' beliefs regarding children's genre preferences. Teachers with whom she had interacted believed that, in general, children liked stories better than nonfiction and that only some boys would prefer information texts. These beliefs were not corroborated in her study (Pappas, 1993). In the beginning session, 13 children favored the informational text. By the third reading, almost all the children preferred the informational text. Although this study was conducted with a small sample size, it shows that additional research is needed regarding children's genre preferences. These findings have implications for practice in that teachers' read aloud selections may be based on incorrect beliefs about children's genre preferences. In sum, informational texts seem to be beneficial in generating talk during book reading, supporting sophisticated word use, and in affording distinctive language features. In addition, some children, especially boys, may prefer informational texts. One reason teachers may not be aware of children's genre preferences is because the lack of informational texts in preschool and primary classroom libraries limits children's choices.

#### *Lack of Informational Text Availability and Use*

One concern for early elementary grades is the lack of informational texts available to students in classrooms. From preschool to third grade, informational titles were scarce in individual classroom libraries in studies that counted available texts and surveyed teachers' use of informational texts (N.K. Duke, 2000; Yopp & Yopp, 2006). If informational texts are

valuable tools for vocabulary growth during book reading, lack of these texts may hinder some types of vocabulary learning.

Existing research on non-fiction texts in the primary grades showed that, in some first grade classrooms, students had little exposure to non-fiction print on display and as little as 3.6 minutes per day of instructional time allocated for non-fiction text use (N.K. Duke, 2000). Duke observed for four days throughout the school year in 20 first-grade classrooms from extremely high SES and extremely low SES areas. She examined the classroom libraries and coded the books in five categories; *narrative*, *informational*, *informational-narrative*, *informational-poetry*, and *other*, which were then combined into three categories: *narrative*, *informational*, and *other*, such as worksheets and name cards.

Overall, low SES schools had 40% fewer books than high SES schools. In low SES schools, the classroom libraries were 68% narrative, 25% other, and 7 % informational. In high SES schools, the classroom libraries were 55% narrative, 32% other, and 13% informational. The differences in genre were significant for the two types of schools. Duke argued that the lack of non-fiction text in primary classrooms may have implications for opportunities related to children's reading interests and for what some term the "fourth grade slump," (J. S. Chall, Jacobs, & Baldwin, 1990) in which children may have trouble reading and writing non-fiction texts. In her study, Duke (2000) found no evidence to justify the lack of non-fiction text in early grades.

There is a lack of informational text use not only in first grade but also throughout preschool to third grade. Yopp and Yopp (2006) conducted an investigation to expand the literature regarding book selection to include preschool and to compare book selections of teachers and parents according to genre. Two studies were conducted. In the first study, the researchers surveyed 1,144 American teachers during workshops and asked them to

anonymously report their grade level and the book titles they read to their students on the day prior to the conference. Selections were analyzed descriptively according to genre and grade level.

From preschool to third grade, teachers reported reading 1,487 identifiable book titles. Overall, 77% were *narrative*, 8% were *informational*, 1% were *mixed*, and 14% were *other*, which included biography, poetry, menus, instructions, and rules. In preschool, 68% were *narrative*, 5% were *informational*, 0% were *mixed*, and 28% were *other*. At all grade levels, there were proportionately more narrative texts than any other genre. There were no significant differences in genres across grade levels, indicating that informational text use did not increase as children progressed in the primary grades. There were also no significant genre differences for teachers who read more than one text, meaning that teachers who read more books were not more likely to include informational texts.

Data from home reading logs showed that students' home exposure to informational texts mirrored their school exposure. In the second study, seven months of home reading logs from the families of one kindergarten classroom were examined in the same manner as the teachers' reported titles. 1,473 identifiable titles were analyzed descriptively. 77% were narrative, 7% were informational, 3% were mixed, and 12% were other. The home findings were almost identical to the teachers' reported titles, with children hearing significantly more narrative texts than any other type at home. There was a significant gender by genre interaction effect, with boys hearing significantly more informational and mixed texts than girls (Yopp & Yopp, 2006).

The results of these studies show that the limited use of informational texts begins as early as preschool and remains through at least third grade. This trend exists even in classrooms where teachers employ a greater number of read alouds. Children's home environments mirror

the lack of informational texts that they experience at school. However, boys may hear more informational texts at home than girls.

These findings present questions about why teachers and parents choose mostly narrative texts for young children. Duke, Bennett-Armistead, and Roberts (2003) suggested that the main reasons for the lack of informational texts may be that adults feel that informational texts are too difficult for children, that children dislike informational texts, and that children need to learn how to read before they are challenged with factual material. However, there are no empirical data to support these beliefs. Yopp and Yopp (2006) suggested two supplementary explanations for the lack of informational read-alouds. Adults may understand the benefits of informational texts, but may not view them as appropriate for read-aloud material. Also, many adults may not be aware of the quality and selection of informational texts available.

Whatever the reason for the lack of informational texts as read-alouds in preschool through third grade classrooms, by focusing only on narrative texts, teachers and parents may be missing opportunities to discuss valuable vocabulary and concepts during shared book reading. Additional research is needed that goes beyond the categorization of titles to examine which informational texts preschool teachers are choosing and how they integrate vocabulary connections during book reading with those texts.

## Summary

As an early language and literacy intervention, some preschool programs emphasize vocabulary growth. Vocabulary acquisition can occur in various settings in preschool. One of those settings, whole group book reading, is a social experience that can influence children's

vocabulary outcomes. During book reading, the teacher and the children interact with the text to negotiate meaning.

A sociocognitive perspective on preschool word learning underscores the interrelated influences of the teacher, the child, and the text in meaning negotiation during book reading. The impact of social interactions on the cognitive processes of language development plays a key role in this perspective. Sociocognitive theory also highlights the teacher's support that scaffolds children's vocabulary growth. Several teaching behaviors contribute to the scaffolding of children's word learning.

Adults' behaviors during book reading that scaffold learning include elaboration of and exposure to target words, style of reading, and attention to child engagement. When teachers elaborate word meanings during repeated readings of texts, children have opportunities to expand schemata and increase their word learning incrementally. Aspects of adult reading style, such as analytic and vocabulary-related talk, also influence word learning. Increasing engagement by providing opportunities for children to generate target words may also influence vocabulary growth. These teaching behaviors have been successful in intervention research.

Procedures that increase word learning in intervention research may or may not translate easily into normal classroom practice. In contrast to some procedures used in book reading intervention research, in typical preschool classrooms book reading may take place in whole group settings and involve a single reading of a book. Planning for techniques such as elaboration of target words and opportunities for children to talk about the book may or may not be part of teachers' normal book reading routines. An intermediate step may be necessary before teachers can improve vocabulary by incorporating successful intervention methods into book reading in preschool classrooms. Additional research is needed to facilitate integration of

methods from interventions. Another feature of book reading that may influence word learning is genre.

Although most book reading in preschool classrooms utilizes narrative texts, preschool children may benefit from exposure to nonfiction texts because they provide opportunities for rich vocabulary exposure and discussion of academic concepts. The stance the reader adopts with nonfiction texts may influence word learning. Adopting an efferent stance with nonfiction texts may set a purpose for reading and help children “carry away” information about vocabulary words and concepts.

More research is needed that examines features of preschool teachers’ instructional methods during book reading with fiction and nonfiction texts. Additional research on the nuances of classroom book reading may highlight ways to incorporate methods that have been successful in experiments into teachers’ book reading routines. Analysis of preschool teachers’ current vocabulary teaching techniques may inform ways to increase children’s vocabulary learning during book reading.

### Conclusions and Hypotheses

Preschool is often considered an intervention due to an emphasis on early language and literacy experiences. Vocabulary is one component of language emphasized in some preschool classrooms. One part of the preschool day in which teachers can focus on vocabulary learning is during whole group book reading. Teachers’ choices of instructional behaviors related to vocabulary during book reading may influence children’s vocabulary growth.

Evidence exists to support the idea that several procedures used in vocabulary intervention studies positively influence vocabulary growth during book reading. Specifically,

multiple exposures to and elaboration of words, adult reading style, and child engagement foster vocabulary growth in children. Also, reader stance may influence vocabulary growth because adopting an efferent stance may direct readers' attention to meanings of new words.

However, several differences between critical procedures and conditions of successful studies and daily preschool classroom settings, such as group size, duration of reading, and adult reader, may make it difficult to facilitate commensurate vocabulary learning for children in preschool classrooms.

The present study is designed to look at how preschool classroom teachers support vocabulary learning during whole group book reading of fiction and nonfiction texts. More specifically, the purpose of this study is to look at the relationship between teacher behaviors during book reading and children's vocabulary growth on target and general vocabulary measures. In addition, the study examines the influence of children's levels of involvement during book reading, rated on a five-point scale, and their vocabulary growth on target and general vocabulary measures. The hypotheses are organized according to a sociocognitive perspective and focus on the contributions of the teacher, the child, and the text to vocabulary learning.

**Contributions of the Teacher: Variations in teacher language during book reading will be related to child growth in vocabulary.**

1. Teachers who use a relatively higher rate of vocabulary facilitation talk during book reading will have children who gain more in vocabulary on target measures as well as on distal standardized measures.

2. Teachers who have a relatively higher rate of elaborated target vocabulary facilitation during book reading will have children who gain more on target vocabulary measures.
3. Teachers who use a relatively higher rate of sophisticated words during book reading will have children who gain more in vocabulary on target measures as well as distal standardized measures.

**Contributions of the Child: Variations in child involvement during book reading will be related to growth in the target vocabulary presented.**

4. Children with higher levels of involvement during book reading and whose teachers use a relatively higher rate of vocabulary facilitation during book reading will gain more in vocabulary on target measures as well as on distal standardized measures.
5. Children who produce more target words during book reading and have teachers with a relatively higher rate of vocabulary facilitation during book reading will gain more on target vocabulary measures.

**Contributions of the Text: Genre will affect both teacher style and child vocabulary growth.**

6. Teachers will use a higher rate of vocabulary facilitation talk when they read nonfiction books than when they read fiction books.
7. Teachers who read more nonfiction books will have children who gain more on distal standardized vocabulary.

## CHAPTER III

### RESEARCH DESIGN AND PROCEDURES

#### Research Site and Participants

##### *Research Site*

The data for this study were obtained in conjunction with an Early Reading First (ERF) (United States Department of Education, 2002) program implemented in a rural, southwestern county in Tennessee. The researcher served on a team from a private university that conducted a three-year independent evaluation of the Early Reading First program. The Early Reading First program focused on enhancing the early language and literacy opportunities of the preschool children in the county. The ERF program included twelve preschool classrooms located in the three public schools in the county. This study involved seven of the twelve preschool classrooms, focusing on the classrooms that served four-and five-year-old children. Each of the seven preschool classrooms served an average of 15 students, with groups ranging from 13 students to 17 students. The students arrived at school at 7:45 am and were dismissed beginning at 2:00 pm. The preschool teachers used the Opening the World of Learning (OWL) curriculum (Schickedanz & Dickinson, 2005), which is a literacy-focused preschool curriculum. The curriculum was structured in regards to the organization of the day and included guidance for teachers for each component of the day. The components of the curriculum central to the study were Storytime and Let's Find Out About It. Storytime occurred in the morning in a whole group setting and usually took place for approximately 15 to 30 minutes. During Storytime, teachers

read only fiction books. Let's Find Out About It occurred in the afternoon in a whole group setting and usually took place for approximately 10 to 20 minutes. During Let's Find Out About It, teachers read only non-fiction books.

### *Participants*

Seven preschool classroom teachers in the county's three public elementary schools participated in the study. The study sample represented all but one of the four-and five-year old classroom teachers in the ERF program. Four teachers were located at one elementary school, two teachers were located at another elementary school, and one teacher was located at the third elementary school. The preschool teachers were purposefully selected because of their participation in the Early Reading First program. All eight teachers were invited and consented to be in the study; one teacher chose to withdraw before the study began due to a death in her family. The teachers' years of experience ranged from one to twenty-seven years, with an average of thirteen years. All seven teachers were Caucasian. All teachers were certified for elementary teaching; one teacher had completed preschool certification.

One hundred eight preschool children participated in the study. Fifty-eight children were located in four classrooms at one school, thirty-three children were located in two classrooms at another school, and seventeen students were located in one classroom at a third school. Of the 108 children, 46 were female (42.5%) and 62 were male (57.5%). The majority of the children in the school system were Caucasian; 100% of the study children were Caucasian.

### *Book Reading Procedure*

*Books.* Eight whole group book readings per teacher were videotaped. The books included four fiction and four nonfiction titles. With seven participating teachers and eight books per teacher, 56 total book reading sessions were videotaped.

The fiction book titles included *Dreams* by Ezra Jack Keats, *The Ugly Vegetables* by Grace Lin, *Make Way for Duckings* by Robert McCloskey, and *Bigger* by Daniel Kirk. The nonfiction book titles included *Fun with Shadows* by Sharon Siamon, Jeff Siamon, and Cynthia Benjamin, *Taking Root* by Allan Fowler, *Growing Things* by Dawn Sirett and Lara Tankel, and *See How They Grow: Duck* by Angela Royston (see Appendix C for a complete bibliography). All fiction books were read at least three times in each classroom. The curriculum provided guidance for each of the three fiction readings, and the purpose and procedures for each reading varied. For the purposes of the study, only the first reading of each fiction and nonfiction book was videotaped.

The books were chosen for the study because they occurred in the normal progression of the OWL curriculum and were integrated into the thematic activities the children participated in across the day. All teachers had experience with the books from the previous two years of curriculum implementation. The books represented topics discussed during Unit 6 of the *Opening the World of Learning* (OWL) curriculum, entitled *Things That Grow* (Schickedanz & Dickinson, 2005). The books varied according to length and readability levels. Although the study children were not reading independently but listening to books read aloud to them, readability information is provided as one way to show the variation in the texts. Microsoft Word Readability Statistics were used to generate the word count and Flesch-Kincaid readability level (DuBay, 2004; Klare, 1975) for each book by typing the text into a Microsoft Word document.

Readability is measured by grade level, on the scale commonly used in the United States. For example, readability level of 3.3 can be understood as what a child should read independently in the third month of third grade. Book length ranged from 242 to 931 words per book, with an average of 500 words. Readability ranged from 2.1 to 5.1, with an average of 3.5. (see Appendix D for readability statistics for each title.)

### *Instruments*

*Peabody Picture Vocabulary Test (PPVT)*. The Peabody Picture Vocabulary Test (PPVT) (Dunn & Dunn, 1997) is a receptive vocabulary test in which children point to a picture, from a choice of four pictures, in response to an examiner's prompt. The test contains pictures and prompts for nouns, adjectives, and verbs. For example, a child views a picture of four scenes in which a woman is doing four different activities. Then, the child is asked to "point to *walking*." The examiner ends the test when, within a set of 12 items, a child misses eight or more items. The variables for analysis from the PPVT were children's pretest and posttest standard scores.

*Woodcock-Johnson III (WJIII)*. The Woodcock Johnson III (WJIII) (Mather & Woodcock, 2001) subtest used in this study was Picture Vocabulary. In this subtest, children were given an oral prompt to identify an image that is presented on a card. The Picture Vocabulary subtest involves labeling individual pictures; they all represent nouns. The examiner ended the subtest when a child missed six consecutive items. The variables for analysis from the WJIII Picture Vocabulary subtest were children's pretest and posttest standard scores.

*Guess My Word*. A target vocabulary assessment was administered as a pretest and posttest. This assessment was adapted from the Guess My Word instrument created by Dickinson (2004). The format of the original instrument remained the same, but target words

were changed to reflect content from books read in the study. The assessment, which measured expressive vocabulary, was a cloze procedure that required children to produce a term at the end of the sentence that gave semantic clues about the meaning of the word (see Appendix A). Twenty-three vocabulary words were chosen by the researcher from the eight books read by teachers. The vocabulary words were taken from those recommended in the curriculum as words for the teacher to emphasize during reading, words that would most likely be unknown to the children. The items included 18 nouns, 4 verbs, and 1 adjective. Words were chosen from each of the eight books. Twelve words were chosen from the four fiction titles and eleven words were chosen from the four nonfiction titles. The test included three foil items, which were nouns not included in the books. A sample item from the assessment is -- *The people who live in houses close to you are called your \_\_\_\_\_ (neighbors)*. Children were not informed as to the correctness of their answers.

The researcher pilot-tested the assessment on five children in a private preschool and day care center. The children in the pilot study were similar in age and ethnicity to the study children. They participated in a half-day, private preschool program. Due to information gathered during the pilot testing, sentence wording was revised, some target items were changed, the length of the test was adjusted, and procedures and instructions were modified.

In the study, 93 of the 108 children in the seven classrooms completed both pretests and posttests. The number of children *per classroom* who were present for both pretest and posttest ranged from 13 to 17 children. The researcher conducted the assessments individually with children in a quiet area near the classroom. Each assessment took two to five minutes per child.

The variables for analysis from the vocabulary assessment were pretest and posttest scores. Children's pretest scores consisted of the percentage of words that were correct at pretest. Children's posttest scores consisted of the percentage of words that were correct at posttest.

