What Classroom Observations Reveal about
Oral Vocabulary Instruction in Kindergarten

by

Tanya S. Wright

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Education)
in The University of Michigan
2011

Doctoral Committee:

    Professor Susan B. Neuman, Chair
    Professor Frederick J. Morrison
    Professor Annemarie Sullivan Palincsar
    Professor Addison Stone

Table of Contents

Chapter

List of Tables

List of Appendices

Abstract

The purpose of this dissertation study was to examine how vocabulary instruction is enacted in naturalistic classroom settings in kindergarten. Four days (12 hours) of instruction was observed in 55 classrooms in a range of socio-economic communities. All instruction was audio-taped for a total of 660 hours of observation, and coded for evidence of vocabulary instruction. Results revealed no planned vocabulary instruction. Instead, teachers provided word explanations that resembled "teachable moments" in the context of other instruction. Findings revealed negligible repeated explanations, inconsistent word selection, and minimal time devoted to subject areas, such as science and social studies, in which word explanations were most dense. Teachers serving economically-advantaged children provided a greater number of word explanations and were more likely to explain sophisticated words than those serving economically disadvantaged children. These results suggest that the current state of instruction may be contributing to rather than ameliorating vocabulary gaps by socioeconomic status.

Chapter 1

Introduction

Children in the United States arrive in kindergarten with vast disparities in their language and literacy knowledge and skills by socio-economic status (Lee & Burkham, 2002). Studies show that children from low socio-economic status (SES) families and communities have the least access to early language and literacy experiences, including fewer experiences with print in their homes (Heath, 1986), as well as fewer available print resources in their neighborhoods (Neuman & Celano, 2001). Dickinson and Snow (1987) found that low SES kindergartners scored significantly below their middle class peers on a battery of pre-reading and vocabulary tasks. In their analysis of data from the U.S. Department of Education's Early Childhood Longitudinal Study, Lee and Burkham (2002) found that socio-economic status predicted reading achievement at the beginning of kindergarten. Children from low SES families fell below their middle and upper SES peers at the start of school.

Social class differences in language and literacy at the beginning of kindergarten are particularly concerning as children's literacy achievement in the early childhood and early elementary school years is a strong predictor of their academic trajectories. Juel (1988) found that if a child was a struggling reader at the end of first grade, there was a .88 probability that he or she would remain a struggling

reader in 4th grade. In a longitudinal study, Cunningham and Stanovich (1997) found that children's reading achievement at 1st grade predicted exposure to print, reading comprehension, vocabulary, as well as general knowledge in 11th grade.

In an attempt to ameliorate these inequalities, researchers and educators look to better understand the component knowledge and skills that contribute to children's literacy development in order to determine key areas for instructional interventions. It has been well-established that children's vocabulary knowledge is one domain of knowledge that is closely tied to their development as readers, particularly to children's ability to comprehend text (Catts, Adlof, & Weismer, 2006; Cunningham & Stanovich, 1997; Sénéchal, Ouellette, & Rodney, 2006; Storch & Whitehurst, 2002). The quantity and quality of lexical input, volume of word exposure, explicit teaching of word meanings, and sophistication of words taught, that children experience in their homes in the early childhood and early elementary school years predict children's vocabulary development (Hart & Risley, 1995; Weizman & Snow, 2001). However, research has shown that children growing up in poverty are exposed to fewer words in their homes, resulting in more limited vocabulary knowledge than their middle class peers before the start of formal schooling (Hart & Risley, 1995). These gaps continue throughout children's schooling and have long-term ramifications for children's development as readers (Chall, Jacobs, & Baldwin, 1990).

The knowledge that vocabulary is an essential component of literacy development, in combination with the vast disparities in children's knowledge of word meanings before school entrance, has led experts to recommend vocabulary instruction as a key component of literacy instruction in elementary school (Snow,

Burns, & Griffith, 1998; National Reading Panel, 2000, National Early Literacy

Panel, 2008). Meta-analyses of intervention studies suggest that vocabulary

instruction contributes to children's vocabulary learning and reading comprehension

(Marulis & Neuman, 2010; Stahl & Fairbanks, 1986).

   Although there is a preponderance of evidence indicating that vocabulary

instruction *can* and *should* be addressed in schools before children begin to encounter

difficulty with reading comprehension, the available evidence to date indicates that

there is little emphasis on the acquisition of vocabulary as it applies to printed text in

elementary school curricula. For example, in her classic study of reading

comprehension, Durkin (1978-1979) found that teachers dedicated less than 3% of the

reading period to instruction, review and application of word meanings. More recent

studies provide converging evidence with these findings. Observing reading lessons

on three consecutive days in 28 fourth grade classrooms, Blanton and Moorman

(1990) reported only 6% of the time spent on vocabulary development. Moreover,

they found that 212 of the 380 vocabulary events observed involved introducing

students to a dictionary definition of a word.   Similarly, Scott, Jamieson-Noel, and

Asselin (2003) in their recent analysis of Canadian 5th though 7th grade classrooms

found that over 40% of the time devoted to vocabulary was spent on copying

definitions. Teachers did much mentioning of words and assignment of vocabulary

activities, but little actual teaching of new vocabulary.

   In short, previous observational studies provide a very limited picture of

vocabulary instruction in printed text as it is presently enacted in classroom settings.

We know even less about the extent of oral vocabulary instruction provided to young

children who are not yet reading conventionally. This is particularly disheartening given the substantial differences in vocabulary evident early in children's lives and their consequences for subsequent literacy development.

Therefore, there is a clear need to better understand how vocabulary instruction is enacted early on, when children are just beginning their formal schooling in kindergarten. The purpose of the present study is to examine vocabulary instruction in 55 classrooms within a range of SES neighborhoods. Specifically, the goal was to examine when, where, and under what conditions vocabulary instruction takes place for kindergartners. If we are to improve and ultimately ensure that all children receive high quality vocabulary instruction, it is imperative to understand what may occur in daily practice.

Overview of the Present Study

As we do not understand the current state of affairs, the purpose of this study is to quantitatively describe vocabulary instruction as it is instantiated at the start of school, in kindergarten classrooms. The goal is to examine vocabulary instruction throughout the day in a large sample of naturalistic classroom settings. Data for this study were collected as part of the Home-School Study (Susan Neuman, PI), sponsored by the Corporation for Public Broadcasting/Public Broadcasting System through a *Ready to Learn* grant funded through the Office of Innovation and Improvement, U.S. Department of Education. I used 660 hours of observational data from 55 kindergarten classrooms located in a range of urban and suburban communities in Michigan. Trained observers conducted four visits to each classroom during February through May of 2009. Each visit was three hours long, which

spanned the whole school day for half-day kindergarten classrooms and the entire morning for full-day kindergarten classrooms.

Trained observers documented all vocabulary lessons, as well as all episodes of word meaning explanations that occurred throughout the school day. For the purposes of this study, a word explanation episode was defined as a verbal interaction in which the teacher explicitly states some meaning for a target word or helps children to determine the meaning of a target word. Observers documented the specific words that were taught and the language used to provide meaning for the target word. They also recorded the academic content, grouping configuration and time during which these word explanation episodes occurred. Teacher talk was audio recorded during the entire observation period to supplement real time coding.

I present descriptive findings investigating both the quantity and quality of vocabulary teaching across the curriculum. I examine the quantity of vocabulary teaching observed. I also attempt to describe vocabulary teaching - both what it looked like and when it occurred during the school day. I examine teachers' use of repetition, as well as the challenge-level of words they select for vocabulary teaching. I also report on the contexts for vocabulary instruction include the grouping configurations, content area, and read-aloud text genre in which word meaning explanations occur. I then use inferential statistics to determine whether there are differences in vocabulary instruction across classrooms with regards to the curriculum materials that teachers use as well as the socioeconomic status of the student population in the classroom. Finally, I use transcribed audio-recordings of the classroom talk from a subsample of teachers to provide preliminary results on the

relationship between the vocabulary teaching that teachers provide and the incidental vocabulary learning opportunities teachers provide through their daily oral language discourse.

The following research questions are addressed in this study:

1. What is the extent of vocabulary instruction in kindergarten?

2. What are the features that best describe vocabulary instruction in kindergarten?

3. What are the contexts in which teachers provide vocabulary instruction?

4. Does vocabulary instruction vary by curriculum use?

5. Does vocabulary instruction vary by the socioeconomic status of the student population?

6. Is there any relationship between the quantity of vocabulary instruction teachers provide, the quantity of lexical input they provide through their general oral language discourse in the classroom, and the socioeconomic status of the student population in the classroom?

Contribution of the Study

We cannot seek to improve vocabulary instruction in schools unless we understand what is currently occurring in classrooms. Yet the current research-base of observational studies of vocabulary instruction focuses mostly on upper-elementary school classrooms (e.g. Durkin, 1978-1979; Scott, Jamieson-Noel, & Asselin, 2003) where vocabulary is considered a component reading comprehension skill. We currently have limited knowledge about the oral vocabulary instruction that teachers

provide at the start of elementary school, before children can read independently (Neuman, 2010b).

Likewise, we currently know little about vocabulary instruction beyond the language arts block. While there have long been theoretical connections posited between vocabulary and background knowledge (Anderson & Freebody, 1981), recent evidence suggests that young children can learn vocabulary and conceptual knowledge embedded in a variety of content areas outside of language arts (Neuman & Dwyer, in press). This study contributes to the research-base by examining vocabulary teaching throughout the school day to further understand the instructional contexts that support vocabulary instruction.

The evidence suggests that children arrive at school with differences in their vocabulary knowledge that are related to their socioeconomic background (Hart & Risley, 1995) and language exposure in their home environment (Hoff, 2003; Weizman & Snow, 2001). As such, it has been proposed that schools should work towards ameliorating these vocabulary gaps through instruction (Neuman, 2008) yet current evidence suggest that schooling does not improve this situation (Chall, Jacobs, & Baldwin, 1990). In contrast, children who arrive at school with strong vocabularies are more likely to become successful readers while those who arrive with weaker vocabularies are more likely to struggle (Stanovich, 1986). While these studies have documented differences in children's home-based vocabulary learning opportunities by socioeconomic status, we currently know little about the opportunities that children from different backgrounds are given to learn vocabulary

at school. This study seeks to address this question by examining instruction across classrooms serving student populations from a range of SES backgrounds.

Since vocabulary is central to children's early literacy skills and comprehension abilities, it is imperative to have a better understanding of the amount, quality, and conditions of instruction that enable children to become successful readers. With a clearer knowledge of current instructional practice, we can better understand the type of research and development that is necessary to move forward in improving vocabulary instruction for young children.

Chapter 2

Literature Review

Research consistently demonstrates that children from low socio-economic status backgrounds have lower levels of vocabulary knowledge than their middle class peers. This finding had been replicated in early childhood (Hart & Risley, 2003), elementary school (Biemiller & Slonim, 2001) and in middle school (Chall, Jacobs, & Baldwin, 1990).

Hart and Risley (2003) observed 42 families for an hour each month over two and a half years beginning at the time the children were 7-9 months old. They found that 86% to 98% of the words that they recorded children using were also used by their parents. Children from low socio-economic status (SES) families knew fewer words and were adding words to their vocabularies more slowly than their middle and upper SES peers. In a follow-up study of the same children, they found that children's vocabulary at age 3 predicted their language skills in the 3rd grade. Not only were there group differences in vocabulary acquisition by socio-economic status in early childhood, these differences remained well into children's elementary years.

Beimiller and Slonim (2001) measured the root word vocabulary of 1st through 6th grade children by asking children the meaning of a target word in a sentence. They found that at the end of 2nd grade, on average, socio-economically advantaged children knew 1000 more root words than their peers from a normative

population. Chall, Jacobs, & Baldwin (1990) studied 30 low SES children. They found that both above and below average readers in this sample were at grade level in language, reading and writing in the early elementary grades, but they fell below grade level in late elementary and middle school years. Below average readers started to "slump," or fall below grade level, in reading in 4th grade, and above average readers started to "slump" in 6th or 7th grade. The researchers found that this deceleration was particularly strong in the area of knowing word meanings. By the 7th grade, both poor and good readers in the researchers' low SES sample were 2 years below grade level in vocabulary. The authors hypothesized that by late middle school, texts contain fewer common words with more academic and abstract words that a student would typically acquire through wide reading or being read to. In earlier grades (1-3) texts contain more common words that children already know, and so lack of broad vocabulary knowledge is less noticeable in these earlier years, but has a noticeable impact on children's reading development as they progress into middle school.

These findings, that children from low socio-economic status backgrounds arrive at preschool with more limited vocabulary knowledge than their peers, and that this gap continues to impact children's literacy development throughout their schooling, has been termed, *the Matthew effect (*Stanovich, 1986)*. Stanovich argues that young children who grow up in environments with lots of language experiences learn more vocabulary, and this vocabulary knowledge facilitates reading comprehension. Because these children become strong readers early, and because they enjoy reading, they are exposed to more print. This extensive reading in turn

builds more vocabulary knowledge, which enables stronger reading comprehension as well as a stronger ability to derive unknown word meanings from context during reading. As such, the best readers become better, and the weakest readers continue to struggle in school.

Relationship between Vocabulary Knowledge and Literacy Skills

Vocabulary "gaps" by socio-economic status are particularly concerning because they are apparent before formal schooling and continue to impact children's learning throughout their school career. Researchers have begun to unravel the connections between vocabulary knowledge and other key literacy skills including phonological awareness, decoding skills, exception word reading, and most resoundingly, reading comprehension.

Phonological awareness, the child's ability to recognize the speech sounds that make up words, is related to young children's literacy development as children must learn to associate separate speech sounds with letters of the alphabet in order to decode and encode text. Goswami (2002) suggests that young children who have more vocabulary knowledge are more likely to develop phonological awareness. As children learn more words, they must focus on the phoneme-level differences between words in order to differentiate their meaning. For example, a young child who knows that 'cot,' 'cat,' and 'cut,' are different words is discriminating based on a single phoneme. According to this *lexical restructuring* theory, children who know more oral vocabulary in the early childhood years are likely to have strong phonological awareness skills, which in turn will contribute to facility in literacy development.

Storch and Whitehurst (2002) gathered data on 626 low-SES children beginning when they were four-year-old participants in Head Start programs. The researchers used structural equation modeling to examine the influences of code-related skills and oral language (measured as expressive and receptive vocabulary) on children' reading. They found that children's vocabulary is particularly related to their code-related skills in pre-school and is slightly less so in kindergarten. This relationship is no longer significant in first and second grade, but receptive and expressive vocabulary is again related to reading ability in third and fourth grade when it is connected to reading comprehension. The authors suggest that in the early elementary grades, reading comprehension is determined mostly by reading accuracy, while in the later grades, even children who can read accurately may be unable to comprehend if they do not have the appropriate language skills. The authors express concern that phonological processing skills should not be the only oral language skills emphasized in the preschool and lower elementary years. They recommend that vocabulary and syntax should be taught orally, beginning in preschool and throughout the elementary years rather than waiting to focus on vocabulary after children can decode.

The NICHD Early Childcare Research Network (2005) authors disagreed with a narrow focus on vocabulary. Their study demonstrated the importance of conceptualizing oral language more broadly. The researchers examined the relationship between broad-based oral language skills (including vocabulary but also syntax, morphology and communicative ability) and children's reading outcomes in 137 children from the NICHD Study of Early Child Care and Youth Development.

They found that for both high and low SES children, after controlling for maternal vocabulary scores, broad-based oral language at 54 months was directly related to word recognition in first grade and to reading comprehension in third grade. Also, children's vocabulary knowledge in 1st grade predicted their reading comprehension in 3rd grade. The authors argue that broad-based oral language skills are important for the development of decoding skills in the transition to school as well as for reading comprehension throughout the elementary grades. These authors too recommend ensuring that early education includes rich and comprehensive oral language experiences.

The finding that strong vocabulary knowledge is particularly facilitative of reading comprehension beginning in mid-to-late elementary school has been replicated repeatedly in different countries and across language groups. Muter and colleagues, in a longitudinal study of 90 British children, found that children's oral language skills at school entry, including vocabulary and grammatical awareness, were significant predictors of reading comprehension two years later, even after controlling for early word recognition, phoneme sensitivity, and letter knowledge (Muter, Hulme, Snowling, & Stevenson, 2004). In a similar finding, Sénéchal, Ouellette, and Rodney (2006) found that English-speaking children's receptive vocabulary in kindergarten predicted reading comprehension in 3rd grade but not 1st grade. Kindergarten listening comprehension also predicted reading comprehension in 3rd grade. The authors replicated this finding with French-speaking children. Again, vocabulary measured in kindergarten predicted reading comprehension in 4th grade, but was not predictive of reading comprehension in first grade. These studies indicate

that differences in vocabulary knowledge and general oral language comprehension become particularly poignant as children move past early decoding skills and begin to read more challenging texts, and that this finding can be generalized across cultures and language groups.

In another recent study (Rickets, Nation, & Bishop, 2007) of 81 children in mid-to-late elementary school, the authors found that vocabulary predicted exception word reading (words that are inconsistent in spelling-sound correspondence) and reading comprehension, but it did not relate to text reading accuracy, decoding or regular word reading. These findings contribute to this literature by replicating the ubiquitous finding that vocabulary knowledge facilitates reading comprehension. However, these findings also suggest that semantic knowledge can continue to impact children's ability to read certain types of words into late elementary school years.

The connection between vocabulary and reading comprehension is also well-documented in the reading disabilities literature. Researchers theorize that reading disabilities that are not related to word reading can be traced to underlying difficulties with the verbal abilities that make up language comprehension including: background knowledge, vocabulary, language structures, verbal reasoning and literacy knowledge (Scarborough, 1998; 2002). For example, Catts, Adlof, and Weismer (2006), found that children with poor reading comprehension in 8th grade had concurrent deficits in language comprehension, including measures of receptive vocabulary. These readers had normal phonological processing skills. Looking retrospectively at data collected on the same children in kindergarten, 2nd grade and 4th grade, the researchers found that children already demonstrated language comprehension deficits at these earlier

time points. The authors argue that their findings provide evidence for the *Simple View* of reading (Hoover & Gough, 1990), which postulates that reading comprehension is primarily composed of two mechanisms: word recognition and oral language comprehension. According to this view, for children who have normative decoding skills, difficulties with reading comprehension are likely due to underlying difficulties in comprehending oral language, and vocabulary knowledge is a key component of oral language comprehension. This Simple View is rephrased quite elegantly in the title of a recent article by Beimiller (2003), *Oral Comprehension Sets the Ceiling on Reading Comprehension.* If an individual does not know or understand a word or concept when it is presented in oral language, it is unlikely that he or she would understand it when reading it in a text.

While there is some evidence that vocabulary knowledge relates to phonological awareness and word reading skills, there are a large number of studies linking early vocabulary knowledge to later reading comprehension. After children learn to decode and move towards reading more challenging texts, those with weak vocabulary knowledge are likely to struggle to comprehend these texts. These difficulties are reflected in children's oral language comprehension as well. The implication of this research, repeated by authors of almost all of these studies, is to address vocabulary orally in the early childhood years before and while children learn to read independently, rather than waiting to address vocabulary when children begin to struggle with reading comprehension in upper elementary school.

Theories Connecting Comprehension and Vocabulary

Anderson and Freebody (1981) in their review of the relationship between vocabulary and reading comprehension, conclude that word knowledge is strongly related to reading comprehension. This finding has held across language groups and across numerous studies and has been replicated repeatedly in more recent studies. The authors state three hypotheses to explain why vocabulary knowledge is such a strong predictor of both oral and reading comprehension. While few scholars adhere to a single theory, each has different implications for intervention and instruction:

(1) The *aptitude* hypothesis suggests that vocabulary tests are a proxy measure for general aptitude. This general aptitude both enables the individual to learn more words and allows the individual to comprehend text more easily. Proponents of this theory cite the strong correlation between vocabulary and IQ, "The strong relationship between vocabulary and general intelligence is one of the most robust findings in the history of intelligence testing." (Anderson & Freebody, 1981, p. 77). The authors review ten studies that provide evidence that scores on the vocabulary measures of intelligence tests are so strongly correlated with the total score (.71 to .98) on these tests that the vocabulary measure can be used as an estimate, or short measure, to determine the score on the entire scale. This theory might lead to instruction focused on changing children's aptitude by increasing reading time, improving decoding skills or addressing early word exposure. However, this hypothesis might also lead to counter-productive assumptions that vocabulary skill is simply a matter of innate ability that cannot be improved upon through instruction, an idea that has been disproved resoundingly in meta-analyses of

vocabulary intervention studies (Marulis & Neuman, 2010; National Reading Panel, 2000; Stahl & Fairbanks, 1986), where researchers have demonstrated that all children can be taught new words.

(2)The *instrumentalist* hypothesis suggests that knowing more words enables better comprehension. This hypothesis focuses on knowledge of many individual words. Proponents of this theory cite the finding that increasing the difficulty of words in a text makes it more difficult to read. This leads to instruction focused on increasing children's knowledge of individual words. Well known recent examples of intervention studies based on this theory have been done by Beck and her colleagues (i.e. Beck, McKeown, & Kucan, 2002; Beck & McKeown, 2007), who focus on teaching children *Tier II* words. They suggest that Tier II words are not common, everyday words used regularly in oral language, nor are they words that are esoteric to a particular domain. Instead Tier II words are known by mature, literate, language-users and are found across a variety of domains (i.e., coincidence, absurd, industrious). Of note is that this manner of selecting words ascribes to the theory that increasing knowledge of individual words is the key to increasing vocabulary knowledge and thereby improving comprehension.