*Child Observation in Prekindergarten (COP)*. During both fiction and non-fiction book reading, the researcher or one of two associates coded child involvement levels using an adapted version of the *Child Observation in Prekindergarten (COP)* (Farran, Plummer, and Kang, 2003). The COP is an instrument used to examine aspects of the curriculum as received by the child. During an observation, each child is observed for three seconds and his/her behavior is coded. The categories include: *verbal*, *to whom*, *schedule*, *proximity*, *interaction*, *type task*, *involvement*, and *materials*. Each single observation, called a sweep, provides a "snapshot" of behavior. Over several sweeps of an instructional activity, such as book reading, a picture of the child's behavior accumulates and patterns of behavior can be seen.

The adapted version of the COP used in the study included four categories. Each of the six categories was coded each time the child was observed for three seconds. The categories included whether the child was talking or listening (*verbal*), to whom the child was talking or listening (*to whom*), the level of the child's engagement (*involvement*), and whether the target words were used (*use of target words*) (see Appendix B). The *verbal* category was used to denote whether or not the child was speaking or listening. The *to whom* category was used to denote whether the child was speaking or listening to the teacher, an assistant, another child, the whole group, himself, or not speaking or listening at all. The *involvement* category was used to rate the child's involvement in the activity on a five-point scale, with ratings of *low*, *medium low*, *medium*, *medium high*, and *high*. The *target* categories were used to identify whether a target

vocabulary word was spoken by the teacher, the target child, or another child or children in the group.

The observers were trained to use the *Child Observation in Prekindergarten* (COP) during other work with the Early Reading First project and other projects that involved child data collection in preschool. Observers were trained to use the COP and practiced in preschool classrooms not involved in the current study. The researcher had two and a half years of experience using the instrument in preschool classrooms. The other two observers had five years and one year of experience, respectively.

Training reliability for the COP was calculated by percent agreement [ $\text{agreement} / (\text{agreement} + \text{disagreement})$ ]. Training reliability was calculated from paired visits to classrooms not involved in the study. Training reliability for the researcher and the first observer was 88.9 % . Field reliability was not calculated for the researcher and the first observer. Training reliability for the researcher and the second observer was not calculated. Field reliability for the researcher and the second observer was 88%.

Variables for analysis from the COP are those related to involvement and production of target words. The *verbal* and *to whom* categories were not analyzed for this study. The first variable was the average involvement rating for each child over all the snapshots taken of the child. The other COP variable was related to production of target words. During each sweep (3-second interval of observation), it was noted whether the observed child produced a target vocabulary word. For each book reading episode, the total number of times the observed child produced the target word during the episode was summed. In the current analysis, the child target production was used to determine the relationship between vocabulary gain and target word production.

*Teacher talk during book reading.* All video observations were transcribed and formatted for use with the Systematic Analysis of Language Transcripts (SALT) software, version 9 (Miller and Iglesias, 2006). Teacher utterances were coded at the sentence level using an existing system (Dickinson & Smith, 1994), with additional codes added by the researcher. Analyses of the data were used to categorize teachers' talk during whole-group reading of fiction and non-fiction texts and look for profiles of types of talk and differences between genres.

Transcripts were coded and analyzed for frequency of teacher utterances related to *vocabulary and world knowledge*. These types of utterances were found in a small pilot study that examined three teachers' talk during book reading. This study extends the pilot study to look at relationships between types of teacher talk and children's vocabulary gain. In addition, the transcripts were used to examine the number of sophisticated words the teachers used, according to the Dale-Chall list of common words (Chall & Dale, 1995). Also, the frequency of teachers' elaboration of target words was coded. Finally, the frequency of teachers' use of target words in the transcripts (instances when the teachers used the words without elaboration) was calculated.

In summary, the initial variables for analysis from the transcripts were teachers' *vocabulary and world knowledge* utterances, use of *sophisticated words*, *elaboration of target words*, and teachers' *mention of target words*. These variables focused on two main types of talk-teacher talk in general and teachers' use of target words. The first three variables, *vocabulary* utterances, *world knowledge* utterances, and *teachers' use of sophisticated words* focus on teacher talk in general.

*Vocabulary* utterances were defined as talk about the meaning of specific words. They may be stated as a definition, an example sentence, a text connection, or a request to repeat the word. An example of a *vocabulary* utterance is "*A plum is a kind of purple fruit, and it's smaller*

*than a peach, but it's like it.*” *World knowledge* utterances were defined as talk that is related to information about the world. The content may be related to science, social studies, or other general cultural knowledge. *World knowledge* utterances often follow *vocabulary* utterances and extend a concept. An example of a *world knowledge* utterance is “*If we are running and we get really hot, our blood is pumping really fast and our bodies get hot.*” *World knowledge* utterances did not contain target words; those utterances were coded as *elaborated target words*, which are described below. The purpose of looking at world knowledge utterances was to note instances when teachers expanded general conceptual knowledge. Sophisticated words were defined as all words *except* those included in the Dale-Chall list of 3,000 most common words (Chall & Dale, 1995), the 23 target words from the books, and common idioms and proper names, such as “Ms. Heather,” that were determined by the researcher upon analysis of the transcripts.

The last two variables, *elaboration of target words*, and teachers’ *mention of target words*, focus on teachers’ use of target words. *Elaborated target words* were defined as any of the 23 target words from the books for which meaning is provided by the teacher. Elaboration consisted of definition, gesture, an example sentence, a clear illustration, or a text connection. Elaboration can occur when the text is read or within teachers’ extratextual comments. Teachers’ *mention of target words* was defined as the teacher speaking one of the 23 target words from the books *without* providing meaning about the word. Target words can be mentioned when the text is read or within the teachers’ extratextual comments.

*Reading logs.* Teachers completed reading log calendars through the duration of the study, for approximately one month (see Appendix E for a sample reading log). A calendar format was used for the logs. Teachers recorded the books they read to the whole group on a

daily basis. They recorded the title, genre (fiction or non-fiction), and whether they read the complete book or read portions of it. Data from the reading logs provide information about variation of book reading frequency among teachers. The variables for analysis from the reading logs were frequency of fiction and frequency of nonfiction books read.

### *Procedures*

*Observation and Data Collection.* The books that teachers read on videotape were recommended and provided by the preschool literacy curriculum *Opening the World of Learning* (Schickedanz & Dickinson, 2005). At the time of data collection, the teachers were involved in their third implementation of the spring portion of the curriculum. The researcher chose to videotape books that were suggested in the curriculum in order to lessen disruption of teachers' planned schedules as much as possible. Other than requesting that the teacher read the entire selection, the researcher did not influence the teachers' reading of the books; the goal of this portion of the study was to examine individual differences in teachers' reading behaviors for the same texts and look at the influence of those behaviors on word learning.

Data collection was carried out by the researcher and two colleagues. Colleagues collected data with the researcher on the second, third, and fourth days of data collection. All the preschool classrooms in the county used the OWL curriculum, and administrators encouraged teachers to follow a schedule that kept all classrooms on the same pace. Professional development for the curriculum was organized so that all teachers were at the same place in the curriculum on the same day. This meant that all teachers in the study read the same books on the same days. Because the teachers in the study were located at three different schools

approximately 15 miles apart, the researcher and her colleagues shared data collection responsibilities.

For any given classroom, the person collecting data arrived at the beginning of the morning and set up video cameras in the classrooms of the participating teachers at the school. Before the data collection day, the researcher consulted with each teacher about the time during her schedule that she would read the books. The person collecting the data would come to the classroom at the scheduled time to turn the camera on and collect the child involvement data. The camera was set up to capture as much of the group as possible, while trying to obtain the best sound quality possible. As a backup measure, a digital audio recorder was placed near the teacher, to supplement the video recording. The teacher let the person collecting data know when to turn the camera on and off. In order to determine when a book reading session “began” and “ended,” the data collector relied on the teacher to tell her when to turn the camera on and off.

Once the video camera was turned on, the observer coded child involvement levels during book reading using an adapted version of the *Child Observation in Prekindergarten* (COP) (Farran, Plummer, and Kang, 2003). Child involvement during book reading was measured at multiple time points throughout the study. Involvement levels were coded during six of the eight book readings (for three fiction book readings and three nonfiction book readings). During the first two book readings the researcher was collecting data alone; therefore, involvement could not be coded for all classrooms. Child involvement was coded live in sweeps of 3-second intervals per student for the duration of the book readings.

Twice during the study, teachers were briefly interviewed by email about vocabulary instruction and some specific behaviors observed during the sessions (see Appendices G and H for interview questions). The interview questions served as an opportunity for teachers to reflect

on their planning and instructional behaviors for book reading, in addition to their use of nonfiction texts during whole group time. Questions for the first interview were based on the first round of observation and data collection. Questions for the second interview were based on subsequent observations and teachers' answers to the first set of questions. If an individual teacher made a comment in the first interview that provided information about book reading, a question was formulated based on that comment and asked to all teachers in the second interview. All teachers were asked the same questions. Teachers could respond by email. In addition, hard copies of questions and addressed, stamped envelopes were provided to those who preferred to use mail. While not used in formal hypothesis testing, the teacher interview responses supplemented other analyses with descriptive data related to teachers' ideas about planning for and using fiction and nonfiction texts during whole group book reading.

Also, teachers completed reading logs throughout the duration of the study. On a calendar worksheet provided by the researcher, the teacher noted each book read, the genre of the book (fiction or nonfiction) and whether she read the entire selection or portions of the book. The researcher provided an addressed, stamped envelope for teachers to return the reading logs. Data from the reading logs provide information about variation of book reading frequency among teachers.

*Assessment.* The target vocabulary assessments took place within one week preceding and following the book readings (see Appendix F for a timeline of the study). Approximately one month elapsed between the pretest and the posttest, during which teachers read eight books to the children. The researcher conducted the assessments individually with children in a quiet area near the classroom. The researcher invited each child to "play a game" with her. No children declined to participate in the pre- or post- assessment. Each assessment took two to five minutes

per child. Due to absences, 43 children were pre-tested after the first book reading. The target words to which those 43 children had been exposed during the first book reading were not calculated with their vocabulary scores.

The PPVT and WJIII assessments were given to the children in the study by a group of Early Reading First assessors who assessed children for the three years of the Early Reading First program. Neither the researcher nor her colleagues who collected classroom data administered the PPVT or WJIII to the study participants. The PPVT and WJIII assessments were administered to the children at the beginning of their preschool year in August or September 2006 and again at the beginning of their kindergarten year in September or October 2007.

### *Hypothesis Testing*

There are three main groups of hypotheses for analysis, involving contributions of the teacher, the child, and the text to children's word learning. Analyses were conducted for teacher variables, for the interaction of teacher and child variables, and for text variables (see Appendix I for a table of variables). For one analysis involving the teacher variables, the distributions of the individual variables for the seven teachers were examined for skewness to determine whether to use parametric t-tests for dependent samples or non-parametric tests if the distributions were strongly irregular. For other analyses, hierarchical multi-level analyses were conducted (Byrk & Raudenbush, 1992). Although the nature of the data involved children nested within classrooms, with a sample size of seven teachers, statistically significant effects were difficult to detect. Therefore, magnitude of effects was examined.

At the beginning of analysis, the co-occurrence of the teacher variables (world knowledge utterances, vocabulary utterances, teacher target vocabulary elaboration utterances, and sophisticated word use) was examined to see if creating a composite “vocabulary facilitation” variable would be more appropriate than conducting analyses with separate teacher variables.

*Contributions of the Teacher: Variations in teacher language during book reading related to child growth in vocabulary.*

- 1. Teachers who use a relatively higher rate of vocabulary facilitation will have children who gain more in vocabulary on target measures as well as on distal standardized measures.* Hypothesis 1 was tested with a multi-level analysis with children at the first level nested within classrooms at the second level. The model predicted children’s posttest scores on the target vocabulary assessment using teachers’ rate of vocabulary utterances, and children’s pretest scores on the target vocabulary assessment. Two other similar multilevel models were run using pretest and posttest scores from each of the standardized vocabulary assessments (PPVT and WJIII Picture Vocabulary). The child level predictors were pretest scores on the target and distal standardized measures, gender, and age in years, and the teacher level predictor was rate of vocabulary utterances.
- 2. Teachers who have a relatively higher rate of elaborated target vocabulary facilitation during book reading will have children who gain more on target vocabulary measures.* Hypothesis 2 was tested with a multi-level analysis with children at the first level nested within classrooms at the second level. The model predicted children’s posttest scores on the target vocabulary assessment using teachers’ rate of target vocabulary elaboration utterances, and children’s pretest scores on the target vocabulary assessment. The child

level predictors were pretest scores on the target vocabulary measure, gender, and age in years, and the teacher level predictor was rate of target vocabulary elaboration utterances.

3. *Teachers who use a relatively higher rate of sophisticated words during book reading will have children who gain more in vocabulary on target measures as well as on distal standardized measures.* Hypothesis 3 was tested with a multi-level analysis with children at the first level nested within classrooms at the second level. The model predicted children's posttest scores on the target and distal vocabulary assessments using teachers' rate of sophisticated word use, and children's pretest scores on the target and distal vocabulary assessments. The child level predictors were pretest scores on the target and distal vocabulary measures, gender, and age in years, and the teacher level predictor was rate of sophisticated word use.

*Contributions of the Child: Variations in child involvement during book reading related to growth in the target vocabulary presented.*

4. *Children with higher levels of involvement during book reading whose teachers a relatively higher rate of vocabulary facilitation will gain more in vocabulary on target measures as well as on distal standardized measures.* Hypothesis 4 was tested with a multi-level analysis with children at the first level nested within classrooms at the second level. Hypothesis 4 included examination of the interaction between all teacher vocabulary utterances and level of child involvement on children's target and distal word learning. The model predicted children's posttest scores on the target and distal vocabulary assessments using children's involvement levels during book reading and children's pretest scores on the target and distal vocabulary assessments. The child level predictors were average rated child involvement, pretest scores on the target and distal

vocabulary measures, gender, and age in years. The teacher level predictor for the interaction was rate of all vocabulary utterances.

5. *Children who produce more target words during reading and have teachers with a relatively higher rate of vocabulary facilitation during book reading will gain more on target vocabulary measures.* Hypothesis 5 was tested with a multi-level analysis with children at the first level nested within classrooms at the second level. Hypothesis 5 included examination of the interaction between all teacher vocabulary utterances and child target production on children's target word learning. The model predicted children's posttest scores on the target vocabulary assessment using the proportion of children's target production during book reading (during what proportion of sweeps the child produced a target vocabulary word) and children's pretest scores on the target vocabulary assessment. The child level predictors were child target word production, pretest scores on the target vocabulary measures, gender, and age in years. The teacher level predictor for the interaction was rate of all vocabulary utterances.

*Contributions of the Text: Genre will affect both teacher style and child vocabulary growth.*

6. *Teachers will use a higher rate of vocabulary facilitation talk when they read non-fiction books than when they read fiction books.* For Hypothesis 6, the individual teacher distributions for frequency of genre reading were examined for skewness. Because the data were not highly skewed, a paired t-test used for significance testing in parametric analyses was conducted for this hypothesis.
7. *Teachers who read more nonfiction books will have children who gain more in vocabulary.* Hypothesis 7 was tested with a multi-level analysis with children at the first level nested within classrooms at the second level. The model predicted children's

posttest scores on the distal vocabulary assessment using teachers' frequency of nonfiction book reading (from the reading log) and children's pretest scores on distal vocabulary assessments. The child level predictors were pretest scores on the distal vocabulary measures, gender, and age in years, and the teacher level predictor was frequency of nonfiction book reading (from the reading log). Fiction book reading was included as a control in order to examine the influence of nonfiction book reading above and beyond the influence of fiction book reading.

## CHAPTER IV

### RESULTS

#### Initial Analyses

##### *Descriptive Results for Quantitative Analyses*

Presented in Table 1 are the means and standard deviations of the target vocabulary pretest and posttest. The scores shown are the percentage of words the child knew correctly, based on the number of possible words for which the child was tested. Depending on the time of the pretest, children were tested on either 17 or 23 target words. The third row of the table shows the percentage gain score for the target assessment, derived by subtracting the percentage of words correct at pretest from the percentage of words correct at posttest. The last row of the table shows the mean vocabulary gain in number of words, derived by subtracting the number of words correct at pretest from the number of words correct at posttest.

Table 1

*Descriptive Statistics for Target Vocabulary Assessment (Guess My Word) (N=93)*

Source	Mean	Minimum	Maximum	SD
Pretest	.30	.00	.74	.17
Posttest	.53	.00	.88	.21
Gain (percentage)	.22	-.09	.53	.13
Gain (number of words)	5	0	12	2.42

*Note.* The first three rows of scores are reported as percentage of possible words correct. Depending on the time of pretest, children were tested on either 17 or 23 target words.

Descriptive data for the pretest and posttest distal vocabulary assessments, the PPVT and the Picture Vocabulary subtest of the WJIII, are presented in Table 2. The pretests were given at the beginning of the preschool year (Fall 2006), and the posttests were given at the beginning of the kindergarten year (Fall 2007). The scores for the children in the study are similar to the average of the standardization sample of 100 (Dunn & Dunn, 1997a; Mather & Woodcock, 2001).

Table 2

*Descriptive Statistics for Distal Vocabulary Assessment (PPVT and WJIII)*

Source	N	Mean	Minimum	Maximum	SD
PPVT Pretest	92	97.86	53	122	13.00
PPVT Posttest	91	104.79	69	128	10.03
Picture Vocabulary Pretest	91	104.79	39	128	11.26
Picture Vocabulary Posttest	91	107.59	90	132	9.45

*Note.* Standard scores are reported. The standard score scales used in the WJIII and PPVT are based on a mean of 100 and a standard deviation (SD) of 15.

Descriptive data for average child involvement for all eight books and for each book are presented in Table 3. Child involvement was rated on a five-point scale (1=low, 2=medium low, 3=medium, 4=medium high, 5=high) and coded live during book reading. Children were observed individually for three seconds and then coded for involvement and target word production. Coding of children continued in sweeps throughout the duration of the book reading. The values in the table for the individual books were derived by dividing the sum of involvement ratings for all sweeps for all children by the total number of sweeps for all children for that book. The mean involvement rating for all books was derived by averaging the involvement scores for all books.

Table 3

*Descriptive Statistics for Child Involvement (Child Observation in Prekindergarten)*

Source	N	Mean	Minimum	Maximum	SD
All books	93	2.24	1.71	3.09	.27
<i>Ugly Vegetables</i>	86	2.36	1.50	3.44	.46
<i>Taking Root</i>	86	2.40	1.20	3.38	.44
<i>Make Way for Ducklings</i>	88	2.09	1.38	2.88	.33
<i>Growing Things</i>	88	2.04	1.31	3.14	.39
<i>Bigger</i>	81	2.34	1.60	3.50	.42
<i>Duck</i>	80	2.21	1.00	3.38	.49

*Note.* Child involvement was coded on a five point scale (1=low, 2=medium low, 3=medium, 4=medium high, 5=high).

Descriptive data for the proportion of child target word production for all eight books and for each book are presented in Table 4. Child target word production was coded live during book reading. Children were observed individually for three seconds and then coded if they said one of the target vocabulary words for that book. Coding of children continued in sweeps throughout the duration of the book reading. A sweep is the interval during which all children were observed once. The table shows the proportion of target words produced overall and per book. The number of sweeps in which a child produced the target word was divided by the total number of sweeps for the child. Book averages were created by averaging the scores for all the children observed

during the reading of that book. For example, a score of .36 for *Bigger* should be interpreted as children producing one of the target words about once every third sweep.

Because book reading times varied, the number of sweeps per book ranged from 7 to 14.

Table 4

*Descriptive Statistics for Child Target Production*

Source	N	Mean	Minimum	Maximum	SD
All books	93	.50	.00	3.70	.99
<i>Ugly Vegetables</i>	86	.00	.00	0.00	.00
<i>Taking Root</i>	86	.81	.00	22.22	3.42
<i>Make Way for Ducklings</i>	88	.24	.00	14.29	1.69
<i>Growing Things</i>	88	.41	.00	11.11	1.91
<i>Bigger</i>	81	.36	.00	12.50	1.88
<i>Duck</i>	80	1.32	.00	14.29	3.77

Descriptive data for the frequency of book reading by genre across classrooms are presented in Table 5. This data represents frequency counts of books that teachers read throughout the duration of the study, which lasted approximately one month, not just the eight books for which teachers were videotaped. Teachers kept records of book title and genre in a reading log. Values are presented for the number of titles and for the total number of readings

because the curriculum recommended that teachers read fiction books three or four times each and nonfiction books once.

Table 5

*Descriptive Statistics for Frequency of All Book Reading by Genre Across Classrooms*

Source	Mean	Minimum	Maximum	SD
Fiction Books Read (Title only)	31.71	24	44	9.07
Nonfiction Books Read (Title only)	17.14	11	23	4.38
Fiction Books Read (Total readings)	52.57	44	63	7.85
Nonfiction Books Read (Total readings)	20.71	17	27	4.15

Descriptive statistics for the teacher variables are presented in Table 6. Values are shown for *all vocabulary utterances*, *world knowledge utterances*, *sophisticated word use*, *teacher target elaboration utterances*, and all vocabulary utterances except for teacher target elaboration utterances. *All vocabulary utterances* represent all the vocabulary talk that goes on during book reading. This group of utterances contains all teachers' extratextual talk and text read and includes target and nontarget vocabulary words and elaborated and nonelaborated vocabulary words. *World knowledge utterances* are teachers' extratextual talk that is related to information about the world. These utterances do not focus on meaning support for specific words but expansion of concepts. *Sophisticated words* were characterized as words not found on the Dale-

Chall list of 3,000 most common words (Chall & Dale, 1995). Sophisticated words also excluded slang and familiar terms used, such as names and words for items familiar to preschool like *cubbie* or *housekeeping*. For more information about the teacher variables, see Appendix J, which is the code book.

All values were prorated for time because teachers read the same books for varying time lengths. Prorating for time was calculated by dividing the total number of utterances by the teacher's book reading time and then multiplying the quotient by a constant value of 15 minutes. Prorating for time creates a value that reflects teachers' rate of vocabulary facilitation during book reading. These density values for teacher utterances reveal individual differences in vocabulary facilitation style. Means are given for all eight books, for the four fiction books, and for the four nonfiction books.

Table 6

*Teacher Language Per Book Overall and Per Genre (N=7)*

Source	Mean	Minimum	Maximum	SD
<i>All Vocabulary Utterances</i>				
Per book	5.95	4.19	8.19	1.44
Nonfiction books	8.20	5.02	12.53	2.66
Fiction books	3.20	2.02	4.25	.67
<i>World Knowledge Utterances</i>				
Per book	3.19	1.38	5.32	1.27
Table 6, continued				
Nonfiction books	4.42	1.14	7.76	2.32
Fiction books	1.96	1.15	3.49	.84
<i>Sophisticated Words</i>				
Per book	19.91	15.07	25.00	3.64
Nonfiction books	19.87	14.08	28.50	4.73
Fiction books	19.94	16.07	27.45	3.83
<i>Teacher Target Elaboration Utterances</i>				
Per book	10.31	6.78	20.57	4.70
Nonfiction books	16.67	9.43	37.43	9.56
Fiction books	3.96	2.55	6.98	1.50

Table 6, continued

*Teacher Language Per Book*

Source	Mean	Minimum	Maximum	SD
<i>All Vocabulary Utterances Except Teacher Target Elaboration</i>				
Per book	5.23	3.76	6.88	1.13
Nonfiction books	6.79	4.29	9.52	1.93
Fiction books	3.08	1.82	3.79	0.65

Values for the percentage of utterance types for all books are presented in Table 7. This information was derived by first summing all teacher utterances for all books. Next, each type of utterance was summed for all books. Then, the sum of all teacher utterances for all books was divided by the sum for each type of utterance. In comparison to the table that provided mean utterance values for the different utterance types, this table shows how much each type of utterance occurred in relation to all teacher utterances.

Table 7

*Percentage of Utterance Types for All Books, Nonfiction Books, and Fiction Books*

Source	All books	Nonfiction books	Fiction books
All Vocabulary Utterances	16.58%	22.19%	9.94%
World Knowledge Utterances	1.26%	1.59%	0.89%
Teacher Vocabulary Elaboration Utterances	4.15%	6.18%	1.91%
All Vocabulary Utterances Except Teacher Elaboration	12.43%	16.00%	8.51%

*Note.* Sophisticated words were calculated by total frequency of use instead of by utterance. Therefore, the percentage of sophisticated word use does not appear in the table.

### Hypothesis Testing

Because the data consisted of children nested in classrooms, it was clear that hierarchical linear modeling was the best data analysis method to use for this study. Due to the small number of classrooms, test coefficients that would be considered statistically significant at the often-used criteria of .05 or .01 were not expected. For this study of seven teachers, p-values near 0.1 were considered to indicate relationships that should be explored further in a larger study. More important than statistical significance, was an examination of the magnitude of effects.

Ferron et al (2006) recommended several reporting practices to include in studies using multilevel modeling in order to clearly explain the data analysis process so that the reader can critique the method and analysis (Ferron et al., 2006). The recommended reporting practices

suggest specifying information about the number of models estimated, the assumed covariance structure, whether predictors were centered, whether data were consistent with assumptions of multilevel modeling, whether outliers were present, and how the models were estimated. The following paragraphs address these issues.

In this study, a two-level model for hierarchical linear modeling was employed. Variables specific to individual children were used at level one. Variables specific to individual teachers were included at level two. Thirteen models were estimated. Due to the small number of classrooms, the between-classrooms variance component was fixed; that is, the the relationship between predictors and outcomes was not allowed to vary across classrooms. Due to the small sample size of seven teachers at level-two, predictors were kept in their natural metrics (uncentered), in order to preserve as many degrees of freedom as possible. One outlying value was present. One teacher's score for teacher target vocabulary elaboration was an outlier (20.57, which was 10.04 points larger than the next smallest value). With only seven teachers in the sample, this outlier had the potential to strongly influence results. The outlying score was recoded to a less extreme value, and the model was run with a Winsorized value of 13.53 for that teacher. The score was recoded to 13.53 because the difference between the lowest value and the next to largest value was fewer than four points ( $10.53 + 3 = 13.53$ ).

The models were estimated based on theory and prior research on vocabulary learning. Outcomes, possible predictors, and covariates were chosen *a priori*. Before estimating the models, four teacher vocabulary variables (world knowledge, sophisticated word use, teacher target vocabulary elaboration utterances, and all vocabulary utterances excluding teacher target elaboration.) were correlated and crosstab ranked to determine whether the variables should be tested individually or as a composite "vocabulary facilitation" variable.

Table 8

*Spearman Correlations among Four Initial Teacher Variables*

	World Knowledge	Sophisticated Words	Teacher Target Elaboration	All Vocabulary Except Teacher Target Elaboration
World Knowledge	—	0.893**	0.571	0.679
Sophisticated Words		—	0.536	0.675
Teacher Target Elaboration			—	0.857**
All Vocabulary Except Teacher Target Elaboration				—

*Note.* \*\* Correlation is significant at the 0.01 level.

As presented in Table 8 above, the test results showed a high correlation between world knowledge utterances and teacher sophisticated word use,  $r = 0.893$ ,  $p < 0.01$ . Due to the high correlation, world knowledge utterances were dropped from the quantitative analyses and sophisticated word use was the variable used in the models. Also, the variable representing vocabulary utterances excluding teacher target elaboration and the variable representing teacher target elaboration utterances were highly correlated,  $r = .857$ ,  $p < 0.05$ . However, because of the theoretical implications of the study, teacher target vocabulary elaboration was retained as a variable, and another variable that included all teacher vocabulary utterances was created. These two variables are not mutually exclusive and therefore are not used together in any analyses. The three teacher variables that were kept as predictors for statistical analysis were *all teacher*

*vocabulary utterances, teachers' sophisticated word use, and teacher target vocabulary elaboration utterances.*

For the thirteen multilevel models that were used to test six of the seven study hypotheses, multiple outcomes and predictors were employed, depending on the hypothesis and model. Overall, outcomes included three vocabulary assessments- a target vocabulary test and two distal standardized vocabulary measures, the PPVT (Dunn & Dunn, 1997a) and Picture Vocabulary subtest of the WJIII (Mather & Woodcock, 2001). Final predictors were three teacher variables (sophisticated word use, all vocabulary utterances, and teacher target vocabulary utterances) at level-two and two child variables (average child involvement during book reading and mean proportion of child target vocabulary production) at level-one. For the models that included child involvement and target production, interaction effects between involvement and teacher vocabulary facilitation and between target production and teacher vocabulary facilitation were examined. In those models, the reduced form model was used, with both the variables involved in the interaction included separately as main effects plus the interaction. Also included in the models were the covariates of age, pretest score for the three vocabulary assessments, and gender. Covariates were included to control for specific factors in order to reduce variance and improve the precision of the study. Covariates help explain the variance in the outcome. Age, pretest, and gender are common covariates used in the literature that often significantly predict outcomes. When interpreting the results, the fixed effects model without robust standard errors was used, again due to the small sample size not meeting the requirements for the robust fixed effects coefficients to be applicable. See Appendix K for the equations for all multilevel models.

*Contributions of the Teacher: Variations in Teacher Language During Book Reading will be Related to Child Growth in Vocabulary*

Hypothesis 1: *Teachers who use a relatively higher rate of vocabulary facilitation talk during book reading will have children who gain more in vocabulary on target measures as well as on distal standardized measures.* Three models were used to test this hypothesis. The outcome variables for the models were 1) percentage correct on the target vocabulary posttest, 2) standard score for the PPVT posttest, and 3) standard score for the Picture Vocabulary posttest. The predictor for the models was all teacher vocabulary utterances. This variable included target and non-target vocabulary utterances as well as elaborated and non-elaborated vocabulary utterances spoken by the teacher. The variable also included utterances read from the text as well as teachers' extratextual talk. The *all teacher vocabulary utterances* variable was prorated for time because teachers read the same books for varying time lengths. Covariates for the models were the appropriate pretest score, age at the time of posttest, and gender.

The values in the Table 9 come from the HLM output of final estimation of fixed effects. For this model, the coefficient for all teacher vocabulary utterances was positive but not significant. Hypothesis 1 was not supported for target vocabulary gain.

Table 9

*Results for the Influence of All Teacher Vocabulary Utterances on Target Vocabulary Outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept	-0.29	0.19	88	0.127
All teacher vocabulary utterances	0.01	0.01	88	0.599
Target pretest score	0.95***	0.08	88	0.000
Gender	0.04*	0.03	88	0.094
Age	0.09***	0.04	88	0.013

*Note.* \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$ .

The values in Table 10 come from the HLM output of final estimation of fixed effects. For this model, the coefficient for all teacher vocabulary utterances was significant and negative. The interpretation for this model is that for every one unit increase in the rate of teacher vocabulary utterances, the PPVT score decreases by 1.26. Because the unstandardized coefficient was significant and negative, hypothesis 1 was not supported for PPVT vocabulary gain.

Table 10

*Results for the Influence of All Teacher Vocabulary Utterances on PPVT outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept	80.77***	12.35	97	0.000
All teacher vocabulary utterances	-1.26**	0.59	97	0.033
PPVT pretest score	0.51***	0.06	97	0.000
Gender	0.11	1.57	97	0.944
Age	-4.29**	2.13	97	0.04

*Note.* \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

The values in Table 11 come from the HLM output of final estimation of fixed effects. For this model, the coefficient for all teacher vocabulary utterances was positive but not significant. Hypothesis 1 was not supported for the Picture Vocabulary outcome.

Table 11

*Results for the Influence of All Teacher Vocabulary Utterances on Picture Vocabulary Outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept	71.83***	14.42	96	0.000
All teacher vocabulary utterances	0.04	0.61	96	0.955
Picture Vocabulary pretest score	0.50***	0.06	96	0.000
Gender	0.71	1.68	96	0.672
Age	-1.68	2.27	96	0.460

*Note.* \*\*\* $p < .01$

In sum, the coefficient for all teacher vocabulary utterances for the target assessment outcome was positive but not significant, the coefficient for the PPVT outcome was negative and significant, and the coefficient for the Picture Vocabulary outcome was positive and not significant. Therefore, hypothesis 1, stating that the rate of *all teacher vocabulary utterances* would increase growth on the target or distal vocabulary measures, was not supported.

Hypothesis 2: *Teachers who have a relatively higher rate of elaborated target vocabulary facilitation during book reading will have children who gain more on target vocabulary measures.* One model was used to test this hypothesis. The outcome variable for the model was

percentage correct on the target vocabulary posttest. The predictor for the model was the rate of teacher utterances involving target vocabulary elaboration. The variable included only teachers' extratextual talk, not utterances where teachers read the book text. This variable was prorated for time because teachers read the same books for varying time lengths. Covariates for the model were the target vocabulary pretest score, age at the time of posttest, and gender. The predictor variable, teacher target vocabulary elaboration utterances, included one outlying value. One teacher's score for teacher target vocabulary elaboration was an outlier (20.57, which was 10.04 larger than the next smallest value). With only seven teachers in the sample, this outlier had the potential to strongly influence results. The score was recoded to a less extreme value, and the model was run with a Winsorized value of 13.53 for that teacher. The score was recoded to 13.53 because the difference between the lowest value and the next to largest value was less than four points ( $10.53 + 3 = 13.53$ ). The Winsorized model is reported in this analysis.

The values in Table 12 come from the HLM output of final estimation of fixed effects. For this model, the coefficient for teacher target vocabulary elaboration utterances was positive and approached significance at the 0.1 level. The positive coefficient indicates that there is a possible trend toward growth in target vocabulary score as the rate of teacher target vocabulary elaboration utterances increase. The interpretation for this model is that for every one unit increase in the rate of teacher target vocabulary elaboration utterances, target vocabulary assessment score increases by 0.0098.