(3) The *knowledge* hypothesis suggests that a person who scores well on a vocabulary test has high general knowledge and knows lots of information. Vocabulary words represent and describe this knowledge. For example, if you know the word, "mast," you probably also have knowledge about boats and sailing. Vocabulary knowledge represents conceptual knowledge, and knowing words means having developed "schemata" that enable comprehension. Proponents of this

hypothesis argue that vocabulary learning should be imbedded in content-rich instruction. Here, it is this strong background knowledge, along with the language to articulate this knowledge, which enables an individual to have good listening/reading comprehension. Scholars have focused on the *knowledge hypothesis* as a strong explanation for the connection between vocabulary and reading comprehension (Hirsch, 2003). Neuman (2006) argues that vocabulary gaps by socio-economic class represent "knowledge gaps." She and her colleagues suggest that early literacy skills should be integrated into content-rich instruction that could simultaneously advance children's conceptual knowledge and vocabulary development in the early childhood years (Neuman & Dwyer, in press, Neuman, Roskos, Wright, & Lenhart, 2007; Wright & Neuman, 2009).

While differing theories may lead to different methodologies for instruction, the importance of vocabulary knowledge to children's academic trajectories is resoundingly clear. These theories suggest that vocabulary knowledge is not a finite skill that can be addressed and mastered at one age or stage of development. Instead, understanding word meanings is intricately connected to reading and learning throughout schooling and beyond.

Lexical Input at Home

Prior to conventional literacy, oral language is the primary source from which young children learn the meanings of new words. It is a socially-mediated process, learned through adult-child interactions, including joint events like book reading (Mol, Bus, and deJong, 2009), and informal learning experiences, like play (Neuman & Roskos, 1992). Research demonstrates that vocabulary learning is strongly

impacted by the quality, as well as the quantity, of words that very young children are exposed to in their homes. Hart and Risley (1995) demonstrated that the amount of lexical input that children are exposed to, or the sheer number of words that they hear in the home, can be correlated with children's vocabulary size.

Weizman and Snow (2001) studied the language of 53 low-income mothers as they interacted with their kindergarten children during playtime, mealtime and book reading sessions. The authors examined both the quantity of language to which children were exposed as well as the quality or level of this language. The authors examined word quality by examining lexical sophistication. Sophisticated words were defined as being outside the 3000 words on the Dale-Chall list (Chall & Dale, 1995). The researchers also examined the quality of maternal-child interactions around sophisticated words by rating the mother's language as more or less informative in providing meaning and syntactic information for the child, and by rating the mother's ability to scaffold the child through the interaction. Together these elements of the interaction led to a rating of each interaction as instructive (directly informative with extensive scaffolding), helpful (indirectly informative with some facilitative interactional features) or neutral (no interactive scaffolding). Analyses indicated that 99% of the words used by the mothers consisted of words that fell within the most common 3000 words in English. However, the density of children's exposure to sophisticated words was related to their vocabulary knowledge as measured by the Peabody Picture Vocabulary Test at the end of kindergarten and at the end of second grade, even after controlling for other key factors such as maternal education, child nonverbal IQ and amount of talk during the observations. The authors also found that

children's exposure to these sophisticated words in instructive or helpful interactions predicted vocabulary performance. Within this population of low-income mothers, the density of sophisticated words used by the mother, and the helpfulness to the child of the interactions around these words, were more important factors than the sheer quantity of lexical exposure in predicting children's vocabulary development.

Hoff (2003) compared the speech of high and low SES mothers as they engaged in naturalistic interactions with their two-year-old children. She found that maternal speech mediated the relationship between SES and children's vocabulary development. Like the previous studies, Hoff finds evidence that gaps in vocabulary by socio-economic status are explained by children's language experiences at home.

These home-based findings lead to questions about school-based teaching and learning. While the language used by mothers during observations in children's homes can be seen as a snapshot of children's language exposure since birth (e.g., mothers who use more sophisticated words during more facilitative interactions with their five-year-olds have likely had similar patterns of behavior over time). This finding reinforces the hypothesis that home-based exposure, or lack of exposure, to lexical input explains a good deal of the differences in children's vocabulary knowledge at school entry. Could helpful interactions around sophisticated words in a school-based setting serve to boost children's vocabulary development, particularly for children who do not receive this lexical exposure at home? Or perhaps, more discouragingly, is the time children spend in their homes over the first five years of their language development so instrumental to their general vocabulary knowledge that even intensive school-based vocabulary instruction is just "a drop in the bucket?"

We know very little about the current status of children's school-based lexical input. While intervention studies indicate that children learn words that they are taught in school (Stahl & Fairbanks, 1986), we do not know how often teachers provide vocabulary instruction of the type and intensity seen in intervention studies, particularly in lower elementary school before vocabulary is taught as a component skill of reading comprehension. We also do not know how often teachers explain sophisticated words to children during typical school days.

Extent of Vocabulary Instruction

There is now evidence from several large-scale research summaries and meta-analyses suggesting that vocabulary instruction can improve children's vocabulary knowledge and reading comprehension (Stahl and Fairbanks, 1986; Marulis & Neuman, 2010; National Early Literacy Panel, 2009; National Reading Panel, 2000). While evidence indicates that vocabulary *can* and *should* be addressed in schools before children begin to encounter difficulty with reading comprehension, recent research is very limited in examining the extent or features of vocabulary instruction at the start of formal schooling.

In their meta-analysis of studies on vocabulary instruction, Stahl and Fairbanks (1986) found that vocabulary instruction improves children's reading comprehension of passages that contain the words that were taught. Vocabulary instruction also has a weaker but significant impact on children's reading comprehension of passages that do not contain the learned vocabulary words. The authors suggest that even though children need to learn thousands of words, vocabulary instruction is not a futile endeavor. They suggest that a typical vocabulary

21

program can help students to learn around 300 new words per year, which is particularly helpful for children who have relatively weak vocabulary knowledge.

After analyzing 50 studies that researched vocabulary instruction using experimental methods, The National Reading Panel (2000) recommended that vocabulary instruction is a key domain for children's reading development that must be addressed in schools. The authors added that it is not optimal for children's learning to rely on a single method of vocabulary instruction. They conclude that, "our knowledge of vocabulary acquisition exceeds our knowledge of pedagogy. That is, the Panel knows a great deal about the ways in which vocabulary increases under highly controlled conditions, but the Panel know much less about the ways in which such growth can be fostered in instructional contexts" (p. 4-27). The authors also note that most of the studies reviewed by the panel were conducted with children in grades 3-8, with only six studies on populations younger than third grade, pointing to the limited knowledge that we have about vocabulary instruction before children learn to read independently.

More recently, the National Early Literacy Panel (2009) completed a meta-analysis of nineteen language intervention studies for children ages birth through five, and they found moderate effect sizes on oral language skills for interventions that specifically address these skills with young children. In addition, the authors examined the effect of shared book reading interventions on vocabulary and oral language skills. Here they examined a set of 16 studies and found a moderate effect size on children's vocabulary as well as on more broad-based oral language measures.

In the most current meta-analysis of 67 vocabulary interventions provided to pre-kindergarten and kindergarten children (Marulis & Neuman, 2010), the authors found an overall effect size of .89, demonstrating that on average, vocabulary instruction provided in research studies enabled young children to gain almost one standard deviation on vocabulary measures.

Clearly there is evidence that young children can be taught vocabulary words; however, we know little about vocabulary instruction as it is currently instantiated in classrooms that are not part of intervention studies. Therefore, observational studies that describe the current status of instructions are necessary in order to determine how to move forward in ensuring that young children are, in fact, receiving vocabulary instruction in their classrooms. Several studies have sought to better understand daily vocabulary instruction.

In one study (Neuman & Dwyer, 2009), researchers studied ten curricula that are commonly used by pre-K programs receiving Early Reading First grant money. They found that while curricula were likely to recommend vocabulary instruction in their scope and sequence as well as to identify a list of words that should be taught, these materials provided little guidance to teachers as far as instructional strategies for teaching words, opportunities for children to practice words, opportunities to review new words or methods for ongoing progress monitoring of children's vocabulary learning. These findings indicate that for the more than 41,000 children impacted by this federal program, there is likely very limited attention to vocabulary instruction. Observational studies of instruction are needed to further examine the enactment of these materials.

Observational research on the state of vocabulary instruction in elementary school classrooms has tended to focus on "print" vocabulary instruction for children who are already reading independently. For example, in her classic study of reading comprehension, Durkin (1978-1979) observed instruction on word meanings during reading and social studies in upper-elementary school classrooms. She found that teachers dedicated less than 3% of the reading period to instruction, review and application of word meanings. Blankowitz (1987) observed six fourth grade reading groups over 10-15 days and found that 15-20% of instructional time was dedicated to vocabulary, far more than in Durkin's earlier observations at the same grade level. However, it is hard to compare these percentages as Blankowitz only coded about half of the time spent in reading groups as instructional.

Blanton and Moorman (1990) observed reading lessons on three consecutive days in 28 fourth grade classrooms. They found that teachers spent 11.3% of their pre-reading time on teaching the meaning of vocabulary words recommended by the basal reading program. This time accounts for only about 6% of total time spent on reading instruction. Of the 380 vocabulary events that were observed, in 212 of these, the teacher simply introduced a dictionary definition of a word. Watts (1995) completed 47 observations of reading lessons in six classrooms: three fifth grade classrooms and three sixth grade classrooms. She also interviewed teachers regarding their vocabulary instruction. Analysis of this qualitative data indicated that teachers generally provided vocabulary instruction as a pre-reading activity. Based on interview responses, the researchers found that teachers were focused on teaching vocabulary to help children with immediate classroom requirements for reading

comprehension, but did not consider this domain of knowledge in terms of broader environments such as children's overall school or societal success.

In a more recent observational study of vocabulary instruction (Scott, Jamieson-Noel, & Asselin, 2003), completed in Canadian 5th-6th grade classrooms, the authors examine time spent on vocabulary instruction over the course of three consecutive days of observation in 23 classrooms. They also examined the type of vocabulary instruction that occurred. The authors found that over the course of the school day, teachers spent 52% of their time on literacy-related activities, but only 1.4% of time in school was spent on vocabulary. Of the little time spent on vocabulary instruction, the authors found that 40% was spent with students copying definitions from dictionaries.

In short, these studies provide some evidence as to vocabulary instruction for children who are reading, but we know little about oral vocabulary instruction provided to young children who are not yet reading conventionally.

Two recent studies observed vocabulary instruction during language arts in kindergarten classrooms. Al Otaiba and colleagues used a time sampling methodology to examine time dedicated to code-based compared to meaning-based instruction (vocabulary and comprehension) during 60-minute observations of the language arts block in 17 Reading First kindergarten classrooms (Al Otaiba, Connor, Lane, Kosanovich, Schatschneider, Dyrlund, Miller, & Wright, 2008). The authors found a large range in time dedicated to vocabulary instruction, 2 to 24 minutes, per observation. Further investigation of the features of vocabulary instruction was not the focus of this study, nor was instruction beyond the language arts block; however,

25

the authors suggest that teachers on the high end for vocabulary instruction used one specific curriculum that focused on this area. The authors provide limited discussion of their definition of "vocabulary instruction" for purposes of this study.