Table 12

*Results for the Influence of Teacher Target Vocabulary Elaboration Utterances on Target Vocabulary Outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept	-0.32*	0.18	88	0.079
Teacher target vocabulary elaboration utterances	0.01	0.01	88	0.111
Target pretest score	0.96***	0.08	88	0.000
Gender	0.05**	0.03	88	0.056
Age	0.08***	0.04	88	0.019

*Note.* \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

In sum, according to commonly-used p-values, hypothesis 2 was not supported for the target vocabulary outcome. However, due to the small sample size of seven teachers in the study, the unstandardized coefficient suggests the value of future work with a larger sample that might contain greater variation in teacher performance.

Hypothesis 3: *Teachers who use a relatively higher rate of sophisticated words during book reading will have children who gain more in vocabulary on target measures as well as distal standardized measures.* Three models were used to test this hypothesis. The outcome variables for the models were 1) percentage correct on the target vocabulary posttest, 2) standard score for the PPVT posttest, and 3) standard score for the Picture Vocabulary posttest. The predictor for the models was the rate of average sophisticated words used by the teacher during all book reading sessions. Sophisticated words were defined as words not found in the Dale-

Chall list of 3,000 common words (Chall & Dale, 1995). Slang terms (*gonna*), proper nouns (*Townboro, Miss Sue*), and familiar terms (*cubbie, housekeeping*) were also excluded from the sophisticated word count. Each teacher got a score for sophisticated word use for each book. As with the other teacher variables, this score was prorated for time of book reading. The sophisticated word variable was prorated for time because teachers read the same books for varying time lengths. Teachers' sophisticated words use was averaged across the eight book readings. Covariates for the models were the appropriate pretest score, age at the time of posttest, and gender.

The values in Table 13 come from the HLM output of final estimation of fixed effects. For this model, the coefficient for teacher sophisticated word use was positive but not significant. The interpretation for this model is that for every one unit increase in the rate of teacher sophisticated word use, target vocabulary gain increases by .0016. Thus, hypothesis 3 was not supported for target vocabulary gain.

Table 13

*Results for the Influence of Sophisticated Word Use on Target Vocabulary Outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept	-0.29	0.19	88	0.134
Teacher sophisticated word use	0.01	0.01	88	0.675
Target pretest score	0.95***	0.08	88	0.000
Gender	0.04*	0.03	88	0.096
Age	0.09***	0.04	88	0.013

Note. \*\*\* $p < .01$ , \* $p < .1$

The values in Table 14 come from the HLM output of final estimation of fixed effects.

For this model, the coefficient for teacher sophisticated word use was negative but not significant.

Thus, hypothesis 3 was not supported for PPVT vocabulary gain.

Table 14

*Results for the Influence of Teacher Sophisticated Word Use on PPVT outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept	79.59***	13.25	97	0.000
Teacher sophisticated word use	-0.12	0.23	97	0.616
PPVT pretest score	0.49***	0.06	97	0.000
Gender	0.31	1.61	97	0.847
Age	-4.63**	2.17	97	0.036

Note. \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

The values in Table 15 come from the HLM output of final estimation of fixed effects. For this model, the coefficient for teacher sophisticated word use was positive but not significant. Thus, hypothesis 3 was not supported for the Picture Vocabulary outcome.

Table 15

*Results for the Influence of Teacher Sophisticated Word Use on Picture Vocabulary Outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept	70.02***	15.00	96	0.000
Teacher sophisticated word use	0.09	0.24	96	0.695
Picture Vocabulary pretest score	0.43***	0.08	96	0.000
Gender	0.78	1.68	96	0.643
Age	-1.69	2.26	96	0.456

*Note.* \*\*\* $p < .01$

In sum, the coefficient for teacher sophisticated word use for the target assessment outcome was positive but not significant, the coefficient for the PPVT outcome was negative and not significant, and the coefficient for the Picture Vocabulary outcome was positive and not significant. Therefore, hypothesis 3, stating that teacher sophisticated word use would increase growth on the target and distal vocabulary measures, was not supported.

*Contributions of the Child: Variations in Child Involvement During Book Reading will be Related to Child Growth in the Target Vocabulary Presented*

Hypothesis 4: *Children with higher levels of involvement during book reading and whose teachers use a relatively higher rate of vocabulary facilitation during book reading will gain more in vocabulary on target measures as well as on distal standardized measures.* This hypothesis involves an interaction between child involvement and teacher vocabulary facilitation. Three models were used to test this hypothesis.

The outcome variables for the models were 1) percentage correct on the target vocabulary posttest, 2) standard score for the PPVT posttest, and 3) standard score for the Picture Vocabulary posttest. An interaction between a child level and teacher level predictor was used in the models. The predictor for the models at the child level was average child involvement for all book readings. Child involvement was coded live and rated on a five-point scale (1=low, 2=medium low, 3=medium, 4=medium high, 5=high). Coding of children continued in sweeps throughout the duration of each book reading. Average involvement per book reading was derived by dividing the sum of involvement ratings for all sweeps by the total number of sweeps for that book. The mean involvement rating for each child for all books was derived by averaging the involvement scores for each child for all books.

The predictor for the models at the teacher level was the rate of all teacher vocabulary utterances. The teacher variable was prorated for time because teachers read the same books for varying time lengths. Teachers' vocabulary utterances were averaged across the eight book readings. Covariates for the models were the appropriate pretest score, age at the time of posttest, and gender.

The values in Table 16 come from the HLM output of final estimation of fixed effects. For this model, the coefficient for the main effect for all teacher vocabulary utterances was positive but not significant. The main effect for child involvement was positive but not significant. Thus, hypothesis 4 was not supported for target vocabulary gain.

Table 16

*Results for the Interaction of Child Involvement and Teacher Vocabulary Utterances on Target Vocabulary Outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept for main effect of all teacher Vocabulary utterances	-0.72	0.64	88	0.265
Main effect of all teacher vocabulary utterances	0.07	0.10	88	0.486
Main effect of child involvement	0.20	0.27	88	0.473
Interaction effect of all teacher vocabulary utterances and child involvement	-0.03	0.04	88	0.518
Target pretest score	0.94***	0.09	88	0.000
Gender	0.05*	0.03	88	0.097
Age	0.09***	0.04	88	0.013

*Note.* \*\*\* $p < .01$ , \* $p < .1$

The values in Table 17 come from the HLM output of final estimation of fixed effects. For this model, the coefficient for the main effect of all teacher vocabulary utterances was negative and significant. The negative coefficient indicates that PPVT score decreases as teacher

vocabulary utterances increase. However, the coefficient for the interaction effect of average child involvement in the presence of all teacher vocabulary utterances was significant and positive. The positive coefficient indicates that PPVT increases as child involvement during book reading increases in the presence of teacher vocabulary facilitation.

Table 17

*Results for the Interaction of Child Involvement and Teacher Vocabulary Utterances on PPVT Outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept for main effect of all teacher vocabulary utterances	162.77***	37.43	95	0.000
Main effect of all teacher vocabulary utterances	-14.02***	5.62	95	0.015
Main effect of child involvement	-37.50**	15.88	95	0.020
Interaction effect of all teacher vocabulary utterances and child involvement	5.81**	2.55	95	0.025
PPVT pretest score	0.54***	0.07	95	0.000
Gender	-0.28	1.60	95	0.862
Age	-4.60**	2.15	95	0.035

*Note.* \*\*\* $p < .01$ , \*\* $p < .05$

Figure 1 graphically represents the interaction between all teacher vocabulary and child involvement levels during book reading. The blue line represents teacher vocabulary utterances below the median. Blue circles represent children in those classrooms. The green line represents teacher vocabulary utterances above the median. Green circles represent children in those

classrooms. The black line represents child involvement. The combination of low child involvement and low teacher vocabulary utterances resulted in greater PPVT gains than low child involvement and high teacher vocabulary utterances. Also, the combination of high child involvement and high teacher vocabulary utterances resulted in greater PPVT gains than high child involvement and low teacher vocabulary utterances. These results suggest that when the level of child involvement is matched to the amount of teacher vocabulary utterances, vocabulary learning during book reading may be optimized. Because the interaction coefficient was positive and significant, hypothesis 4 was supported for PPVT vocabulary gain.

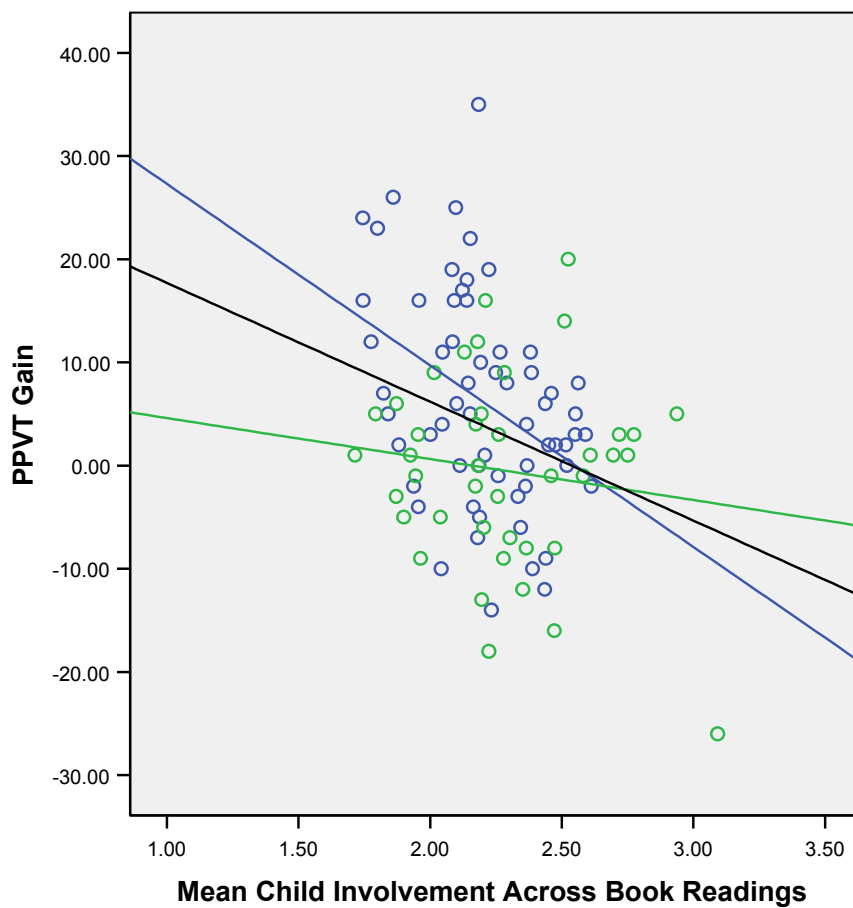


Figure 1. Interaction graph for all teacher vocabulary utterances and child involvement.

The values in Table 18 come from the HLM output of final estimation of fixed effects. For this model, the coefficients for the main effect of all teacher vocabulary utterances, the main effect of child involvement, and the interaction effect were not significant. Because the interaction coefficient was not significant, hypothesis 4 was not supported for Picture Vocabulary gain.

Table 18

*Results for the Interaction of Child Involvement and Teacher Vocabulary Utterances on Picture Vocabulary Outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept for main effect of all teacher Vocabulary utterances	129.03***	41.44	94	0.003
Main effect of all teacher vocabulary utterances	-9.41	6.04	94	0.122
Main effect of child involvement	-21.98	16.97	94	0.199
Interaction effect of all teacher vocabulary utterances and child involvement	4.32	2.75	94	0.119
Picture Vocabulary pretest score	0.39***	0.08	94	0.000
Gender	-0.12	1.71	94	0.945
Age	-2.69	2.30	94	0.246

*Note. \*\*\* $p < .01$*

Hypothesis 5: *Children who produce more target words during book reading and have teachers with a relatively higher rate of vocabulary facilitation during book reading will gain more on target vocabulary measures.* This hypothesis involves an interaction between child target vocabulary production and teacher vocabulary facilitation. One model was used to test this hypothesis.

The outcome variable for the model was percentage correct on the target vocabulary posttest. An interaction between a child level and teacher level predictor was used in this model. The predictor for the model at the child level was the mean proportion of child target vocabulary production for all book readings. The predictor for the models at the teacher level was the rate of all teacher vocabulary utterances. The teacher variable was prorated for time because teachers read the same books for varying time lengths. Teachers' rate of vocabulary utterances were averaged across the eight book readings. Covariates for the model were the target pretest score, age at the time of posttest, and gender.

The values in Table 19 come from the HLM output of final estimation of fixed effects. For this model, the coefficient for the main effect of all teacher vocabulary utterances on target vocabulary measures was not significant. The coefficient for the main effect of child target vocabulary production on target vocabulary measures was not significant. The coefficient for the interaction effect of child target vocabulary production in the presence of all teacher vocabulary utterances on target vocabulary measures was not significant. Thus, hypothesis 5 was not supported for target vocabulary gain.

Table 19

*Results for the Interaction of Child Target Vocabulary Production and Teacher Vocabulary Utterances on Target Vocabulary Outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept for main effect of all teacher vocabulary utterances	-0.27	0.19	86	0.160
Main effect of all teacher vocabulary utterances	0.00	0.01	86	0.928
Main effect of child target production	-0.04	0.05	86	0.409
Interaction effect of all teacher vocabulary utterances and child target production	0.01	0.01	86	0.350
Target pretest score	0.94***	0.08	86	0.000
Gender	0.04*	0.03	86	0.096
Age	0.09**	0.04	86	0.011

*Note.* \*\*\* $p < .01$ , \*\* $p < .05$ , \* $p < .1$

*Contributions of the Text: Genre will Affect Both Teacher Utterances and Child Vocabulary Growth*

Hypothesis 6: *Teachers will use a higher rate of vocabulary facilitation talk when they read nonfiction books than when they read fiction books.* The variables used to test this hypothesis were the rates of teacher vocabulary utterances for fiction and nonfiction book reading. First, skewness of the distributions of the number of teacher vocabulary utterances per genre was examined. Upon determining that the distributions were appropriate for a parametric

analysis, this hypothesis was tested with a paired samples t-test for dependent samples. Table 20 presents descriptive statistics for the teacher vocabulary utterances per genre.

Table 20

*Descriptive Statistics for Teacher Vocabulary Utterances per Genre*

Source	N	Mean	SD
Teacher vocabulary utterances for fiction book reading	7	21.75	4.73
Teacher vocabulary utterances for nonfiction book reading	7	50.32	19.32

The results for the paired samples t-test for dependent samples showed that teachers used significantly more vocabulary utterances during nonfiction book reading,  $t(6) = 4.15, p = 0.006$  (two-tailed). Due to the significance of the results, hypothesis 6, stating that teachers use a higher rate of vocabulary utterances when reading nonfiction books, was supported.

*Hypothesis 7: Teachers who read more nonfiction books will have children who gain more in vocabulary.* Two models were used to test this hypothesis. The outcome variables for the models were 1) standard score for the PPVT posttest, and 2) standard score for the Picture Vocabulary posttest. The predictor for the models was the total number of nonfiction books read by the teacher during the course of the study, which lasted approximately one month. The models also included a control for the number of fiction books read. Covariates for the models were the appropriate pretest score, and gender.

The values in Table 21 come from the HLM output of final estimation of fixed effects. For this model, the coefficient for the number of nonfiction books read was positive but not significant. Thus, hypothesis 7 was not supported for PPVT vocabulary gain.

Table 21

*Results for the Influence of the Number of Nonfiction books read on PPVT outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept	65.49***	14.95	96	0.000
Nonfiction books read	0.07	0.21	96	0.728
Fiction books read	0.15	0.11	96	0.165
PPVT pretest score	0.49***	0.06	96	0.000
Gender	0.61	1.62	96	0.709
Age	-4.31*	2.18	96	0.051

*Note.* \*\*\* $p < .01$ , \* $p < .1$

The values in Table 22 come from the HLM output of final estimation of fixed effects. For this model, the coefficient for the number of nonfiction books read was negative and not significant. Thus, hypothesis 7 was not supported for Picture Vocabulary gain.

Table 22

*Results for the Influence of the Number of Nonfiction books read on Picture Vocabulary Outcomes*

Fixed Effect	Coefficient $\beta$	SE	d.f.	p-value
Intercept	64.55***	16.93	95	0.000
Nonfiction books read	-0.22	0.22	95	0.317
Fiction books read	0.13	0.11	95	0.228
Picture Vocabulary pretest score	0.44***	0.08	95	0.000
Gender	1.13	1.68	95	0.501
Age	-1.25	2.26	95	0.580

*Note.* \*\*\* $p < .01$

## Secondary Analyses

### *Results of Qualitative Analyses*

The purpose of this section is to provide illustrative examples of the ways that teachers in the study read fiction and nonfiction books. Examples are given for three areas relating to teacher and text contributions to vocabulary learning-- talk that teachers used that is representative of successful strategies found in the literature, talk that might interfere with word learning, and

ways that the text influenced how teachers read books. Excerpts from transcripts are supported by interview data from teachers.

Examples were taken from the 56 transcripts of teachers' book readings of both genres. The analytic process of examining the transcripts was recursive in nature. Some illustrations and patterns of teacher talk emerged as the transcripts were read prior to and during coding of teacher utterances. In addition, following quantitative analyses, the transcripts were reexamined for further examples to contextualize findings and explain results. That is, some of the patterns found among teachers emerged from the transcripts and others were sought as examples to inform and explain quantitative results.

### Illustrations of Teachers' and Text Contributions to Word Learning

#### *Examples of Best Practice*

The teachers in the study used several strategies for vocabulary support that reflected best practice as defined in the literature. For example, teachers used styles similar to the performance-oriented style (Dickinson & Smith, 1994), provided multiple elaborations of target words (Elley, 1989; Justice et al, 2005; Penno et al, 2002; Robbins & Ehri, 1994), labeled objects and gave children opportunities to manipulate those objects (Wasik & Bond, 2001), and prompted children to generate target words (Ewers & Brownson, 1999; Senechal, 1997). In a future study with a larger sample, these strategies from the literature could influence effects on word learning. Illustrations from teacher transcripts that were similar to the successful intervention procedures and strategies from the literature follow. Note that in all excerpts, pseudonyms are used in place of student and teacher names, and utterances are not necessarily contingent. At the beginning of

an utterance, identifiers such as T for teacher, C for child, and G for group, are used. Target words are in bold.

The first excerpt is an illustration of the performance-oriented style (Dickinson & Smith, 1994). The excerpt does not focus on the teacher's dramatic reading of the text but highlights the after-reading analysis that focused on a specific aspect of the story and included an open-ended question of high cognitive demand.

T *What do you think a mother duck does to take care of her babies?*

T *What does the mother duck do, what does any kind of mother duck do, to take care of her babies?*

C *She feeds them.*

T *Feeds them, ok, that's good.*

T *What's something else a mother duck would do to take care of her babies, Ned?*

C *Give them safe.*

T *Keep them safe, ok, that's a good one.*

T *Can you think of something else a mother duck would do to keep, to take care of her ducklings?*

C *They would, she would, take care of them and would watch out for them in case something in case a snapping turtle gets in the water and tries to x that would make them die.*

T *Ok, she would take care of them and watch and make sure a snapping turtle or another animal doesn't try to come and get them and eat them.*

T *Kelly, what do you think the mother does to take care of the ducklings?*

C *Waters and feeds 'em.*

T *Make sure they get water and food, good.*

T *What is something else you thought of that their mother might do?*

C *Keep them safe from the foxes.*

T *Ok, keep them safe from the foxes, good.*

T *Anybody else want to add anything else you've thought of?*

[Three more students list animals that might hurt ducklings].

T *Ok, gotta keep them safe from all those animals that might hurt them.*

A different teacher from the one in the excerpt commented on book reading style in an interview response. One of the interview questions asked teachers how they would train a student teacher to read books out loud, considering children's vocabulary learning. The following teacher's response indicates her use of vocabulary support and dramatic reading, two ideas that connect to Dickinson and Smith's (1994) *performance-oriented* style.

*Make the vocabulary word come alive if at all possible. Do it with your voice and with actions. Reread the sentence with the definition. For example: 'Sol saw his reflection in the pail.' Sol saw himself in the pail. 'It was a monumental crash.' It was a huge very noisy crash. Have the students repeat the word after you, but in a way that would not disrupt the flow of the story. Help the students relate the word to something you know the children are familiar with. For example: They are not familiar with the term escalator at a department store, because Department Store is not a term we use often in the South. But they are familiar with a Mall and they can relate seeing an escalator at the [local mall].*

The next excerpts are examples from two teachers of multiple elaborations of target words, which is a strategy that is supported in the literature (Elley, 1989; Justice et al, 2005; Penno et al, 2002; Robbins & Ehri, 1994). The two excerpts elaborate on the meaning of two target words, *womb* and *root*. In the examples, elaboration consists of reading the text, giving a definition, and using example sentences.

womb excerpt

T [text] *But every day, in the darkness of my mother's **womb** I grew.*

T *Now in my mother's **womb**.*

T *Um, a **womb** is a really special place inside a mommy where babies grow until they are ready to be born.*

T *This baby is tiny inside his mommy's **womb**.*

T *Inside his mom's **womb**.*

root excerpt

T *This is about different vegetables that grow that are **roots**.*

T ***Roots** grow down in the ground.*

T *And we said carrots are a **root**.*

T *The **roots** grow under the ground.*

T *When you eat a carrot you're eating a **root**.*

Teacher interview data corroborated that the teachers felt strongly about defining words; all seven teachers talked about defining words at some point in their interview responses. One teacher commented, *"The most important thing is to define new words to the students as you come to them in the story. If there is a picture of the new word, show it to the students to help them add this new word to their vocabulary."*

The next excerpt is an example of the teacher labeling an object and providing an opportunity for children to manipulate the object. In the example, the teacher is labeling and showing buckets of regular soil and potting soil. These utterances occurred during the after-reading portion of a nonfiction book reading. The children were allowed to touch the soil and later used soil to plant seeds and played with soil during center time in the sensory bin. These

utterances and the subsequent activities gave children the opportunity to use the words throughout the day, similar to the methods used by Wasik and Bond (2001).

T *What did we say another word for soil was?*

C *Dirt.*

T *Dirt.*

T *This is what we call potting soil* (teacher holds bucket of potting soil).

C *What's in that other bucket?*

T *Well that's just some other regular soil.*

T *But this is potting soil.*

C *We wanna see that other one!*

T *I'm gonna show you both.*

T *Potting soil is very, very thin.*

T *It's not thick like our dirt at all.*

T *It's got these itty bitty little white pieces in it.*

[discussion of fertilizer occurs]

T *This is just regular soil or dirt* (teacher holds bucket of dirt).

T *What is soil, soil is the same thing as?*

C *As dirt.*

T *Soil is the same thing as dirt, that's right.*

All of the seven teachers used props with at least two of the four nonfiction books. When reading fiction, on the other hand, only one teacher used a prop, with only one of the books. In the interviews, all seven teachers commented that props were necessary for use with nonfiction

books, to help children attend to, identify with, and understand the text. Comments from four teachers' interviews follow.

*“Non-fiction usually requires or allows me to use more pictures, props, and other non-fiction books.”*

*“If we are reading a non-fiction text, I try to have some real life things that go along with the story to help make it more interesting for the students.”*

*“Sometimes, because children tend to identify less with ideas in nonfiction books, tangible props are good for drawing children back in...for redirecting focus. Also, props help make ideas from the book real to children. Realizing that something from a book can be made, held, or examined makes it a little more interesting and identifiable.”*

*“I use as many props as possible to teach vocabulary and concepts for both fiction and nonfiction. Preschool children are very concrete in their thinking so props are very helpful in helping them to understand new ideas.”*

The final illustrations of successful strategies from the literature found in the study classrooms focus on child target word production. Encouraging children to generate target words was found to be beneficial in the literature (Ewers & Brownson, 1999; Senechal, 1997). In the excerpts, the teachers used prompts for target words in conjunction with target elaboration utterances. In other words, the prompt to repeat the word was immediately adjacent to, or very near, an utterance that elaborated the meaning of the word. The first example falls within several utterances of the teacher's extratextual talk. The second example follows a line from the text.

*soil* excerpt

T **Soil** is another word for dirt.

T Can you say **soil**?

G **Soil**.

T Good.

*root* excerpt

T [text] The **root** that grows out of the seed is called the primary **root**.

T And that means the main **root**.

T The biggest **root**.

T Let's say that word together.

T Primary.

T Say that.

G Primary.

T Good.

T That means it's the main **root**.

Two of the seven teachers commented in an interview response that providing opportunities for children to say words was important. One teacher's comment is included here.

*"The most important thing to remember when working on building a child's vocabulary is to get the words into his/her mouth. Allow the children to repeat the words with you. The teacher should use the word(s) many times during the day and if possible point out when the children use the word in discussions or individual conversations."*

This strategy was found in this teacher's transcripts, as with all teachers at some point during book reading. However, the teacher who prompted children to say words the most frequently did not mention the strategy in her interview responses.

### *Examples of Less-than-Effective Practice*

In addition to looking for examples of best practice, the transcripts were examined to determine what teachers did that might have been less effective, even though their utterances would have been coded as supporting vocabulary. One example of less-than effective practice was that, at times, teachers demonstrated instances of poor vocabulary support. The excerpts below illustrate imprecise definitions or confusing examples. In the first excerpt, the teacher gives an imprecise definition of the target word *chop*. In the second excerpt, the teacher's utterances may confuse the children because sand is not always dry. If the children have experiences with the ocean, then their prior knowledge may involve wet sand. These two excerpts are examples where teachers' vocabulary talk may have interfered with children's word learning.

#### *chop* excerpt

T *And the mother, she was having a really tough time **chopping** things.*

T *That's when, you know, when you cut them in half.*

#### *dry* excerpt

T *Is it (sand) wet or **dry**?*

T ***Dry**, usually sand is very very **dry**.*

T *And it's, it's a really **dry**, grainy soil.*

Another example of less-than-effective practice may be the improper balance of vocabulary support, in that teachers may have used too many vocabulary utterances that may have led to or occurred during low child involvement. In the excerpt below, which focuses on the sophisticated word *aroma*, the teacher made 23 contingent utterances (not all are shown here) about the word *aroma*. Her string of utterances included only one child comment. It is possible that she spent too much time on a single word and the children were uninvolved during that portion of the story.

*aroma* excerpt

T *An **aroma** is a beautiful smell, everybody (sniff).*

T *Um, it's like outside after it rains there's an **aroma**.*

T *Yesterday at the zoo there was a beautiful **aroma** by the restaurant.*

T *That's an **aroma**.*

T *And look at how the artist made the wind carry this **aroma**.*

T *Here goes the **aroma** (points to illustration).*

The last point refers to the content of the *other* talk during book reading. As previously mentioned, 17% of all teacher utterances were related to vocabulary support. Other, non-coded, talk included text connections, retelling story events after reading text and after showing pictures, talk related to management and behavior, and recalling story events after reading. The other talk that occurred during book reading, especially teachers' management and behavior talk that interrupted the flow of the text, may have negatively influenced children's word learning.

The previous section illustrated teachers' contributions to word learning in the form of more- and less- effective examples of vocabulary support. The next section focuses on the

contributions of the text to word learning and how the nonfiction genre influenced teachers' reading.

### *Teachers' Differential Reading of Text by Genre*

In the literature, research has been done with students and text structure. Pappas (1991, 1993) examined the ways that students relied on genre structure to construct retellings of text. The influence of genre on teachers' book reading has been comparatively less explored. This study examined genre and its influence on the teachers' reading of the text.

The teachers' comfort level with reading nonfiction text may have influenced their differential reading of those texts. In the interview responses, all seven teachers stated that they thought children prefer fiction texts or identify better with stories. The following interview responses are examples of teachers' comments that children prefer fiction texts.

*"I think my children are attentive and interested while participating in Story Time [fiction book reading]. They do seem to enjoy fictional stories more than information-type books. This is typical, I know, but another reason could be because fictional books are easier for children to relate to."*

*"I think that most preschoolers prefer to listen to fiction books. I think that has a lot to do with the fact that fiction books tell a story and allow students to use their imagination, while non-fiction is just presenting children with facts."*

Notably, teachers read more fiction texts than nonfiction texts. Also, since the teachers stated that props were necessary to hold the children's attention during nonfiction reading, perhaps teachers may be more comfortable reading fiction texts to children. This information

from teachers' book reading and interviews connects to other researchers' findings that teachers prefer fiction texts (Pappas, 1993; Yopp & Yopp, 2006).

Another influence of the text on teachers' book reading was in the way that two of the teachers chose to set up the reading of nonfiction books. The excerpts below show examples of talk about genre. These two teachers used extratextual utterances before reading nonfiction books to let the children know that the book they were about to hear was not fiction. These two teachers set up each nonfiction reading in this way; the other teachers often made connections to fiction titles with the same themes, but they did not talk specifically about genre differences. Conversely, no teachers set up fiction book readings with talk about genre or by contrasting features or structure of fiction and nonfiction books.

*information book excerpt*

T *It's a different kind of book than the one that we read this morning.*

T *This book is an information book.*

T *Now we've said that word lots of times in here but let's say it together.*

T *Information book.*

G *Information book.*

T *This book has lots of different ideas and information, about shadows.*

T *This morning's book, dreams, that was about shadows too.*

T *But it didn't give us any information about shadows, it just told us a story about shadows.*

T *So this book is a little different.*

T *Sometimes when we sit on the group rug we read information books that tell us more about how to do something or how to make something or some other kind of information.*

T *There aren't any characters in this book, like Roberto and Amy were characters in our other story Dreams.*

T *This is not a story book.*

T *This is a book that has information about shadows.*

T *And the title, this book is like the other one it still has a title, and it still has an author.*

T *But there aren't characters like there were in our other book.*

*science book excerpt*

T *Alright, I have another new story.*

T *And it's called Growing Things.*

T *This is not a story book like Make Way for Ducklings.*

T *Even though there's a pretend little duck on the front and potato heads, this is a science book.*

T *It's called nonfiction.*

T *It's not make believe; it's real.*

T *It's going to tell us some real things we can do.*

In addition to setting up nonfiction book reading differently than fiction book reading by using genre talk, sometimes teachers also read the text of nonfiction books differently. Several teachers added the words “it says” or “now it tells us” before reading some of the text in nonfiction books. The utterances in the following examples were modifications of text utterances. They were used for text and for section headings (“see a sunflower grow”). More than one teacher chose to add the qualifier “it says” or “now it tells us” before reading the text in the nonfiction books. Note that the utterances are not dialogue. One interpretation for this style of reading is that teachers added phrases to note that nonfiction book provides information. Not

every line of text was read in this way, but multiple teachers used these types of utterances with the nonfiction books.

T *It says, put some cotton on a saucer.*

T *It says, water the beans whenever the paper feels dry.*

T *Now it says, see a sunflower grow.*

T *It says, fill a pot with soil.*

T *And it says, dig a hole for each plant.*

In conclusion, the teachers read all of the fiction texts but chose to read varying amounts of the nonfiction texts, possibly due to the structure of the text and corresponding activities. In addition to only reading portions of nonfiction texts, some teachers chose to paraphrase text information. One teacher commented in an interview response, *“I sometimes do not read all of the words and paraphrase what the [nonfiction] book says.”* Another teacher wrote, *“If there are several pictures [in a nonfiction book], then I normally look at the pictures and tell the story in my own words.”* Sometimes this involved replacing rich vocabulary with more simple words, or omitting some words and concepts. Teachers read fewer nonfiction texts than fiction texts over the course of the study. However, they used more vocabulary utterances with nonfiction texts than with fiction texts. Often with fiction texts, the extratextual talk focused on retelling the previously read text or describing illustrations. This talk focused on story events and not necessarily on vocabulary or conceptual knowledge. Alternatively, while teachers also used retelling talk in nonfiction texts, they tended to include vocabulary talk about target words or difficult words more often with nonfiction texts. More after-reading talk occurred in fiction reading, when teachers recapped the story events and asked students comprehension questions or

elicited personal connections. This talk focused more on recalling story events than analysis or vocabulary. With nonfiction texts, teachers used less after-reading talk.

## CHAPTER V

### SUMMARY, DISCUSSION, AND CONCLUSION

This study included seven hypotheses that focused on the contributions of the teacher, child, and text during book reading to target and distal standardized vocabulary outcomes in preschool. Due to the small number of classrooms, test coefficients that would be considered statistically significant at the often-used criteria of .05 or .01 were not expected. For this study of seven teachers, p-values near 0.1 were considered to indicate relationships that should be explored further in a larger study.

#### Summary of Hypotheses

##### *Contributions of the Teacher*

The first set of hypotheses focused on the contributions of the teacher to children's word learning. Three hypotheses pertaining to the influence of *all teacher vocabulary utterances*, *teacher target elaboration utterances*, and *teacher sophisticated word use* on three outcomes of children's word learning were tested. All hypotheses were disconfirmed for all outcomes. The result for the influences of *teacher target elaboration utterances* on children's target vocabulary learning approached significance.

##### *Contributions of the Child*

The second set of hypotheses focused on the contributions of the child, in the presence of teacher vocabulary support, to children's word learning. Two hypotheses pertaining to *child*

*involvement level* and *child target word production* on three outcomes of children's word learning were tested. The hypothesis related to *child involvement level* was confirmed for only one outcome, and that was for PPVT gain. The significant result was that the interaction of the rate of teacher vocabulary support and child involvement was related to PPVT gain. Children made greater gains on PPVT when involvement level and rate of teacher vocabulary support were matched. The child hypotheses were disconfirmed for all other outcomes.

### *Contributions of the Text*

The last two hypotheses pertained to contributions of the text to word learning. The first text-related hypothesis was confirmed in that teachers used significantly more vocabulary utterances during nonfiction reading than during fiction reading. The second text-related hypothesis, that the amount of nonfiction book reading influences distal standardized vocabulary learning, was disconfirmed.