In another recent correlational study, Silverman and Crandell (2010) examined vocabulary instruction during the language arts block for pre-kindergarten or kindergarten classrooms. The authors observed 16 classrooms in a school district that was focused on promoting vocabulary development. The study authors provided teachers with a professional development workshop on vocabulary instruction, books to use for read-alouds and target vocabulary words to teach over the course of the year in relation to children's learning of the target words. They then observed teachers' vocabulary teaching practices and related these to child outcomes. Yet, this study cannot answer questions about the quantity or features of vocabulary instruction in naturalistic settings as the authors provided professional development as well as selected texts and target words to the teachers. Both of these recent studies limited observations to language arts instruction, so we have minimal information about oral vocabulary instruction that might occur in other contexts throughout the day.

In sum, we currently know little about oral vocabulary instruction as it is presently enacted across a range of naturalistic classroom settings. In particular, this study seeks to better understand the extent and features of vocabulary instruction across the curriculum in classrooms serving a range of communities. Therefore, there is a clear need to better understand how vocabulary instruction is enacted early on, when children are just beginning their formal schooling in kindergarten.

Features of Vocabulary Instruction

Recent research has generated an increasing consensus on the characteristics that appear to promote children's vocabulary learning. This research emphasizes the development of instruction that includes rich and explicit explanations of words, in-depth discussions of words in multiple contexts, and review and practice of words on many occasions.

Converging evidence suggests that explicit explanations enhance young children's word learning (Biemiller & Boote, 2006; Booth, 2009). Typically, instruction is considered *explicit* when students are given definitions or other attributes of the words to be learned (National Reading Panel, 2000). In a recent meta-analysis, Marulis and Neuman (2010) reported significantly higher effect sizes for interventions that included explicit instruction (g=1.11) compared to implicit instruction in which a new vocabulary word might be embedded in story book reading without direct explanation of word meanings. In comparison, smaller effect sizes (g=.62) were reported for interventions with only implicit instruction in which a new vocabulary word might be embedded in story book reading without direct explanation of word meanings. Studies of direct comparisons between approaches, as well, have reported that young children learn more words during story book reading when teachers provide explicit explanations of target words compared to just reading aloud (Coyne, McCoach, Loftus, Zipoli, & Kapp, 2009; Penno, 2002). These studies suggest that implicit instruction alone may not be substantive enough to significantly boost oral language development.

Another characteristic that appears to affect vocabulary development is children's depth of processing words (Stahl & Fairbanks, 1986). For example, learning words and applying them to another context may represent a different depth of processing than learning a word in one context only. Beck, McKeown and Kucan (2002) use the term, *rich vocabulary instruction*, to describe this type of teaching that includes explanations of word meanings in child-friendly language, use of the word in a variety of contexts, opportunities to explain appropriate and inappropriate uses of the word, as well as review. Studies demonstrated that children who receive rich instruction on challenging words learn significantly more words than children in a control group (Beck & McKeown, 2007).

Silverman (2007) argues that it is the multidimensional features of vocabulary instruction that may promote depth of processing. In addition to explicit word explanations provided by the teacher and contextual instruction, she developed an intervention in which children were actively engaged in more decontextualized analysis of word meanings (i.e., comparing and contrasting words, or thinking of antonyms and synonyms) after the book was read. Similar to Beck and McKeown, she found that children engaged in multidimensional teaching learned more words than others who had discussed word meanings only in the context of a specific book. Coyne and his colleagues (2009), as well, found that by extending instruction to include multiple opportunities to interact with target words outside the context of the story enhanced greater depth of processing and word learning for kindergarteners.

Multiple exposures to different meaningful information about words may help young children form a more decontextualized knowledge of a word's meaning.

Neuman and Gallagher (1994) developed an intervention which involved book reading and oral language strategies. Parents and teachers were provided with theme-related books and concrete objects, designed to engage children in playful reenactments and retellings of a specific topic or theme. Teachers and parents were trained to use the target vocabulary words during the related activities. Children not only engaged in richer conversations, but also expressed and elaborated on their ideas, which appeared to lead to greater overall effects on overall vocabulary development. Other interventions, using theme-based prop boxes have demonstrated similar powerful effects on overall vocabulary development (Han, Moore, Vukelich, & Buell, in press; Neuman & Roskos, 1992).

These and other studies highlight the importance of a related feature of hearing words in multiple contexts—repetition. Single exposures to explanations might provide children with an initial exposure, a fast mapping of a term to establish some baseline information about a new word; however, word meaning is developed through repeated exposure to the word in conjunction with information about the word's meaning (Carey, 1978; Booth, 2009). Studies suggest that students need multiple exposures to explanations of word meanings. For example, Biemiller and Boote (2006), found that young children exposed to repeated readings of a text with a single word explanation for each target word, learned 22% of new words. When teachers provided two additional reviews of each word's meaning, children learned 41% of the target words, almost double what was learned with only a single explanation.

In comparison to the substantial literature on the characteristics of instruction, less attention has been paid to the selection of words. Recently, however, there is a growing consensus that words for vocabulary instruction should be selected from the portion of word stock that comprises sophisticated words, or rare words outside children's day-to-day lexicon. Ideally, focus words for explicit instruction should be appropriately challenging to support long-term comprehension (Nagy & Hiebert, 2010). Beck, McKeown, and Kucan (2002), for example, recommend teaching Tier II words—words that are domain general, known by mature, literate, language-users, and found across a variety of domains (i.e., coincidence, absurd, industrious). Biemiller (2006) suggests that words should be selected by age of acquisition, moving children towards more complex words as they become word conscious. Weizman and Snow (2001) used the term, *sophisticated words* to refer to words outside the 3000 most common words on the Dale-Chall list. They found that the density of mothers' use of sophisticated words as well as instructive interactions around these words predicted children's vocabulary scores in kindergarten and beyond.

Others have recommended teaching content-specific words early on to ensure that children develop the vocabulary words and background knowledge to comprehend text relevant to science, mathematics and social studies (Hirsch, 2003; Marzano, 2004a; Neuman, 2006; Neuman, Roskos, Wright, & Lenhart, 2007; Wright & Neuman, 2009). Although each approach may have its unique strengths and limitations, the renewed interest and focus on challenging words is designed to help promote overall verbal functioning, particularly for students who may come from

lower-SES backgrounds and may have less opportunities to acquire these words outside of school. It might also represent the most efficient use of instructional time.

Together, a growing consensus in research has shown that when vocabulary instruction is explicit, in-depth, multidimensional, involving challenging words, and repeated practice in multiple contexts, we can substantially improve children's vocabulary knowledge in kindergarten.

Contexts for Vocabulary Instruction

Several instructional contexts have been assumed to relate to the amount and quality of vocabulary instruction, although here there is less consensus. These include the group size, the curriculum, and read-aloud genre in which words are taught, as well as the use of a core reading program.

Group size might be expected to affect vocabulary instruction. Participation in a group discussion, or as Stahl and Clark (1987) found, even the expectation of being called to participate might lead to more active processing of words. A study by Powell and his colleagues, for example, supported longstanding concerns about whole group instruction. In their observations of 12 classrooms in 12 urban schools, they found that 52% of the time was spent in whole group, supporting passive modes of child engagement like listening, instead of talking and acting (Powell, Burchinal, File, & Kontos, 2008). Similarly, Morrow and Smith (1990), investigating children's comprehension of stories, found that whole group interactions were less beneficial for developing comprehension skills than either small group or one-to-one interactions. No significant differences, however, were reported in a recent meta-analysis of vocabulary interventions between whole group, small group and one-to-one

instruction (Marulis & Neuman, 2010). Given the importance of interaction in developing vocabulary, this is a subject of intense interest for further inquiry.

Vocabulary instruction may be impacted by the curricula in a classroom – both the enacted curriculum as well as formal curriculum materials. In studies of vocabulary instruction for young children, researchers have typically used read-alouds as the context for word selection and word meaning teaching (National Early Literacy Panel, 2009). In instruction built around this context, research studies provide children with word explanations (Biemiller & Boote, 2006), dialogic reading (Hargrave & Sénéchal, 2000; Wasik & Bond, 2001; Wasik, Bond & Hindman, 2006; Whitehurst, Arnold, Epstein, Angell, Smith, & Fischel, 1994) or extended discussion of vocabulary words (Beck & McKeown, 2007; Silverman, 2007) to promote children's vocabulary learning. Vocabulary teaching has therefore typically been examined as part of language arts instruction (Silverman & Crandall, 2010).

Recently, researchers have created effective curricula that embed vocabulary teaching in content area instruction to ensure that children develop the vocabulary words and background knowledge to comprehend science, mathematics, and social studies content with successful outcomes for children's vocabulary and conceptual knowledge (Neuman & Dwyer, in press; Neuman, Dwyer, Koh, & Wright, 2007). As such, vocabulary instruction might occur across the curriculum during all content areas. Another way that teachers might provide content area vocabulary is through informational text read-alouds and discussions (Leung, 2008). Yet, research suggests that informational texts have been underutilized for read-alouds in early elementary school classrooms (Duke, 2000a). Marzano (2004b), for example, suggests that

opportunities for vocabulary instruction in school have generally been underestimated because the focus tends to be on general word learning during language arts instruction and not the words in key content areas.

Whether or not the use of a comprehensive (core) reading program might improve the amount and quality of vocabulary instruction has been the subject of debate in recent years. Over the past decade, there has been a policy emphasis on the use of core reading curricula in Reading First and Early Reading First legislation (Al Otaiba et al., 2008; Carlisle, Cortina, & Zeng, 2010; U. S. Department of Education, 2002). Studies of these curricula, however, have been critiqued as providing limited support for vocabulary instruction. Researchers have argued that core reading programs for lower elementary school miss opportunities to build word and background knowledge during read-alouds and thematic instruction (Walsh, 2003). At the pre-kindergarten level, Neuman and Dwyer (2009) found little evidence of a deliberate effort to teach vocabulary to preschoolers. The authors reported a mismatch between explicitly stated goals in the scope and sequence; a general pattern of 'acknowledging' the importance of vocabulary but sporadic attention to addressing the skill intentionally; little attention to developing background knowledge; and limited to no opportunities to practice, review, and monitor children's progress. Still, to my knowledge, there have been no observational studies to examine whether or not different content areas within the curriculum or core curricular materials might promote greater vocabulary instruction.

I examine these contextual factors to better understand how or when vocabulary instruction occurs in kindergarten classrooms. Certainly, many other

aspects of setting could be considered. However, these factors seem to be more consistently related to understanding how or when vocabulary instruction might occur in kindergarten classrooms.