In summary, the effect of the rate of teacher target elaboration approached significance for the outcome of children's target word learning, the interaction between child involvement and rate of teacher vocabulary support on the PPVT outcome was significant, and teachers used significantly more vocabulary utterances during nonfiction reading than during fiction reading. All other hypotheses were disconfirmed.

### Summary of Qualitative Analyses

For the qualitative analyses, the teacher transcripts were examined for patterns and examples of teacher talk and text influence before, during, and after coding for teacher utterances. Interview data was used to corroborate qualitative findings from the transcripts. These results focused on three major areas. The first group of findings was examples of best practice, or

instances found in the study classrooms that were similar to effective strategies established in the literature. These teacher behaviors were use of performance-oriented adult reading style, elaboration of vocabulary words, and encouraging children to generate target words. The second group of findings was examples of less-than-effective practice, or evidence of low quality vocabulary support that might explain the no-effects outcomes. These findings were imprecise or confusing definitions and improper balance of vocabulary talk in light of child involvement. The third set of qualitative findings concentrated on text influences on teachers' reading. These were teachers' beliefs about genre and text features of nonfiction books. The examples were the teachers' belief that children prefer fiction texts, differential set up for nonfiction book reading, and the use of props to increase engagement during nonfiction reading.

## Issues

### *Measuring and Effecting Child Vocabulary Gain*

One of the difficult findings from this study is the significantly negative effect of the density of teachers' vocabulary talk during book reading on children's posttest scores on the PPVT. Those teachers who had the highest rates of vocabulary facilitation during book reading had children who gained less on the PPVT. There are two aspects to this finding to think about: the first relates to using distal measures like the PPVT to chart gain, while the second is the whether high rates of teacher vocabulary facilitation could actually have a negative effect on vocabulary gain and how one would account for this effect.

*Distal, General Measures of Vocabulary Gain.* Research in which vocabulary growth has been facilitated through a direct experimental intervention has relied on the use of measures of target

words to examine the influence of teacher talk on children's word learning. Elley's (1989) work for example, showed positive effects from explaining vocabulary words during book reading on preschoolers' target word learning. Also, Penno et al (2002) used Elley's word explanation procedures and showed gains on a target measure for vocabulary talk. Strong target word learning gains, up to 9 words in 10 weeks, were found as well for explained words during repeated readings in small groups in a book reading study with at-risk kindergartners (Justice et al, 2005). These studies, however, did not include a measure of distal vocabulary learning. In contrast, Wasik and Bond's (2001) 15-week vocabulary intervention resulted in distal word learning gains on the PPVT. Their study included introducing vocabulary words before whole group reading, asking open-ended questions during and after reading, and providing interactions with children about vocabulary words in other contexts of the day. Thus, expectations of gain may have been supported more by short term experimental research findings that focused on specific words.

#### *Possible Negative Effects from High Rates of Teacher Talk*

Teacher talk, predicted to be facilitative, was collected in a one-month time sample; these behaviors were presumed to be representative of teacher behavior during book reading over the course of the year. Two theories of word learning, incremental word learning (Carey, 1978; Nagy & Scott, 2004) and word consciousness (Anderson & Nagy, 1992), support the expectation of distal word learning gains related to teacher talk. A theory of word consciousness states that drawing attention to unknown words and their meanings helps children notice and attend to new words. An incremental view of word learning proposes that children learn about the meanings of words over time and that through experiences children may be learning concurrently about the

meanings of many words. Ideas of word consciousness may start at school and may start within the book reading context as teachers draw attention to vocabulary.

In contrast to expectations, however, the current study found a negative influence of teacher vocabulary talk on children's PPVT gains. Although one naturalistic and several experimental studies support the facilitative effect of teacher vocabulary talk during book reading, the results from the current study suggest further investigation into critical features of vocabulary talk during whole group book reading. Continued examination of the amount of vocabulary talk teachers use when reading books might focus on isolating the features necessary for talk to positively influence word learning.

One explanation for the negative results on the distal outcomes is related to the amount of vocabulary talk. The qualitative analyses showed that all teachers used instances of explicit, focused forms of vocabulary talk at some point during the book reading sessions. At times, this vocabulary talk was extensive and occurred as multiple contingent comments that may have broken the flow of the story or caused children to become uninvolved. Naturalistic and intervention studies suggest providing brief vocabulary facilitation in short asides that do not interrupt the flow of the text (Dickinson & Smith, 1994), choosing a small number of words per book to support (Justice, 2002), and keeping an appropriate balance of child and teacher talk during reading (Dickinson & Smith, 1994; Wasik & Bond, 2001). Teachers in the current study may have used too many vocabulary comments, chosen too many words to highlight, broken the flow of text with too much contingent vocabulary talk, or used a teacher-dominated ratio of teacher-child talk during reading.

In the intervention studies, the amount of vocabulary talk was controlled, often with only one or two explanations per word (Elley, 1989; Justice et al, 2005). These controlled, limited

instances of vocabulary talk produced gains in word learning on proximal target measures. Based on the results of the current study, it is possible that teachers in this study used so much talk that it was inadvertently detrimental to vocabulary learning. This explanation connects to the findings from the Home School study where Dickinson and Smith (1994) found that an appropriate *proportion* of teacher and child talk about vocabulary, analysis, and prediction during preschool book reading accounted for outcomes in children's PPVT scores in kindergarten. One key aspect of this finding is that teachers used less talk during reading than before and after reading. In thinking about amount of vocabulary talk and the difference between amount of talk in prior work and in the current study, it might be that a curvilinear relationship exists in reference to word learning, where too low density does not produce optimal word learning and too high density especially when it also interrupts the flow of reading the text negatively influences vocabulary gain.

#### *Teacher Preparation for Vocabulary Facilitation*

In order to consider possible explanations of why teachers in this study used such a high density of vocabulary talk during book reading, it may be beneficial to think about ways that teachers interpret and apply guidance from practitioner journals and curriculum materials about vocabulary talk during book reading. For example, McGee and Schickedanz (2007) outline one approach to repeated interactive read-alouds for preschool teachers. Their guidance is explicit that vocabulary talk should be brief and include short insertions of definitions and other types of vocabulary support, such as tone of voice, gesture, and pointing to illustrations. Teachers are encouraged in the second reading to increase attention to vocabulary by defining more words and to asking more frequent questions that help children make inferences. They caution against asking too many questions in the third reading. "We have found that third read-alouds can

become deadly when teachers overwhelm students with a barrage of questions (McGee & Schickedanz, 2007, p. 746).

However, while McGee and Schickedanz clearly state that vocabulary talk should be brief, they do not specifically caution against the over-use of vocabulary talk. The approach they recommend is used in the *Opening the World of Learning* (OWL) (Schickedanz & Dickinson, 2005) curriculum adopted by some Early Reading First programs (United States Department of Education, 2002) and by the teachers in this study. The curriculum materials also recommend short insertions of vocabulary support that do not break the sequence of the text. However, the teachers in the study often employed longer and more frequent instances of vocabulary talk, and although their talk connected to student experiences, it may have disrupted the coherence of the text.

The teachers in this study were highly encouraged to comply with their curriculum, which recommended the book reading approach described above. Their interpretation and misapplication of the guidance may have caused them to overdo vocabulary talk during book reading. Reacting to the guidance and the additional accountability pressures for Early Reading First, teachers may have adopted a “more is better” attitude toward vocabulary talk during book reading, even though this view was contradictory to the guidance provided. In their attempt to boost word learning gains, teachers may have overlooked the critical factors that vocabulary talk should be brief and not interrupt the flow of the text.

### *Group Size*

Another issue for further investigation is the influence of group size on children’s learning gains in preschool classrooms. In many of the experimental intervention studies, a one-on-one or small group book reading setting was used (Justice, 2002; Justice et al, 2005; Penno et

al, 2002). However, in the classrooms in this study, book reading occurred in a whole group setting. This difference in group size may be a critical contributor to the differences found in children's target word learning on the proximal measure. A larger group size by definition makes it more difficult for teachers to interact individually with students. In addition, group size may influence children's involvement levels. In this study, children's observed levels of involvement were relatively low; all the means for each of the 8 books were below the level of "medium" involvement. Teachers may find it difficult to manage and sustain children's attention when reading to a group of 15 to 20. While the prior work on word learning purportedly focused on exposure to and explanation of words in preschool classrooms, the contextual feature of group size may have been the critical factor accounting for the impact on children's word learning.

#### *Effecting Proximal Vocabulary Gain*

Another result that contrasted expectations is the nonsignificant influence of teacher vocabulary talk about book-specific words on children's learning of those words. Experimental interventions in both clinical and classroom settings have found positive effects for teachers' vocabulary talk on book-specific word learning (Justice, 2002; Wasik and Bond, 2001). A small sample size of seven teachers may be one possible explanation for the no-effects finding in this study, since the result approached significance ( $p = 0.11$ ) at the level set for the study ( $p = 0.10$ ). However, a more parsimonious explanation may be that teachers used vocabulary talk that was not conducive to learning the book-specific words.

In terms of type of vocabulary talk, in the current study, any type of teacher talk about words or word meanings was coded as vocabulary talk. This included vocabulary talk with target and non-target words, elaborated and non-elaborated words, and book text and teachers' extratextual talk. A theory of word consciousness (Anderson & Nagy, 1992), coupled with an

incremental view of word learning, (Carey, 1978; Nagy & Scott, 2004), suggests that children *could* learn about word meanings from various types of talk. However, unlike in the current study where naturally-occurring talk was coded, in the literature reviewed, the type of teacher (or adult) talk was controlled. One explanation for the no-effects results for teacher vocabulary talk on the book-specific vocabulary outcome might be the difference in the type of teacher talk used in the intervention studies and the utterances considered as vocabulary talk in this study. Because the intervention studies examined target word learning, the study procedures described below serve to highlight the possible differences between the types of vocabulary talk teachers used in those studies and in the current study. The vocabulary facilitation protocols in Elley's (1989) study, and also used by Penno et al (2002), consisted of providing a synonym, using tone of voice or gesture to provide meaning, and pointing to an illustration. Justice et al (2005) used vocabulary talk in the form of the word in the text, a definition, and the word in an example sentence. The studies controlled the type of vocabulary talk that the teacher (adult) used. However, in the current study, other types of talk (text-child connections, negative examples, labeling an object) were also considered as vocabulary talk. It may be that, for example, the teachers in the current study used less explicit definitions, less focused vocabulary support in example sentences, or other types of vocabulary talk than were used in the intervention studies.

Considering the starting point of the teachers, in terms of level of experience and prior level of vocabulary facilitation talk, may help explain the no-effects results. In Wasik and Bond's (2001) study of vocabulary facilitation during book reading and also during other contexts of the day, children made gains on book-specific measures of word learning. Their sample consisted of Head Start Teachers, with no information given regarding level of experience or education. The teachers in the current study averaged thirteen years of experience and were all certified for

elementary teaching. It may be that less trained teachers started out using little or no vocabulary facilitation talk. After focused training and mentoring, the increase in Head Start teachers' vocabulary facilitation talk was beneficial for children's word learning. In contrast, the teachers in the current study may have started out at a higher rate of vocabulary facilitation. Receiving extensive professional development and curriculum guidance about vocabulary talk may have influenced them to unintentionally raise their rate of vocabulary talk to a level that was not conducive to children's word learning.

Another explanation involves the fact that one of the emphases of the Wasik and Bond study was to increase teachers' frequency of vocabulary facilitation during contexts of the day other than book reading. It may be that the teachers in the current study focused too much of their vocabulary facilitation during book reading and not enough during other contexts of the day. However, data for the current study was collected during whole group book reading only.

### Strengths

The main strengths of this study relate to the collection of in-depth, multi-faceted data and the ability to examine teachers in a small system that followed the same curriculum.

#### *In-depth Data*

Each teacher was videotaped reading four fiction and four nonfiction books. Having eight transcripts for each teacher provided extensive information about her reading style and strategies and made it possible to examine multiple instances of vocabulary support. In addition, each teacher responded to two rounds of electronic interview communication. This supplementary data helped explain teachers' behaviors, and especially their attitudes toward nonfiction books. In a larger study, this type of thorough data might be more difficult to collect.

### *Multi-faceted Data*

The study included data pertaining to teacher, child, and text influences on book reading and vocabulary learning. Because of the nature of the data collected, the various contributions of the teacher, child, and text to vocabulary learning could be examined. Thus, the potentially critical interaction between child involvement and teacher vocabulary support on children's word learning was found for one outcome measure.

### *Shared Curriculum*

All teachers reading the same books allowed for examination of teachers' treatment of the same vocabulary words, topics, and concepts across books. For example, teachers' use of props with nonfiction books was noticed. For two of the nonfiction books, all teachers followed the guidance from the curriculum about use of props. For the other two nonfiction book, teachers varied in their use of props. Also, because teachers were reading the same texts, their choice to begin some of the same nonfiction sentences with "Now it says," was apparent as a pattern across several teachers.

## Limitations

### *Sample Size*

The small sample of seven teachers made power to detect effects low. This was compensated for by setting significance for the study at 0.10 and concentrating on magnitude of effects. A larger sample of teachers would have increased the statistical power to see effects on children's word learning.

### *Design Flaws*

Also, this study was limited by some unavoidable design flaws. First, not all children were assessed prior to the first fiction and nonfiction book reading. This limited the measure of their vocabulary to words from six of the eight books. In addition, child involvement data was not collected for the first fiction and nonfiction book reading. Since child involvement levels were related to vocabulary gain on one of the distal measures, they appear to be important, and in a future study, getting complete child involvement data would be beneficial.

### *Target Vocabulary Measure*

In the current study, use of the Guess My Word target assessment (Dickinson, 2004) may be questionable, due to the fact that it is an unstandardized tool and that using an expressive target measure might have been too difficult for four- and five-year-olds. It is a concern that children might have been penalized by asking them for an indication they knew the word expressively rather than receptively. It is possible that a receptive measure of target vocabulary might have provided different results, since the exposure to words during book reading is more often a receptive task for children than an expressive one. The Guess My Word target assessment was chosen because it fell within the continuum of target measures from other studies that ranged from a more simple PPVT-style target measure (*Point to yawn*) (Senechal, 1997) to a more difficult definitions measure (*What does yawn mean?*) (Justice et al, 2005). However, a target test similar in format to the PPVT (Dunn & Dunn, 1997) may have been a more appropriate and sensitive measure for the target outcome.

### *Lack of Variation among Teachers*

Many of the teachers' behaviors and types of talk were quite similar. This may be due to the influence of the curriculum. All seven teachers used a literacy curriculum that provided

guidance and suggested scripts for fiction book reading and general guidance for some nonfiction reading. The atmosphere of professional development for the preschool teachers encouraged following the curriculum, sharing materials, and creating similar experiences for children. This atmosphere could have contributed to a lack of variation among teachers. Often in the book readings, teachers followed the curriculum guidance for before- and after- reading discussion and suggested activities. This led to similarities in types of teacher talk. In some ways, the adherence to the curriculum encouraged vocabulary support because all teachers chose to highlight many vocabulary words suggested for emphasis by the curriculum. However, in a larger sample of teachers from various districts, more variation in vocabulary support might occur, and thus might be related to variations in vocabulary acquisition.

#### *Short Duration*

The study took place over approximately one month near the end of the preschool year. One limitation is that the assumption was made that teacher and student behaviors during the study were representative of the whole year. However, this may not be true. Although both teachers and students had experience being videotaped for their Early Reading First evaluation, the use of videotape during the study and the request for teachers to complete reading logs may have influenced behaviors of both students and teachers. This limitation might have influenced the effects on the distal vocabulary measures, which reflect the entire year of book reading.

### Conclusions

This dissertation explored the relationship between what occurs during whole group book reading and children's vocabulary gains. Analyses examined contributions of the teacher, the child, and the text to children's word learning during whole group reading of fiction

and nonfiction books on target and distal standardized measures. Seven teachers were videotaped reading four fiction and four nonfiction books. Videotapes were transcribed, and teachers' utterances were coded for vocabulary facilitation. Children's levels of involvement during book reading were coded. Differences in teachers' vocabulary utterances for fiction and nonfiction reading were examined. Hierarchical linear modeling analyses were conducted to test hypotheses about the relationship of teacher, child, and text factors to children's word learning. Teacher transcripts and interview data were examined for patterns and qualitative examples of teacher talk that could inform and explain the quantitative analyses.

Results indicated that relatively higher rates of teachers' vocabulary talk during whole group book reading negatively influenced children's distal word learning gains and had no effect on target learning gains. Also, results were negative for the influence of child involvement on word learning. The effect of genre was that teachers used a higher rate of vocabulary talk during nonfiction reading, but frequency of nonfiction reading was not related to word learning gains. The results of this study raise concerns about teachers' unintentional overuse of vocabulary talk and about how level of experience and mis-application of guidance for vocabulary facilitation influence teachers' behaviors during reading.

Overall, based on the negative and no-effects outcomes of this study, further investigation of the optimal features of vocabulary talk, and the appropriate purpose for whole group book reading is necessary. Studies of relative rates of during reading vocabulary talk may inform the relationship of amount of vocabulary talk to word learning gains. Due to the possible idea of a curvilinear relationship between the rate of teacher vocabulary talk and children's word learning, one necessary line of analysis may be investigating the difference in word learning gains when

teachers use little or no vocabulary talk, a controlled rate of focused vocabulary talk, and higher rates of vocabulary talk, similar to the teachers in the study.

Another feature for further investigation is type of teacher talk. Future work examining the type of teacher talk might be advised to explore differences in word learning according to specific kinds of talk. For instance, a study could involve different types of teacher vocabulary talk during whole group book reading compared for their influence on word learning gains: using a gesture or acting out the meaning of words compared to using a word in an example sentence.

Finally, in the future, the consideration and experimental manipulation of group size during book reading could provide information about children's word learning in regular preschool classrooms. The influence of group size might be investigated in a future study by varying only group size during book reading. That is, word learning gains could be compared when teachers read the same book, with the same type of vocabulary talk, to whole groups of children and small groups of children. Amount and type of talk and group size are aspects related to vocabulary support during book reading that are connected to the existing literature on word learning in book reading and warrant further investigation based on the results of the current study.

## Appendix A

### Guess My Word

Tell the child:

*I want you to guess what word I am thinking of. I'll give a clue by saying a sentence and leaving a place for you to say a word you think makes sense. I'll let you know when you need to fill in a word by saying "beep." That is the signal for you to guess what word I am thinking of. I'll say the sentence again if you have trouble thinking of a word. If you can't guess the word I'll give you two and you choose which is the best answer. Here's an example:*

*Practice:*

1. "This morning you got up and got dressed and came to beep." (school) *Tell them if they don't guess.*

**Answer:**



*Give feedback on the practice one and help them get the answers. Continue with test items. Say: "Now I am going to give you a few more. Now you'll need to guess on your own. I can't help you now."*

#### Test Items:

1. When you open your mouth really wide because you are tired it's called a \_\_\_\_\_. (yawn)
2. The clothes you wear to bed are called \_\_\_\_\_ (pajamas).
3. The bottom part of the window is called the \_\_\_\_\_ (windowsill).

Foil 1 This part of your body (point to your shoulder) is called a \_\_\_\_\_. (shoulder)

4. The sun was shining. I looked down and saw my shape on the ground. That is called my \_\_\_\_\_ (shadow).
5. I glued some eyes and hair on a sock to make something I could play with. It was a \_\_\_\_\_ (puppet).
6. I couldn't see under my bed because it was dark, so I shined a \_\_\_\_\_ under there. (flashlight)
7. When you make soup, you cut up vegetables. Another word for cut up is \_\_\_\_\_. (chop)
8. When someone wants to carry a lot of things, he can use a small cart with one wheel, called a \_\_\_\_\_ (wheelbarrow).

Foil 2 A child's mother and father are called his \_\_\_\_\_. (parents)

Appendix A (Continued)

9. The people who live in houses close to you are called your \_\_\_\_\_ (neighbors).
10. I wanted to grow a flower so I dug a hole in the ground and planted a tiny \_\_\_\_\_ (seed).
11. The part of a plant that grows underground is called the \_\_\_\_\_ (root)
- Foil 3 The top of a room is called the \_\_\_\_\_. (ceiling)
12. The long middle part of a flower that holds up the blossom is the \_\_\_\_\_ (stem).
13. Birds bodies are all covered with \_\_\_\_\_ (feathers).
14. When you're on the road with lots of cars and you have to drive slowly, your mom might say, we're stuck in \_\_\_\_\_ (traffic).
15. When a bird's old covering falls out and a new one start to grow it's called \_\_\_\_\_ (molt/molting).
16. Another word for dirt is \_\_\_\_\_ (soil).
17. My friend forgot to water the plant. She felt of the dirt and said, "This plant needs some water; the dirt is really \_\_\_\_\_ (dry)
18. When I was a baby, I was small. Then, I started to \_\_\_\_\_. (grow)
19. The round handle on the door is called the \_\_\_\_\_ (doorknob).
20. The place where a baby grows inside his mother is called a \_\_\_\_\_ (womb).
21. When a bird gets ready to lay eggs, it builds a \_\_\_\_\_ (nest).
22. The mouth of a bird is called a \_\_\_\_\_ (beak)
23. When a bird comes out of an egg, it \_\_\_\_\_ (hatch/hatches).
- Scoring:            Introductory items fill-in: \_\_\_\_\_**
- TEST ITEMS:    FILL-IN: \_\_\_\_\_ (=TOTAL SCORE)**

## Appendix B

### Child Observation in Prekindergarten OWL Classrooms (COPO) REVISED

Child: \_\_\_\_\_ Collection \_\_\_\_\_

Teacher: \_\_\_\_\_ School: \_\_\_\_\_

Date \_\_\_\_\_ Observer \_\_\_\_\_ Book Title \_\_\_\_\_ (fiction/non-fiction)

<u>Verbal</u>	<u>ToWho</u>	<u>Involv</u>	<u>Target T</u>	<u>Target C</u>	<u>Target G</u>
X	Tch	X	Spoken	Spoken by	Spoken by
No	AS(st)	High	by	Child	another
Yes	C(hild)	Med H	Teacher		Child in
List	WGT	Med			group
Fs/Cry	Self	Med L			
	NoTalk	Low(Dsr)			
		Unoccupied			

Time	S	Verbal	To Whom	Involve	Target T	Target C	Target G	XXXX	Notes
	1								
	2								
	3								
	4								
	5								
	6								
	7								
	8								
	9								
	10								
	11								
	12								
	13								
	14								
	15								
	16								
	17								
	18								

Revised 03/26/07

Appendix C  
Bibliography of Children's Books

Fiction titles

*Dreams* by Ezra Jack Keats. Puffin Books, 1974.

*The Ugly Vegetables* by Grace Lin. Charlesbridge, 1999.

*Make Way for Duckings* by Robert McCloskey. Puffin Books, 1941.

*Bigger* by Daniel Kirk. Puffin Books, 1998.

Nonfiction titles

*Fun with Shadows* by Sharon Siamon, Jeff Siamon, and Cynthia Benjamin. Celebration Press, 2005.

*Taking Root* by Allan Fowler. Children's Press, 2000.

*Growing Things* by Dawn Sirett and Lara Tankel. Dorling Kindersely, 1997.

*See How They Grow: Duck* by Angela Royston. Dorling Kindersely, 2001.

Appendix D  
Book Information  
Titles, Words, and Readability

<b>Book</b>	<b>Words</b>	<b>Readability</b>
<b>Fiction Titles</b>		
<i>Dreams</i>	242	5.1
<i>The Ugly Vegetables</i>	931	3.3
<i>Make Way for Ducklings</i> (22 pages)	493	4.2
<i>Bigger</i>	415	5.1
average	520	4.4
<b>Nonfiction Titles</b>		
<i>Fun with Shadows</i>	767	3.3
<i>Taking Root</i>	383	2.9
<i>Growing Things</i>	461	2.1
<i>See How They Grow: Duck</i>	305	2.4
average	479	2.7
Average overall	500	3.5

# May 2007

## Appendix E Reading Log

	<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thu</i>	<i>Fri</i>
<b>April 30</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>11</b>
	F/NF; whole/part _____ F/NF; whole/part _____	F/NF; whole/part _____ F/NF; whole/part _____	F/NF; whole/part _____ F/NF; whole/part _____	F/NF; whole/part _____ F/NF; whole/part _____	F/NF; whole/part _____ F/NF; whole/part _____
	F/NF; whole/part _____ F/NF; whole/part _____	F/NF; whole/part _____ F/NF; whole/part _____	F/NF; whole/part _____ F/NF; whole/part _____	F/NF; whole/part _____ F/NF; whole/part _____	F/NF; whole/part _____ F/NF; whole/part _____

Appendix F  
Timeline of Study  
March 28-May 8, 2007

	<b>March 28-April 4, 2007</b>	<b>April 2, 2007</b>	<b>April 16, 2007</b>	<b>April 23, 2007</b>	<b>May 2, 2007</b>	<b>May 3-8, 2007</b>
<b>Child vocabulary</b>	Pretest- Guess My Word 23 items	Data Collection 1: <i>Dreams and Shadows</i> (Videotaped all teachers reading)	Data Collection 2: <i>The Ugly Vegetables and Taking Root</i> (Videotaped all teachers reading)	Data Collection 3: <i>Make Way for Ducklings</i> (half) and <i>Growing Things</i> (Videotaped all teachers reading)	Data Collection 4: <i>Bigger and Duck</i> (Videotaped all teachers reading)	Posttest- Guess My Word 23 items
<b>Child involvement</b>		COPO- Measured child involvement for (X) classes	COPO- Measured child involvement for seven classes	COPO- Measured child involvement for seven classes	COPO- Measured child involvement for seven classes	
<b>Teacher Reading logs</b>	Teachers began reading logs					Teachers ended reading logs
<b>Teacher interviews</b>		Teachers responded to interview questions via email	Teachers responded to interview questions via email		Teachers responded to interview questions via email	
<b>Child measures of broader vocabulary and language</b>	Sept-Oct 2006 PPVT, WJIII Picture vocabulary, story recall, and passage comp.					Sept-Oct 2007 Pic.vocab, story recall, and passage comp.

Appendix G  
Teacher Interview I

Vegetables  
Taking Root

1. Please describe your planning for Vegetables and Taking Root.
2. Please comment on what your children enjoy and dislike about Story time and Find Out About It.
3. Do your planning and reading differ for fiction texts in Story time and non-fiction texts in Find Out About It? If so, how?
4. If you were training a student teacher, what would you tell her or him were the most important things you do when you read books out loud, in terms of children's vocabulary learning?

Appendix H  
Teacher Interview II

Bigger  
Duck

Teacher Name:

1. In the last interview, several teachers mentioned that preschool children, in general, like non-fiction books less than fiction books. Please talk about your opinion (agree or disagree), why you think so, and how your feelings about non-fiction influence the way you prepare for and read a nonfiction book.
2. In the last two sessions, many teachers used various props (soil samples, plants, bird nests, photographs) during the non-fiction reading times. Talk about your decision to use props (or not to use props) and how that influences your students.
3. What are some of the things you do during a read aloud (fiction and/or nonfiction) to teach vocabulary words? Please be as specific as possible, and feel free to include examples. How do you remember to do these things? (or, how do you make sure that you incorporate these things into the reading?)
4. If you were training a student teacher, what would you tell her or him were the most important things you do when you read **non-fiction** books out loud, in terms of children's vocabulary learning?

## Appendix I

### Child and Teacher Variable Information

Variable	Source	Scale	Collection
<b>CHILD DATA</b>			
Child vocabulary gain overall	Guess My Word Vocabulary posttest score – pretest score	23 items from classroom books; 3 foil items Gain score= 0-23	Administered before and after teachers read all eight books
Child involvement during book reading	Child Observation in Prekindergarten OWL version	Child involvement rated on a 1-5 scale Proportion of sweeps of high involvement; high=med high+high	Collected during continuous sweeps of three-second intervals while teachers read books to whole group
Child production of words during book reading	Child Observation in Prekindergarten OWL version	Code is marked if child produces target word during book reading; no specific scale Proportion of sweeps in which child produced words	Collected during continuous sweeps of three-second intervals while teachers read books to whole group
<b>TEACHER DATA</b>			
Teacher utterances- Vocabulary World knowledge	Transcripts of videotaped book readings	Frequency count of number of utterances per specified amount of transcript; No specified scale Split by genre Prorated for time	Transcribed from video tape of teachers' book readings
Teachers' sophisticated word use	Transcripts of videotaped book readings	Frequency count and list of sophisticated words per book reading; No specified scale Prorated by time and length of book	Calculated using SALT and Dale-Chall word list
Teachers' frequency of book reading (overall and per genre)	Teacher reading logs March 28-May 11, 2007	Frequency of fiction and nonfiction book reading; No specified scale	Teachers kept individual reading logs of daily book reading activity for one month
Teachers' frequency of elaborating specific target words	Transcripts of videotaped book readings	Frequency of elaborating each of the 23 target words; No specified scale Prorated for time	Calculated through coding transcriptions

Appendix J  
Code Book

Code	Definition
<b>B=Book</b>	Book text read by the teacher.
<b>V= Vocabulary</b>	Nontarget word spoken by teacher (extratextual talk).
<b>BV=Book vocabulary</b>	Nontarget word in the text read by the teacher
<b>VT= Vocabulary Target</b>	Target word spoken by the teacher (23 possible words).
<b>BVT= Book vocabulary target</b>	Target word in the text read by the teacher.
<b>VE=Vocabulary elaboration</b>	Elaborated nontarget words, or talk about the meaning of nontarget words. Often stated as a definition, an explanation, an example sentence, clearly pointing to an illustration, a gesture, or a request to repeat the word.
<b>BVE= Book vocabulary elaboration</b>	Text read by the teacher that focuses on elaborated nontarget words. Often stated as a definition, an explanation, an example sentence, or reference to an illustration.
<b>VTE= Vocabulary target elaboration</b>	Elaborated target words, or talk about the meaning of target words. Often stated as a definition, an explanation, an example sentence, clearly pointing to an illustration, a gesture, or a request to repeat the word. (Utterance does not have to include the target; may refer to it).
<b>BVTE= Book vocabulary target elaboration</b>	Text read by the teacher that focuses on elaborated target words. Often stated as a definition, an explanation, an example sentence, or reference to an illustration. (Utterance does not have to include the target; may refer to it).
<b>WK= World Knowledge</b>	Talk that is related to information about the world and <i>goes beyond the book</i> . Content may be related to science, social studies, or other general cultural knowledge; talk that has instructional value to the student. World knowledge utterances do not contain target vocabulary (those would be coded at VTE).

Appendix K  
Multilevel Model Equations

Hypothesis 1: *Teachers who use more talk related to vocabulary and world knowledge will have children who gain more in vocabulary on target measures as well as on distal standardized measures.* (3 models)

**Model One-** The outcome variable is target vocabulary posttest percentage correct.

Level-1 Model

$$Y = \beta_0 + \beta_1(\text{gender}) + \beta_2(\text{target vocabulary pretest percentage correct}) + \beta_3(\text{age}) + r$$

Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01}(\text{all teacher vocabulary utterances})$$

$$\beta_1 = \gamma_{10}$$

$$\beta_2 = \gamma_{20}$$

$$\beta_3 = \gamma_{30}$$

**Model Two-** The outcome variable is the standard score on the PPVT posttest.

Level-1 Model

$$Y = \beta_0 + \beta_1(\text{gender}) + \beta_2(\text{standard score on PPVT pretest}) + \beta_3(\text{age}) + r$$

Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01}(\text{all teacher vocabulary utterances})$$

$$\beta_1 = \gamma_{10}$$

$$\beta_2 = \gamma_{20}$$

$$\beta_3 = \gamma_{30}$$

**Model Three-** The outcome variable is the standard score on the Picture Vocabulary posttest.

Level-1 Model

$$Y = \beta_0 + \beta_1(\text{gender}) + \beta_2(\text{standard score on Picture Vocabulary pretest}) + \beta_3(\text{age}) + r$$

Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01}(\text{all teacher vocabulary utterances})$$

$$\beta_1 = \gamma_{10}$$

$$\beta_2 = \gamma_{20}$$

$$\beta_3 = \gamma_{30}$$

Appendix K continued  
Multilevel Model Equations

Hypothesis 2: *Teachers who elaborate target vocabulary words more will have children who gain more on target vocabulary measures.* (1 model)

The outcome variable is target vocabulary posttest percentage correct.