Vocabulary Learning Opportunities and Student SES

As described above, the evidence suggests that young children from economically disadvantaged homes, are exposed to fewer words in their homes, resulting in more limited vocabulary knowledge than their middle class peers before the start of formal schooling (Hart & Risley, 1995; Hoff, 2003). Hart and Risley, for example, showed that by 18 to 20 months, the high SES children's vocabulary trajectories were accelerating away from those of the working-class and welfare children; by 24 months, the trajectory of the working-class had separated from that of the lowest-income children. Paradoxically, this is also when children have the greatest potential for increasing the rate of vocabulary growth; Farkas and Beron (2004) found that the highest rate of vocabulary growth occurs from ages birth through six, and that rates decline for each subsequent age period. Consequently, the early years of schooling play a crucial role in children's growth trajectory and a critical opportunity to enhance the development of oral vocabulary knowledge.

As such, researchers have suggested that schools should work towards ameliorating these gaps by providing vocabulary instruction that could accelerate vocabulary learning for students from low SES backgrounds (Neuman, 2008). Yet, researchers have found little evidence toward this schooling effect (Biemiller, 2006). In fact, the available evidence demonstrates that a year of schooling has almost no impact on vocabulary size (Christian, Morrison, Frazier, & Massetti, 2000), to the

effect that schooling simply reifies the vocabulary trajectories that are associated with students' home experiences.

At present it is unclear why schooling does not make a greater impact on low SES children's vocabulary development because we have little understanding of the daily instruction that children receive. It is possible that classroom instruction, like home-based vocabulary learning opportunities (Hart & Risley, Hoff 2003; Weisman & Snow, 2001), differs when teachers serve children of different socio-economic status backgrounds. To better understand vocabulary instruction, this study looks across classrooms serving student populations from a range of SES backgrounds to determine whether there are detectable differences in the vocabulary teaching that children receive.

Beyond explicit vocabulary instruction, children also learn vocabulary implicitly through exposure to language in the classroom environment (Dickinson & Tabors, 2001). Language learning is a socially-mediated process as children learn language by listening to adult language in their ambient environment (Harris, Golinkoff, & Hirsh-Pasek, 2010; Hoff, 2006) as provided by parents at home (Hart & Risley, 1995; Hoff, 2003; Pan, Row, Singer, & Snow 2005; Weizman & Snow, 2001) and by teachers at school (Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002; Dickinson & Porche, in press). Accumulating evidence indicates that the quality of the oral language experiences in the classroom makes an important contribution to children's achievement (Dickinson & Tabors, 2001; NICHD ECCRN, 2005). A recent study found that teacher language in the early childhood years can have long-term consequences for children's literacy. In their longitudinal study, Dickinson &

Porche (in press) found that features of teacher talk in preschool classrooms, including teacher's use of sophisticated vocabulary during free play, predicted fourth grade reading comprehension for children from low SES background.

However, at present, researchers have not examined the relationship between teachers' vocabulary instruction and their more general oral language discourse in the classroom. Nor do we understand whether there is a relationship between children's economic backgrounds and their implicit vocabulary learning opportunities in school. This study seeks to better understand whether vocabulary instruction might be at all related to the ambient language environment that teachers provide through their general classroom talk.

The Present Study

The purpose of this study was to learn to what extent kindergarten classrooms teachers provide vocabulary instruction. Given the converging evidence regarding quality vocabulary instruction, I ask the following research questions:

(1) What is the extent of vocabulary instruction in kindergarten?

(2) What are the features that best describe vocabulary instruction in kindergarten?

(3) What are the contexts in which teachers provide vocabulary instruction?

(4) Does vocabulary instruction vary by curriculum use?

(5) Does vocabulary instruction vary by the socioeconomic status of the student population?

(6) Is there any relationship between the quantity of vocabulary instruction teachers provide, the quantity of lexical input they provide through their general oral language

discourse in the classroom, and the socioeconomic backgrounds of their student population?

Summary

Vocabulary is an essential area for instruction in schools because children's vocabulary knowledge is related to their reading achievement, particularly in the area of reading comprehension, which is the ultimate goal of reading. Studies indicate that we cannot wait until children begin to read independently to address vocabulary. At this point, there are already vast disparities in children's vocabulary knowledge, and children with weaker vocabularies are likely to struggle as readers. Researchers recommend that vocabulary should be addressed orally in school-based settings in the early childhood and early elementary school years. Intervention studies demonstrate that it is possible to teach sophisticated new words to young children.

However, we do not know whether or how vocabulary is currently being addressed in kindergarten classrooms as there have been limited observational studies documenting vocabulary instruction. This gap in the literature must be addressed, and I propose to do so through this dissertation study. We must understand the current state of vocabulary instruction in order to move forward in ensuring that all children receive the best possible instruction in this vital domain for their literacy.

Chapter 3

Method

The purpose of this study was to better understand vocabulary instruction as it is currently instantiated in kindergarten classrooms. While there is evidence that vocabulary *can* and *should* be taught to young children in school, we have limited understanding of the instruction that children presently experience. This study seeks to describe vocabulary instruction across a broad range of kindergarten classrooms in order to inform researchers and practitioners who seek to ensure that all children have access to high quality instruction in this key domain for children's literacy development.

The research questions addressed in this study are as follows:

1. What is the extent of vocabulary instruction in kindergarten?

2. What are the features that best describe vocabulary instruction in kindergarten?

3. What are the contexts in which teachers provide vocabulary instruction?

4. Does vocabulary instruction vary by curriculum use?

5. Does vocabulary instruction vary by the socioeconomic status of the student population?

6. Is there any relationship between the quantity of vocabulary instruction teachers provide, the quantity of lexical input they provide through their

general oral language discourse, and the socioeconomic status of the

student population in the classroom?

This chapter reports on the methodology used in this dissertation study. First this chapter reports on the process of designing an observation protocol, as well as efforts to define vocabulary instruction and distinguish it from general oral language discourse. I then describe the sampling strategy and provide detailed information about the teachers who participated in this study. I then address data collection and coding. Finally, I describe the analytical strategy that was used to address each research question and discuss limitations of this methodology.

Designing a Protocol

This study began with preliminary observations in local kindergarten classrooms. In order to design the observation protocol, we needed to more thoroughly understand the nature of vocabulary teaching as it might be instantiated in kindergarten classrooms, and how it might differ from teachers' oral discourse throughout the day. While this began with a review of the literature on what might constitute vocabulary instruction, it also required many hours of observation and qualitative note-taking in kindergarten classrooms. These qualitative observations were completed by myself and one additional doctoral student in classrooms that were not part of the larger-scale study.

We visited six classrooms in public, private and charter schools in order to see a range of instruction. While visiting classrooms, we wrote thorough qualitative descriptions of any behaviors on the part of the teacher or children that might constitute vocabulary instruction. We then met with the rest of the research team to

discuss our findings and narrow our definitions before returning to the field for further observation. It took four months of revisions, field testing, and refinement to finalize the observation protocol.

Our qualitative observations led to several key initial realizations. First, none of the classrooms that we observed had a specific time period for vocabulary instruction. Teachers did not announce any vocabulary lessons, and vocabulary was not listed on the daily schedule. Second, teachers provided explanations of the meaning of words to children at various times throughout the day, but these episodes did not occur at regular intervals, and they were not confined to the literacy block. Third, all episodes of word explanations that we observed were teacher-facilitated interactions. While a child might ask what a word meant or participate in a class discussion where the teacher helped children to move toward the meaning of a word, all interactions around vocabulary involved a teacher providing meaning(s) for a word, or the teacher facilitating children's understanding of a word. It was the teacher who provided the meanings for words. Finally, to adequately study and describe vocabulary instruction, we would need to parse vocabulary instruction from teachers' oral language discourse. We would need to carefully define vocabulary instruction in a way, such that it could be reliably identified by classrooms observers.

These discoveries led to several key decisions in designing the observation protocol. First, we needed to observe for a long stretch of time during each visit. We could not simply observe vocabulary "instruction" during a vocabulary lesson because in our preliminary observations, we saw no evidence that this type of lesson occurs. We could not simply observe the literacy block or read-alouds, because this

would not give us an accurate picture of vocabulary teaching across the kindergarten curriculum. Observing only a literacy block or read-aloud period, for example, might not capture the rich vocabulary learning opportunities in content areas like science or social studies. Also, even though we were interested in children's experiences learning vocabulary in kindergarten, we needed to watch and listen to the teacher if we hoped to capture all instances of vocabulary instruction in a classroom. Finally, a time sampling methodology, one observational strategy that we considered, would not be appropriate because word explanation episodes did not occur regularly, and with time sampling, we missed the instances of vocabulary teaching that we hoped to capture when they did not occur during an observation interval.

We decided to audio record and simultaneously observe word meaning explanations as they occurred throughout a three-hour observation period. This was the longest period that we could observe because morning-only and afternoon-only classrooms meet for only three hours per day. Teacher language during word explanation episodes was written down verbatim. Observers also took extensive notes regarding when these episodes occurred. They recorded the general academic content (i.e., reading, math, science) that the teacher was covering during the period of time when the episode occurred, as well as the grouping configuration (i.e., whole group, small group, centers).

Even though we did not see clearly-defined vocabulary lessons (here we were thinking about times when learning word meaning was the main lesson as opposed to word-teaching episodes embedded in other content) during our preliminary visits to kindergartens, vocabulary would be included as a "content" to capture stand-alone

41

vocabulary lessons if they occurred in the larger sample. See Appendix A for a sample of a completed observation protocol.

Defining Vocabulary Instruction

In working out a definition for vocabulary *instruction,* we first needed to differentiate it from teacher talk. For example, quality teacher talk often includes cognitively challenging words, sophisticated or rare words (Dickinson & Porche, in press). Although studies have made important connections between this type of talk and children's vocabulary development, this was not the immediate focus of this study. The focus of this study was to look for evidence of explicit vocabulary instruction as described in the research literature (see Chapter 2). As such, we were interested in recording instances where a teacher might take time to explain or discuss the meaning of a word.

The goal was to be as inclusive as possible in capturing oral language that might constitute vocabulary instruction as it occurred throughout the observation period. At the same time, we needed to ensure that the ten trained observers who would be visiting schools could reliability recognize instances of this instruction when they occurred as distinguished from the general oral discourse in the classroom. We used our qualitative field notes, in conjunction with the literature, to carefully define and provide examples of word explanation episodes for the purposes of this study. We focused on a fairly basic definition of vocabulary instruction as explaining or discussing word meanings. This information was included in a codebook that was used for observer training. For the purposes of this study, a vocabulary teaching episode was defined as follows:

1. An interaction in which the teacher provides children with meaning of a target vocabulary word or helps children to determine the meaning of a target vocabulary word.

Example: "**Rhyming** means the words have to sound alike. They have the same ending sound and sound alike."

2. The target vocabulary word and its meaning are explicitly stated or discussed.

Example: "A **cave** is a hole in a mountain."