Level-1 Model

$$Y = \beta_0 + \beta_1*(\text{gender}) + \beta_2*(\text{target vocabulary pretest percentage correct}) + \beta_3*(\text{age}) + r$$

Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01}*(\text{teacher target vocabulary elaboration utterances})$$

$$\beta_1 = \gamma_{10}$$

$$\beta_2 = \gamma_{20}$$

$$\beta_3 = \gamma_{30}$$

Hypothesis 3: *Teachers who use more sophisticated words will have children who gain more in vocabulary on target measures as well as on distal standardized measures.* (3 models)

**Model One-**The outcome variable is target vocabulary posttest percentage correct.

Level-1 Model

$$Y = \beta_0 + \beta_1*(\text{gender}) + \beta_2*(\text{target vocabulary pretest percentage correct}) + \beta_3*(\text{age}) + r$$

Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01}*(\text{average teacher sophisticated word use})$$

$$\beta_1 = \gamma_{10}$$

$$\beta_2 = \gamma_{20}$$

$$\beta_3 = \gamma_{30}$$

**Model Two-** The outcome variable is the standard score on the PPVT posttest.

Level-1 Model

$$Y = \beta_0 + \beta_1*(\text{gender}) + \beta_2*(\text{standard score on PPVT pretest}) + \beta_3*(\text{age}) + r$$

Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01}*(\text{average teacher sophisticated word use})$$

$$\beta_1 = \gamma_{10}$$

$$\beta_2 = \gamma_{20}$$

$$\beta_3 = \gamma_{30}$$

Appendix K continued  
Multilevel Model Equations

**Model Three**-The outcome variable is the standard score on the Picture Vocabulary posttest.

Level-1 Model

$$Y = \beta_0 + \beta_1*(\text{gender}) + \beta_2*(\text{standard score on Picture Vocabulary pretest}) + \beta_3*(\text{age}) + r$$

Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01}*(\text{average teacher sophisticated word use})$$

$$\beta_1 = \gamma_{10}$$

$$\beta_2 = \gamma_{20}$$

$$\beta_3 = \gamma_{30}$$

Hypothesis 4: *Children with higher rated involvement during book reading, in the presence of teacher vocabulary facilitation, will gain more in vocabulary on target measures as well as on distal standardized measures. (3 models)*

**Model One**-The outcome variable is target vocabulary posttest percentage correct.

Level-1 Model

$$Y = \beta_0 + \beta_1*(\text{gender}) + \beta_2*(\text{target vocabulary pretest percentage correct}) + \beta_3*(\text{age}) + \beta_4*(\text{average child involvement}) + r$$

Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01}*(\text{all teacher vocabulary utterances})$$

$$\beta_1 = \gamma_{10}$$

$$\beta_2 = \gamma_{20}$$

$$\beta_3 = \gamma_{30}$$

$$\beta_4 = \gamma_{40} + \gamma_{41}*(\text{all teacher vocabulary utterances})$$

**Model Two**-The outcome variable is the standard score on the PPVT posttest.

Level-1 Model

$$Y = \beta_0 + \beta_1*(\text{gender}) + \beta_2*(\text{standard score on the PPVT pretest}) + \beta_3*(\text{age}) + \beta_4*(\text{average child involvement}) + r$$

Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01}*(\text{all teacher vocabulary utterances})$$

$$\beta_1 = \gamma_{10}$$

$$\beta_2 = \gamma_{20}$$

$$\beta_3 = \gamma_{30}$$

$$\beta_4 = \gamma_{40} + \gamma_{41}*(\text{all teacher vocabulary utterances})$$

Appendix K continued  
Multilevel Model Equations

**Model Three-** The outcome variable is the standard score on the Picture Vocabulary posttest.

Level-1 Model

$$Y = \beta_0 + \beta_1*(\text{gender}) + \beta_2*(\text{standard score on the Picture Vocabulary pretest}) + \beta_3*(\text{age}) + \beta_4*(\text{average child involvement}) + r$$

Level-2 Model

$$\begin{aligned}\beta_0 &= \gamma_{00} + \gamma_{01}*(\text{all teacher vocabulary utterances}) \\ \beta_1 &= \gamma_{10} \\ \beta_2 &= \gamma_{20} \\ \beta_3 &= \gamma_{30} \\ \beta_4 &= \gamma_{40} + \gamma_{41}*(\text{all teacher vocabulary utterances})\end{aligned}$$

Hypothesis 5: *Children who produce more target words during reading, in the presence of teacher vocabulary facilitation, will gain more on target vocabulary measures.* (1 model)

**Model One-**The outcome variable is target vocabulary posttest percentage correct.

Level-1 Model

$$Y = \beta_0 + \beta_1*(\text{gender}) + \beta_2*(\text{target vocabulary pretest percentage correct}) + \beta_3*(\text{age}) + \beta_4*(\text{mean proportion of child target vocabulary production}) + r$$

Level-2 Model

$$\begin{aligned}\beta_0 &= \gamma_{00} + \gamma_{01}*(\text{all teacher vocabulary utterances}) \\ \beta_1 &= \gamma_{10} \\ \beta_2 &= \gamma_{20} \\ \beta_3 &= \gamma_{30} \\ \beta_4 &= \gamma_{40} + \gamma_{41}*(\text{all teacher vocabulary utterances})\end{aligned}$$

Hypothesis 7: *Teachers who read more nonfiction books will have children who gain more in vocabulary.* (2 models)

**Model One-**The outcome variable is the standard score on the PPVT posttest.

Level-1 Model

$$Y = \beta_0 + \beta_1*(\text{gender}) + \beta_2*(\text{standard score on PPVT pretest}) + \beta_3*(\text{age}) + r$$

Level-2 Model

$$\begin{aligned}\beta_0 &= \gamma_{00} + \gamma_{01}*(\text{total number of fiction books read}) + \gamma_{02}*(\text{total number of nonfiction books read}) \\ \beta_1 &= \gamma_{10} \\ \beta_2 &= \gamma_{20} \quad \beta_3 = \gamma_{30}\end{aligned}$$

Appendix K continued  
Multilevel Model Equations

**Model Two**-The outcome variable is the standard score on the Picture Vocabulary posttest.

Level-1 Model

$$Y = \beta_0 + \beta_1(\text{gender}) + \beta_2(\text{standard score on Picture Vocabulary pretest}) + \beta_3(\text{age}) + r$$

Level-2 Model

$$\beta_0 = \gamma_{00} + \gamma_{01}(\text{total number of fiction books read}) + \gamma_{02}(\text{total number of nonfiction books read})$$

$$\beta_1 = \gamma_{10}$$

$$\beta_2 = \gamma_{20}$$

Appendix L  
Target Words per Book

Title	Genre	Target Words
<i>Dreams</i>	fiction	yawn pajamas windowsill
<i>Fun with Shadows</i>	nonfiction	shadow puppet flashlight
<i>The Ugly Vegetables</i>	fiction	neighbors chop wheelbarrow
<i>Taking Root</i>	nonfiction	seed root stem
<i>Make Way for Ducklings</i>	fiction	molt traffic feather
<i>Growing Things</i>	nonfiction	dry soil
<i>Bigger</i>	fiction	grow doorknob womb
<i>Duck</i>	nonfiction	nest beak hatch

## References

- Anderson, R. C. (2004). Role of the reader's schema in comprehension, learning, and memory. In R. B. Ruddell & N. J. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed., pp. 595-605). Newark, DE: International Reading Association.
- Anderson, R. C., & Freebody, P. (1981). Vocabulary knowledge. In J. Guthrie (Ed.), *Comprehension and Teaching: Research Reviews*. Newark, DE: International Reading Association.
- Anderson, R. C., & Nagy, W. E. (1992). The vocabulary conundrum. *American Educator*, 16(4), 14-18,44-47.
- Barnett, W. S., Brown, K., & Shore, R. (2004). *The universal versus targeted debate: Should the United States have preschool for all?* New Brunswick, NJ: National Institute for Early Education Research.
- Biemiller, A. (2001). Teaching vocabulary: Early, direct, and sequential. *American Educator*, 25(1), 24-28, 47.
- Bloom, P. (2000). *How children learn the meanings of words*. Cambridge, Massachusetts: MIT Press.
- Byrk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Newbury Park: Sage Publications.
- Carey, S. (1978). The child as word learner. In M. Halle, J. Bresnan & G. Miller (Eds.), *Linguistic theory and psychological reality* (pp. 264-291). Cambridge, Massachusetts: MIT Press.
- Caswell, L. J., & Duke, N. K. (1998). Non-narrative as a catalyst for literacy development. *Language Arts*, 75(2), 108-117.
- Chall, & Dale, E. (1995). *Readability Revisited: The New Dale-Chall Readability Formula*. Cambridge, MA: Brookline Books.
- Chall, J. S., Jacobs, V. A., & Baldwin, L. E. (1990). *The reading crisis: Why poor children fall behind*. Cambridge, MA: Harvard University Press.
- Dickinson, & Smith, M. W. (1994). Long-term effects of preschool teachers' book readings on low-income children's vocabulary and story comprehension. *Reading Research Quarterly*, 29(2), 104-122.
- Dickinson, D. K. (2004). Guess my word. Unpublished manuscript, Boston College at Massachusetts.

- Dickinson, D. K., & Tabors, P. O. (2001). *Beginning literacy with language: Young children learning at home and at school*. Baltimore, MD: Brookes.
- DuBay, W. H. (2004). *The principles of readability*. Costa Mesa: Impact Information.
- Duke, N. K. (2000). 3.6 minutes a day: The scarcity of informational texts in first grade. *Reading Research Quarterly*, 35, 202-224.
- Duke, N. K., & Bennett-Armistead, V. S. (2003). Why include informational text in the primary classroom? In *Reading and writing informational texts in the primary grades: Research-based practices*. New York: Scholastic.
- Duke, N. K., & Kays, J. (1998). "Can I say 'once upon a time'?" Kindergarten children developing knowledge of information book language. *Early Childhood Research Quarterly*, 13, 295-318.
- Dunn, L. M., & Dunn, L. M. (1997a). *Examiner's manual for the Peabody Picture Vocabulary Test* (3rd ed.). Minnesota: American Guidance Service.
- Dunn, L. M., & Dunn, L. M. (1997b). *Examiner's manual for the PPVT-III: Peabody Picture Vocabulary Test--Third Edition*. Circle Pines, MN: American Guidance Service.
- Egan, K. (1988). The story form and the organization of meaning. In *Primary Understanding: Education in Early Childhood* (pp. 96-129). New York: Routledge.
- Elley, W. (1989). Vocabulary acquisition from listening to stories. *Reading Research Quarterly*, 24(2), 174-187.
- Ewers, C., & Brownson, S. (1999). Kindergarteners' vocabulary acquisition as a function of active vs. passive storybook reading, prior vocabulary, and working memory. *Journal of Reading Psychology*, 20, 11-20.
- Farran, D. C., Kang, S., & Plummer, C. (2003). Child observation in preschool manual. Unpublished manuscript. Vanderbilt University, Nashville, Tennessee.
- Ferron, J., Hess, M. R., Hogarty, K. Y., Dedrick, R. F., Kromrey, J. D., Lange, T. R., et al. (2006). *Multilevel modeling: A review of methodological issues and applications*. Paper presented at the American Educational Research Association.
- Hammett, L. (2005). *Pattern of parents' talk during storybook sharing with preschool children: A comparison between storybook and expository book conditions*. Paper presented at the National Reading Conference, Miami, Florida.
- Hammett, L., van Kleek, A., & Huberty, C. (2003). Patterns of parents' extratextual interactions during book sharing with preschool children: A cluster analysis study. *Reading Research Quarterly*, 38(4), 442-468.

- Hargrave, A. C., & Senechal, M. (2000). A book reading intervention with preschool children who have limited vocabularies: The benefits of regular reading and dialogic reading. *Early Childhood Research Quarterly, 15*(1), 75-90.
- Harrop, A., & Swinson, J. (2003). Teachers' questions in the infant, junior, and secondary school. *Educational Studies, 29*(1), 49-57.
- Hart, B., & Risley, T. R. (1995). *Meaningful differences in the everyday experience of young American children*. Baltimore: P.H. Brookes.
- Heath, S. B. (1983). *Ways with words : language, life, and work in communities and classrooms*. Cambridge, New York: Cambridge University Press.
- Hofer, K. G. (2007). Attention and vocabulary learning from shared book reading. Manuscript in preparation.
- Hollich, G. J., Hirsh-Pasek, K., & Golinkoff, R. M. (2000). The emergentist coalition model. *Breaking the language barrier: An emergentist coalition model for the origins of word learning, 65*(3), 17-29.
- Huttenlocher, J., Haight, W., Bryk, A., Seltzer, M., & Lyons, T. (1991). Early vocabulary growth: Relation to language input and gender. *Developmental Psychology, 27*(2), 236-248.
- Imai, M., Anderson, R. C., Wilkinson, I. A., & Yi, H. (1992). Properties of attention during reading lessons. *Journal of Educational Psychology, 84*(2), 160-173.
- Justice, L. M. (2002). Word exposure conditions and preschoolers' novel word learning during shared storybook reading. *Reading Psychology, 23*, 87-106.
- Justice, L. M., Meier, J., & Walpole, S. (2005). Learning new words from storybooks: An efficacy study with at-risk kindergartners. *Language, Speech, and Hearing Services in the Schools, 36*, 17-32.
- Karmiloff, K., & Karmiloff-Smith, A. (2001). Learning about the meaning of words. In *Pathways to language: From fetus to adolescent* (pp. 56-85). Cambridge, Massachusetts: Harvard University Press.
- Klare, G. R. (1975). Assessing readability. *Reading Research Quarterly, 10*(1), 62-102.
- Mather, N., & Woodcock, R. W. (2001). *Woodcock-Johnson III Tests of Achievement: Examiner's Manual*. Itasca, IL: Riverside Publishing.
- Nagy, W. E., & Scott, J. A. (2004). Vocabulary processes. In R. B. Ruddell & N. J. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed., pp. 574-593). Newark, DE: International Reading Association.

- Palincsar, A. S., & Duke, N. K. (2004). The role of text and text-reader interactions in young children's reading development and achievement. *The Elementary School Journal*, 105(2), 183-197.
- Pappas, C. (1986). *Exploring the global structure of "information books"*. Paper presented at the National Reading Conference, Austin, TX.
- Pappas, C. (1991a). Fostering full access to literacy by including information books. *Language Arts*, 68(6), 449-462.
- Pappas, C. (1991b). Young children's strategies in learning the "book language" of information books. *Discourse Processes*, 14(2), 203-225.
- Pappas, C. (1993). Is narrative primary? Some insights from kindergarteners' pretend readings of stories and information books. *Journal of Reading Behavior*, 25(1), 97-129.
- Penno, J. F., Wilkinson, I. A., & Moore, D. W. (2002). Vocabulary acquisition from teacher explanation and repeated listening to stories: Do they overcome the Matthew Effect? *Journal of Educational Psychology*, 94(1), 23-33.
- Quine, W. V. O. (1960). *Word and Object*. Cambridge, MA: M.I.T. Press.
- Reece, E., & Cox, A. C. (1999). Quality of adult book reading affects children's emergent literacy *Developmental Psychology*, 35(1), 20-28.
- Robbins, C., & Ehri, L. C. (1994). Reading storybooks to kindergartners helps them learn new vocabulary words. *Journal of Educational Psychology*, 86(1), 54-64.
- Rosenblatt, L. (1994). Efferent and aesthetic reading. In *The reader, the text, the poem*. Carbondale, Illinois: Southern Illinois University Press.
- Ruddell, R. B., & Unrau, N. J. (2004). Reading as a meaning-construction process: The reader, the text, and the teacher. In R. B. Ruddell & N. J. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed., pp. 1462-1521). Newark, DE: International Reading Association.
- Rumelhart, D. E. (1980). Schemata: The building blocks of cognition. In R. J. Spiro, B. C. Bruce & W. F. Brewer (Eds.), *Theoretical issues in reading comprehension: perspectives from cognitive psychology, linguistics, artificial intelligence, and education* (pp. 33-58). Hillsdale, NJ: Erlbaum
- Schickedanz, J. A., & Dickinson, D. K. (2005). *Opening the World of Learning: A Comprehensive Early Literacy Program*. Parsippany, NJ: Pearson Early Learning.
- Senechal. (1997). The differential effect of storybook reading on preschoolers' acquisition of expressive and receptive vocabulary. *Journal of Child Language*, 24, 123-138.

- Senechal, M. (2002). *Read it again, Pam! On the importance of repeated reading for the development of language*. Paper presented at the Proceedings of the Caregiver Language Facilitation Symposium (Chapter 6), Toronto, ON: The Hanen Centre.
- Stahl, S. A., & Fairbanks, M. M. (1986). The effects of vocabulary instruction: A model-based meta-analysis. *Review of Educational Research*, 56, 72-110.
- U.S. Department of Health and Human Services. (2005). *Head Start Impact Study: First Year Findings*. Washington DC: Administration for Children and Families.
- United States Department of Education. (2002). Early Reading First. from <http://www.ed.gov/programs/earlyreading/index.html>
- Vygotsky, L. (1978). Interaction between learning and development. In M. Cole, V. John-Steiner, S. Scribner & E. Souberman (Eds.), *Mind in society* (pp. 79-91). Cambridge, Massachusetts: Harvard University Press.
- Wasik, B. A., & Bond, M. A. (2001). Beyond the pages of a book: interactive book reading and language development in preschool classrooms. *Journal of Educational Psychology*, 93(2), 243-250.
- Wasik, B. A., Bond, M. A., & Hindman, A. (2006). The effects of a language and literacy intervention on Head Start children and teachers. *Journal of Educational Psychology*, 98(1), 63-74.
- Weizman, Z. O., & Snow, C. E. (2001). Lexical input as related to children's vocabulary acquisition: Effects of sophisticated exposure and support for meaning. *Developmental Psychology*, 37(2), 265-279.
- Whitehurst, G. J., Epstein, J. N., Angell, A. L., Payne, A. C., Crone, D. A., & Fischel, J. E. (1994). Outcomes of an emergent literacy intervention in Head Start. *Journal of Educational Psychology*, 86(4), 542-555.
- Whitehurst, G. J., Zevenbergen, A. A., Crone, D. A., Schultz, M. D., Velting, O. N., & Fischel, J. E. (1999). Outcomes of an emergent literacy intervention from Head Start through second grade. *Journal of Educational Psychology*, 91(2), 261-272.
- Yopp, R. H., & Yopp, H. K. (2006). Informational texts as read-alouds at school and home. *Journal of Literacy Research*, 38(1), 37-51.