We used this definition in order to be as inclusive as possible while still focusing on *word meanings* and *teaching*. This led us to focus on interactions where the teacher provided or facilitated a discussion of the meaning of a word. The teacher or a child had to state a word orally, and the teacher had to state or help children to state an explanation that provided meaning for the target word. This definition of vocabulary teaching episodes was inclusive in that we could record and count word meaning explanations as they occurred throughout the day. We were not limited to vocabulary taught during a vocabulary lesson or a particular basal program. We also did not expect the teacher to announce that she would be discussing a vocabulary word or tell children that it was a new word. We included all episodes where the teacher provided an explanation of a word for the children or facilitated children's determination of a word's meaning through discussion or prompts. This allowed us to include "child-friendly" definitions of words. Beyond simple definitions, we included rephrasing, partial definitions, synonyms, antonyms, category membership, and examples used to give meaning to a target word. Episodes could be long conversations or brief definitions, but we considered one episode to be an identifiable

target word clearly associated with conversation about its meaning. In short, we focused on *word explanations* as they occurred throughout the day. *See* Appendix B for sample episodes of word explanations.

Our definition of word explanations excluded some features of the teacher's language that could be considered supportive for children's oral language development. We did not include words connected with gestures but given no additional verbal explanation or meaning. For example if a teacher gestured toward the calendar as she said the word "calendar" in conversation, but did not provide an explanation, this was not included. This decision rule was made because we could not determine in real time whether the teacher was simply using gestures in everyday conversation or purposely using gestures to provide meaning for a vocabulary word. As we were not video-taping, gestures could not be included for purposes of this study. We also did not include descriptions related to words when the teacher did not provide meaning for that word; for example, "the dog is brown." Again, we could not be sure if the teacher was intentionally giving meaning to either the word "dog" or the word "brown" in this utterance. We did not count words that were stated and defined within the text of a book or film unless the teacher stopped to discuss the meaning of the word. We made this decision because our goal was to focus on teachers' instruction and not incidental exposure to words in other contexts. Finally, we did not include spelling, phonics, phonological awareness, or general comprehension instruction as word explanations or vocabulary instruction. While these are important aspects of children's literacy development, we did not want to confuse these skills with vocabulary as we defined it for this study – knowledge of word meanings. Word

44

explanations that occurred while teachers addressed these areas were counted as word explanations during reading instruction. In sum, the focus was on *vocabulary teaching* that could be clearly identified and discriminated by trained observers.

Finalizing the protocol, we then trained two independent researchers to visit two classrooms and to record all vocabulary episodes over a three-hour period. Once they completed their observations, they reviewed their work using the audio-recordings, and revised their observations to include the verbatim explanation for each vocabulary word. Comparing their protocols, percent agreement was 95%. Therefore, we were confident that we could train observers to reliably observe vocabulary instruction in kindergarten settings.

Participants

The participants in this study included 55 kindergarten classroom teachers. Teachers were selected because a student in their classroom was participating in the Kindergarten Home-School study during the 2008-2009 school year (Susan Neuman, PI). At the end of their pre-kindergarten year, eighty children from a range of SES backgrounds, were randomly selected from a large-scale study aimed at improving children's vocabulary and content knowledge in pre-kindergarten during the 2007-2008 school year (Neuman, Newman, & Dwyer, 2009). To insure a diverse sample, selection was stratified by the pre-kindergarten program that children attended. From a sample of 1284 children, we randomly selected 40 children who attended Head Start, 20 children who attended state-sponsored pre-kindergarten, and 20 children who attended a private preschool program where parents paid tuition. The parents of

children in the Home-School study agreed to allow us to study the children's home and school environments over the course of their kindergarten year.

All parents gave permission to contact children's schools. The schools of 65 of the children gave permission for us to contact kindergarten teachers and observe in their classrooms. Five of these children remained in pre-kindergarten classrooms during their five-year-old year. As I was interested in studying kindergarten, their teachers are not included in the sample for this dissertation. There were five cases in which more than one child in the study attended kindergarten in the same classroom. Each teacher was only counted once, and this created my final sample of 55 kindergarten teachers. The 55 teachers in this study taught in 46 different schools across urban and suburban communities in a large mid-western state. In 39 cases, we observed in only one classroom per school. However, because of our sampling strategy of following the selected children, there were two cases where we followed children into 3 classrooms in the same school and 5 cases where we followed children into two classrooms in the same school.

Most teachers in the study were female (96.3%) with an average age of 41 years old. Teachers were diverse in their backgrounds and years of experience. All teachers had at least a Bachelors degree, and over two thirds held a Masters degree. Most teachers taught in public schools (67.2%), although both charter and private schools were represented. Teachers also worked across different types of kindergarten programs – full day, morning-only, and afternoon-only. Teachers taught children from a range of socio-economic backgrounds with approximately a third of the classrooms serving primarily low-income children, a third representing children from

a more diverse economic status, and a third with more economically advantaged

children. See Table 1 for descriptive characteristics of the sample.

Table 1

Characteristics of Kindergarten Teachers and Schools (N=55)

Teacher Characteristics	
Gender	
Female	96.3%
Race	
Asian	1.8%
Black/African American	14.5%
Hispanic	3.6%
White/Caucasian	74.5%
Other	5.5%
Age (mean)	40.8
Highest Level of Education	
Bachelors	29.1%
Masters	70.9%
Total Years Teaching Experience	
0-5 years	34.5%
6-10 years	16.4%
11-15 years	10.9%
16-20 years	12.7%
More than 20 years	25.5%
Type of Kindergarten	
Half Day	38.2%
Full Day	61.8%
School Sector	
Charter	27.3%
Private	5.4%
Public	67.2%
School Free and Reduced Lunch percentage	
25% or less	30.9%
>25%-50%	30.9%
>50%	38.1%

Procedures

Observer Training and Reliability

Prior to the study, ten observers were trained to use the observation protocol.

All observers had prior experience in classrooms as preschool or elementary school

teachers or as school administrators. Observers were current graduate students or teachers and administrators who were on leave or retired. I conducted all trainings with a fellow doctoral student. Observers attended a day-long training which included a review of the codebook, a document created to explain study definitions of vocabulary episodes, as well as additional codes to be used. Training also included experiences completing the observation protocol using written scenarios, as well as video of kindergarten classrooms. After this training, all observers completed a certification test where they were expected to code a 20-minute video of classroom activity. Observers were expected to identify at least 95% of the episodes identified by the trainers in order to proceed to field training. All observers met this criterion.

After completing this certification test, each observer completed training in a real kindergarten classroom with an expert observer (myself or another doctoral student who was on the research team that designed the protocol). For the first half of this observation, research assistants and expert observers coded side-by-side. Expert observers then answered questions and clarified points of confusion. For the second half of the observation, research assistants completed the observation independently from experts to determine reliability. Research assistants were expected to match expert coding at the 95% level in order to begin collecting data for the study. One research assistant did not achieve this level of agreement. She repeated her field training and testing to meet criterion.

Overall, in both the video test and the classroom certification, we found that research assistants were more inclusive than experts in their recording of vocabulary episodes, recording more quotations than expert observers just to be sure that they

were not missing an episode. This was acceptable because observers were *not* responsible for coding or scoring observations sheets, so extra recorded episodes that did not meet the definition of vocabulary word explanations for this study could be eliminated at the coding stage. We could be confident that observers were not excluding word explanation episodes.

Finally, we conducted a reliability check midway through field observations to assess for drift in identifying episodes of vocabulary word explanations. Again, an expert observer accompanied each research assistant on a school visit and conducted a side-by-side observation to ensure that research assistants maintained a 95% match with our own identification of vocabulary episodes. All observers met this criterion.

Additional Data Sources

Kindergarten teacher questionnaire. All teachers were asked to complete a seven-page survey about their own backgrounds, their professional training and recent professional development, the curricula they use in their classrooms, and the language and literacy instruction that they provide in their classrooms. Surveys took fifteen minutes to a half an hour to complete. Teachers received a $10 gift certificate upon completion of this survey.

Publicly available data. Data on school percent free and reduced lunch were publically available online from the state government website.

Classroom Observations

To gather data on vocabulary instruction for this study, each classroom was visited four times between February and May of 2009. Observations lasted for a three-hour period beginning at the start of the school day, creating a total of 660 hours

of observation in kindergarten classrooms. We selected a three-hour period because this typically encompassed the entire school day for am-only or pm-only kindergarten classrooms. As in other studies with young children (Connor, Morrison, & Slominski, 2006), full-day kindergartens were visited in the morning because afternoons included lunch time and rest time, limiting observation of instruction.

Visits were scheduled with the teacher in advance. Teachers were told that we wanted to observe a "typical day." Teachers also understood that they were asked to join the study because one of their students was in our Home-School study. We did not specify our particular focus on vocabulary instruction because we wanted to capture regular classroom instruction without inducing teachers to focus on vocabulary while we were there.

For each classroom, the four visits were scheduled on different days of the week, with approximately two weeks between each visit. Each observation in a classroom was conducted by a different research assistant. During each visit, the research assistant used a laptop to complete the observation protocol and collected an audio recording of all of the teacher's speech during the three-hour period.

Research assistants sat in an area of the room where they could observe the classroom while being as unobtrusive as possible. They were instructed to observe while trying not to interact with children or the teacher or otherwise interrupt the typical classroom day. Observations stopped when teachers and students left the classroom for recess or for subjects not taught by the classroom teacher (i.e., library or music) and resumed observing when the class returned. On average, this out-of-the-classroom time accounted for 42 minutes of each 3 hour observation. At the end

of the study, teachers received a selection of new children's books for their classroom to thank them for their participation.

Audio Recording

Teachers wore a small clip-on microphone while they were with children during the observations. Observers wore ear pieces that enabled them to hear an amplified version of the teacher's language. This amplification allowed observers to watch from a corner of the classroom without following teachers around and causing interruptions to regular instruction. The children did not hear any amplification. Observers captured as much teacher language as they could for each vocabulary episode in real time on the laptop. In addition, the observer's earpiece was attached to a digital recorder, so we were able to record teacher language for the full three-hour observation period. These recordings were used by observers to complete any missing information from the observation protocol sheet after the observation. This was particularly helpful when research assistants were only able to capture partial quotations for vocabulary episodes during the real-time observation. They were expected to fill-in this missing data after the observation.

The Observation Protocol

Word explanations. On a laptop computer, observers wrote down all episodes of word explanations in real time as they occurred throughout the observation period. Any language that was missed was filled-in using audio recordings after the observation period. Observers also wrote down the group configuration and content during which the episode took place as well as the start time for each episode.

Grouping configuration. Observers recorded the activity setting or grouping configuration as it changed throughout the day. They also marked the time at each change of grouping configuration. Setting codes included: whole class, centers, small group, independent, transition, out of classroom, prep time, and other. Out-of-classroom time and prep time were later combined as these were the times when the observation was stopped. Observations resumed when children and teachers returned to the classroom. If observers selected the *other* code, they were expected to provide a written explanation of what was occurring in the classroom. Complete definitions for each code are included in Appendix C. This record of the group configurations later enabled coders to determine the grouping configuration context in which each word explanation episodes occurred as well as the length of time spent in each group configuration.

Content. Observers recorded the academic content as it changed throughout the day. Because our focus was on instruction, observers focused on the content that the teacher was addressing. Therefore, if a teacher worked with a small group, the content for this group was recorded, not the content for the rest of the children. Observers also recorded the content that was occurring during each vocabulary word explanation. Content codes included: vocabulary, reading, read-aloud, writing, math, social studies, science, meeting, centers, and other. Definitions of contents were based on state standards with additional clarification from the teacher's scheduled and our piloting of the protocol. Complete definitions for each code are included in Appendix C.

We asked observers to specifically parse read-alouds as separate from other types of reading instruction. This is because vocabulary intervention research has focused heavily on read-alouds as a context for vocabulary instruction (Biemiller & Boote, 2006; National Early Literacy Panel, 2009), and therefore we needed to examine this time separately. Observers recorded the title and author for each read-aloud text. This way we could later determine whether word meaning explanations occurred during fiction or informational text (Duke, 2000a). Note that all word explanations during read-alouds were counted in this content code even if the topic of book addressed a specific content area. For example, a word explanation during a non-fiction book with a social studies theme was counted as an informational read-aloud not as social studies[1] Also, we included a code for vocabulary instruction that observers could select if they observed a stand-alone vocabulary lesson where the teacher was discussing or focusing on learning word meanings outside of the context where the words were introduced. In the case of a vocabulary lesson, we would have expected to see episodes of word meaning explanations embedded within the content of vocabulary.

We also used "morning meeting" as a content code. In our initial classroom observations, we found that almost all classrooms had a whole group meeting time at the start of the day. During these multi-disciplinary times, teachers typically covered the same series of routines: a greeting song, shared reading of a morning message, review of the daily schedule, review of the calendar, examining or graphing the

---

[1] This decision rule might have led to underestimation of time in other content areas if teachers often addressed other content areas (i.e., science) during informational read alouds. Note, however, that the median for informational read-alouds was 0. See Results chapter. This finding suggests that underestimation due to this decision rule was minimal.

weather and counting the days of school. Typically teachers moved quickly from one routine to another, making the general content difficult to parse. We decided to use "morning meeting" as a single content code for these routines. If teachers veered from these routines (e.g., began to read a story or poem, began a shared writing activity), observers were asked to record the new content. If there was any doubt, observers were asked to choose the more specific content, rather than morning meeting, and to provide qualitative notes so that coders could ensure we were not missing content area instruction.

Observers were asked to provide brief descriptive notes each time they included a new content code. They were asked to specifically state what the teacher was doing and addressing. These notes provide some additional qualitative information on the content being taught and could be used to clarify confusion if the observer selected "other" or was unsure about which content code to include. Examination of qualitative notes suggests that selection of "other" typically occurred when children were eating snack.

Timing. Coders recorded the time when the group configuration changed throughout the day (e.g., move from whole group to transition or from meeting to centers) as well as each time there was a word explanation episode. Usually these group configuration changes signaled a new content; however if multiple contents occurred during a single grouping configuration, during the coding process time was split evenly among the contents.

Coding Word Explanations

In total, there were 220 observation protocols that required coding, representing 660 hours of observations. Vocabulary observations were coded by myself and two additional doctoral students. To ensure reliability, 20% of observations were coded independently by the three coders and then compared to ensure agreement in counting vocabulary episodes before independent coding began. We reached 95% agreement in our counts. During coding, coders met weekly to discuss and resolve questions jointly. Each week, an additional five observations were selected to be coded independently and then compared across all three observers to ensure agreement and prevent drift. Each observations sheet (based on a 3-hour visit) was coded for the following:

1.   Total Episodes of Word Explanations: For each observation coders determined the total number of times that the teacher provided or facilitated a vocabulary episode. Coders excluded language that did not meet study definitions of vocabulary episodes.

2.   Total Vocabulary Words: How many words were explained? Note this is slightly different to total number of episodes because the teacher may have several episodes throughout the day where she addressed the same target word.

3.   Number of word explanations during each content: The coders determined the total number of episodes that occurred during each content area. For example, coders tabulated the number of episodes that occurred during read-aloud, during math, or science.

4.   Number of word explanations during each grouping configuration: The coders determined the total number of episodes that occurred during each grouping configuration. For example, coders tabulated the number of episodes that occurred during whole class, small group or one-on-one instruction.

5.   Number of word explanations during each read-aloud genre: Coders looked up each text listed by observers and used the definition provided by Duke (2000a) to determine if it was a fiction or informational text. They then counted the number of episodes during each genre.

6.   Minutes of instruction: The coders tabulated the total minutes of instruction in each content area, in each grouping configuration, and in each read-aloud genre.

7.   Coders also generated a list of the vocabulary words associated with each episode.

Determining Sophisticated Words

I then further examined the list of vocabulary words that teachers addressed in their word meaning explanations. There is some debate in the literature about which words children should be taught during explicit vocabulary instruction (Nagy & Hiebert, 2010). Beck and McKeown (2002) suggest "Tier II words," words that are commonly used by adult language users (Beck, McKeown, & Kucan 2002; Beck & McKeown, 2007). Other researchers suggest that these words are too difficult for young children, and that words should be selected instead by typical age of

acquisition, moving children towards more complex words as they get older (Biemiller, 2006). These studies focus on how teachers should *select* words to teach, but I needed a way to determine the challenge-level of words post-hoc. I therefore looked to studies that have analyzed word sophistication in parent and teacher language transcripts.

Weizman and Snow (2001) studied children from low SES backgrounds in their homes as they interacted with their mothers during meal times and play times. They found that the density of kindergarten children's exposure to sophisticated words with helpful explanations of these words provided by the mothers predicted children's receptive vocabulary scores on the PPVT in kindergarten and remained a predictor in second grade (Weizman & Snow, 2001). These researchers defined sophisticated words to be words *not* on the updated Dale-Chall list (Chall & Dale, 1995). More recently, Dickinson and Porche (in press), using the same methodology for defining sophisticated words in their study of teacher talk in preschool classrooms. They found that preschool teacher's use of sophisticated words predicted children's reading comprehension scores in fourth grade.

While this could be considered an overly stringent word selection criterion for kindergarten children, I replicated the procedures used by Weizman and Snow (2001) and Dickinson and Porche (in press) in this study to rate the sophistication of words used by teachers during their word explanations. I selected this methodology for theoretical reasons, because these researchers have found that exposure to sophisticated words (under their definition) predicts long-term child outcomes in both vocabulary and reading comprehension. Also, at present there is no agreed upon or

published list of words by Beck, McKeown, & Kucan's "tiers." As such, rating words in this way would be based on rater judgments rather than a commonly available list, which would be a less replicable methodology.

The vocabulary word discussed in each episode of a word explanation was coded to determine whether the taught word was sophisticated. We determined whether or not each target vocabulary word was on the Dale-Chall list or a derivationally inflected form of a word on the list. Forms included 's, s, es, ies, d, ed, ied, ing, r, est, ier, iest. This list includes 3000 common words known by fourth graders, and including derivationally inflected forms creates a total list of 7,875 common words. These words are somewhat similar to Tier I words in the typology described by Beck and McKeown. They are likely to be in children's lexicon, or they are words children will likely learn without explicit instruction. Sample words that teachers explained in this study that were on the Dale-Chall list included: *butterfly, dry, house, empty, mom, lunch,* and *today*.

In this study, episodes where the target word was *not* on the list were considered sophisticated words that children might not typically learn from general oral language exposure and are therefore likely candidates for teaching. Sample words that kindergarten teachers in our study explained that were *not* on the Dale-Chall list include: *construction, dormant, expression, habitat, quotation, souvenir,* and *tinted.*

Transcribed Audio Recordings

In order to determine the relationship between explicit vocabulary instruction and the general oral language environment in the classrooms, I selected a purposive

sub-sample of audio recordings to transcribe and examine further. Sixteen audio-recordings were selected representing the speech of the two teachers with the highest and two teachers with the lowest number of vocabulary word explanations during each of the four observations. The same teacher was not included more than once, and as such if one of her transcripts had already been selected from an earlier observation, I moved down to the next teacher by number of word explanations. One teacher whose audio recording was originally transcribed taught in a preschool (age 3-5) classroom and she was not included in the final sample for this dissertation study because I focused on kindergarten teachers. (Note that 5 teachers from the original sample were not included in this final dissertation study because they worked in multi-age preschool classrooms and this study focused on kindergarten. See *Participants* section of this chapter for further discussion of the sample.). The final total included 15 transcripts with 8 transcripts for "high episode" teachers and 7 transcripts for "low episode" teachers.

Audio recordings were transcribed using the Codes for the Human Analysis of Transcripts (CHAT) conventions for analysis by the Child Language Analysis (CLAN; MacWhinney, 2000) of the Child Language Data Exchange System. The CLAN program FREQ was used to generate a comprehensive teacher word-token list as well as a count of the total word tokens, or total words, used by the teacher. The program also generated a word-type list as well as a count of word types, total *different* words used by the teacher. In conjunction, these data provide information on the quantity and range of vocabulary words that children experience from teachers general classroom discourse

Analytical Strategies

Since the goal was to develop a better understanding of vocabulary instruction in kindergarten, I averaged across the four observations and used mean scores to gauge the extent to which each teacher engaged in vocabulary teaching. I then examined the extent to which teachers employed techniques known to support quality vocabulary teaching and whether certain grouping configurations, content areas, read-aloud genres or curricula were likely to include more vocabulary teaching than others. I then compared vocabulary instruction that teachers provide in relation to the SES of the student population that they taught. Finally I examined the type and token of words that a subsample of the highest and lowest vocabulary instruction teachers provided through their general classroom discourse. The purpose was to quantitatively describe what vocabulary instruction might look like across a large range of kindergarten settings. I used the following analytic strategies to address each research question.

Procedures Used to Address Each Research Question

Question 1: What is the extent of vocabulary instruction in kindergarten?
This research question examined the amount of vocabulary instruction that teachers provide in kindergarten classrooms. The goal was to understand how often teachers provide extended vocabulary instruction – vocabulary lessons – as well as to examine how often teachers provide explanations of word meanings throughout the day. To answer this question, I examined two variables: 1) the number of times that "vocabulary" was selected as the content of a lesson, suggesting more extended instruction and 2) the total number of word explanations provided by each teacher

throughout the observations[2]. For each count, I created a total for each teacher across the four observations and then divided by 4 to examine the number of times that lessons or explanations occurred per day of observation. I then used descriptive statistics to describe these variables across the sample of 55 classrooms. As there was a large range in the number of word explanations across the sample, I then used an independent samples t-test to determine whether there were differences in the quantity of words explanations teachers provided by their highest level of education (e.g., BA or MA). I used analysis of variance to determine whether there were differences in the extent of vocabulary instruction related to teachers' years of experience (e.g., 0-5, 6-10, 11-15, 16-20, >20).

Question 2: What are the features that best describe vocabulary instruction in kindergarten? This research question examines features of vocabulary instruction that the research base suggests induce vocabulary learning. These features include: 1) repeated explanations and 2) explanations of sophisticated words.

To examine repetition, I examined the relationship between the number of different words explained per day and the total number of explanations provided per day. If teachers provided repeated exposure to word meanings, we would expect a larger number of explanations than words explained. For instance if words were typically explained three times, we would expect a 3:1 ration of explanations to words explained. If teachers provided minimal repetition, these numbers would be closer to a 1:1 ratio. For both explanations and words explained, I used the total for each

---

[2] Across all observations, there were 4 total times when a teacher provided a word explanation but was incorrect in the meaning she provided for the target word. As this was so infrequent, these 4 episodes were not included in the totals for word explanations in this study.

teacher divided by 4 to create a per day metric. I then used descriptive statistics to compare the sample means.

I also created a measure of the number of repetitions teachers provided for each word they teach. For each day of observation, I took the total number of word explanations provided by the teacher and divided that by the number of different words that she taught. I then averaged across the four days of observation to find the average number of repeated explanations that teachers provided for each word they discussed. I used descriptive statistics to examine repetition across the sample.

To examine the number of sophisticated words explained, I compared the number of word explanations that teachers provided for words on the Dale-Chall list as compared to words *not* on the Dale-Chall list. Words *not* on the Dale-Chall list were outside of the 3000 common words on the list and were considered sophisticated for the children in this study. For each teacher, I created a total for the number of word explanations for sophisticated words across all observations. I then divided the total by 4 to examine the number of word explanations of sophisticated words provided per day of observation. I then used descriptive statistics to examine this construct across the sample.

There were large ranges in repetition and in the number of sophisticated words explained; hence, I used independent sample t-tests and ANOVA to determine whether there were instructional differences based on teachers' highest degree or years of classroom experience.

Question 3: What are the contexts in which teachers provide vocabulary instruction? The goal of this question is to better understand the various contexts

during the school day where teachers provide word explanations and whether certain contexts were more fertile for these explanations than others. I examined three contexts: (1) grouping configurations, (2) content areas, and (3) read-aloud genres. I repeated the same analysis strategy for each context.

For each type of context, I began by using descriptive statistics to examine the number of times that word explanations occurred during the context per day of observation. For example, when examining grouping configurations, I calculated the number of times that teachers explained words during small group as compared to whole class contexts. Or, in content area, I examined the number of episodes per day that occur during read-aloud or during science.

In all cases, I found non-normal distributions, and as such I move beyond descriptive statistics to examine the percent of the sample of teachers that provide a particular number of episodes within a specific context. For example, a particular percentage of the sample had 0 word explanations during math.

I hypothesized that the number of word explanations that a teacher provided in a context must relate to time spent in that instructional context. Logically, it would be impossible to explain words in a context that a teacher did not address. So, I next examined the amount of time that teachers spent in each context. Again, I used both descriptive statistics and looked at the percent of the sample that provided a particular number of minutes per day.

Finally, I created a measure of episode density for each context. This measured the *density* of word meaning explanations within each grouping configuration, content or genre. For example, for grouping configurations, word

explanation *density* is defined as the number of episodes per minute of instruction

spent in a group configuration. I divided the total number of word explanations that

the teacher provided in each group configuration by the number of minutes that she

spent in that group setting to create an episodes per minute of instruction metric. Note

that this is different than the previous measure of word explanations per day observed

because this calculation focused on the time teachers spent on instruction rather than

the time we spent observing in her classroom. Note also that teachers who provided

zero minutes of instruction in a particular group configuration could not be included

in this calculation as the denominator would be 0, resulting in an undefined equation.

Teachers who spent time in a particular context but did not provide word explanations

were included; however, as the numerator is 0, the teacher's episode density for that

context would be zero. As such, the density measure answers the question: when

teachers provide instruction in a particular context, were word explanations more

concentrated in certain areas as compared to others? To continue the example of

grouping configurations, the type of question that this measure can answer is: were

word explanations more concentrated during whole-group instruction or during small-

group instruction? This question is of interest because certain grouping configurations

may be more fertile contexts for word explanations with, on average, a greater

number of word explanations per minute of instruction.

Question 4: Does vocabulary instruction vary by curriculum use? The

goal of this question is to better understand whether there are differences in the extent

or features of instruction that relate to teacher's use of a comprehensive reading

curriculum. To answer this question, I used independent samples t-tests to compare

the quantity of word explanations, challenge level of words explained and amount of repetition provided by teachers who use comprehensive curriculum versus teachers who use other resources.

Question 5: Does vocabulary instruction vary by the student population? The goal of this question is to determine whether teachers provide varying instruction depending on the SES of the student population that they teach. To examine the SES of the student population, I used a measure of percent free and reduced lunch that is publically available through the state website. While the reported data are school-wide, this is a reasonable proxy for the SES of the student population within a classroom of that school. I split the sample into three groups: (1) Classrooms in schools with 25% or fewer students receiving free or reduced lunch, (2) Classrooms in schools with greater than 25% to 50% of students receiving free or reduced lunch, and (3) Classrooms in schools with more than 50% of students receiving free or reduced lunch.

To answer this question, I used a series of ANOVA's to compare the quantity of word explanations, challenge level of words explained and amount of repetition provided by teachers who serve different SES populations.

Question 6: Is there any relationship between teachers' vocabulary instruction, their general oral language discourse in the classroom, and SES of the student population in their classroom? The goal of this question is to understand the relationship between teachers' word explanations and the quantity and range of vocabulary that they provide through their talk in the classroom. I also sought to understand the relationship between the quantity and range of vocabulary in

teachers' discourse and the SES backgrounds of the student population in their classrooms. I used data from a subsample of teachers' (n=15) language from transcripts of classroom visits. Each transcript was from audio-recordings of teachers' language during a three-hour visit. Audio recordings were fully transcribed and analyzed to find the type and token of words in each transcript. I used independent sample t-tests to compare teachers who generally provided a high number of word explanations per day with teachers who provide a low number of word explanations per day in these measures of their discourse. I also examined teachers' type and token of words by the SES of the student population that they taught using the three groups described in question 5.

Limitations to the Method

There are several limitations to the methodology of this study. My interest was in vocabulary instruction, and therefore I did not focus on other features of the classroom oral language environment, such as repeated readings of read-aloud texts (Elley, 1989), that might provide more implicit supports for children's vocabulary development. Yet within the study goals, I attempted to be as inclusive as possible in counting teachers' word explanations as vocabulary instruction. For example, I did not rate the quality of the explanations that teachers provided for each word but instead accepted all attempts to provide word meanings to children. In doing this, some might argue that I was overly generous in my counts and therefore might have have over-estimated the word explanations that children currently receive.

Classrooms were only visited four times, and I use evidence from only four days to understand "typical" instruction. Yet many recent studies of instruction in

kindergarten classrooms use only three visits to understand instruction (Al Otaiba et al., 2008; Silverman & Crandall, 2010). As such, the four days of observation provide more data than is typical in observational studies. Also, the four classroom visits were two weeks apart rather than on consecutive days. This sampling strategy was used to gain a sense of typical instruction, but I was unable to follow instruction over time and could not examine repetition from day to day.

I used the revised Dale-Chall list to define words as sophisticated, which may be an overly stringent word selection criterion for kindergarten children. As addressed above, this method was used because there is evidence that parents' explanations of these words and teachers' use of these words with children of this age have been shown to have long-term outcomes for children's vocabulary and reading comprehension.

It could be argued that I might underestimate science and social studies vocabulary teaching that could be included in morning meeting, read-alouds or reading instruction. For this reason, I specifically examined word explanations within the genre of informational read-aloud texts. Also, both observers and coders were trained to ensure that time was counted towards more specific content areas if teachers veered away from the basic morning meeting routines. Additionally, while children may have been learning to read informational texts during reading instruction, at the kindergarten level these books are designed to support decoding and are unlikely to introduce new science or social studies vocabulary, which was the focus of this study.

Finally, in this study, I assume based on previous research that vocabulary teaching would lead to improvement in children's vocabulary learning, but this was an observational study of instruction, and I could not specifically link these observations to child outcomes.

Conclusion

This study looks across a large sample of kindergarten teachers to examine their vocabulary teaching. Teachers (N=55) were observed and audio-taped four times for three-hour periods, for a total of 660 hours of observational data. Using an observation protocol, trained observers documented episodes of vocabulary teaching throughout the day and took notes on their context and timing. Observations were coded to quantify episodes of vocabulary instruction. A subsample (n=15) of audio recordings was transcribed for word counts.

I used descriptive and inferential statistics to analyze the data. My analysis focused on the extent and features of vocabulary instruction and the contexts in which vocabulary instruction takes place. I also determined whether instruction varies based on the curriculum materials that are used or the SES of the student population in teachers' classrooms. Finally, I examined the relationship between the vocabulary instruction that teachers provided and the quantity and range of words they used in their classroom discourse. I also examined teachers' vocabulary in their discourse in relation to the SES of the student population that they were teaching.

The goal of this study was to observe and describe vocabulary instruction. In order to ensure that all children receive excellent instruction in this key area, it is essential to understand the vocabulary instruction that they currently experience.

Chapter 4

Results

The primary goal of this study was to describe vocabulary instruction as it is currently instantiated across a large group of kindergarten classrooms. I report findings based on 660 hours of observational data in 55 kindergarten classrooms. I investigate the following research questions:

1. What is the extent of vocabulary instruction in kindergarten?

2. What are the features that best describe vocabulary instruction in kindergarten?

3. What are the contexts in which teachers provide vocabulary instruction?

4. Does vocabulary instruction vary by curriculum use?

5. Does vocabulary instruction vary by the socioeconomic status of the student population?

6. Is there any relationship between the quantity of vocabulary instruction teachers provide, the quantity of lexical input they provide through their general oral language discourse, and the socioeconomic status of the student population in the classroom?

In this section I present descriptive findings investigating both the quantity and quality of vocabulary instruction across the curriculum. I begin by reporting

results on the quantity of vocabulary lessons and word explanations observed. I then present findings describing this instruction - both what it looked like and when it occurred during the school day. I examine teachers' use of repeated explanations, as well as the sophistication of words they explain. I also examine the grouping configurations, content areas, and read-aloud text genres where word meanings are discussed. I then use inferential statistics to determine whether there are differences in vocabulary instruction across classrooms with regards to the curriculum materials that teachers use as well as the socioeconomic status of the student population in the classroom. Finally, I use a subsample of teachers' language transcripts to provide preliminary results on the relationship between the quantity of word explanations that teachers provide and the type and token of words they use in their oral language discourse.

Research Question 1: What is the extent of vocabulary instruction in kindergarten?

To investigate the extent of vocabulary instruction in kindergarten classrooms, I examine both the number of times "vocabulary" was selected as the content of a lesson as well as the number of word meaning explanations teachers provided throughout the observations.

My analysis revealed no dedicated lessons for vocabulary instruction in any of the observed classrooms. Despite observations of 660 hours of instruction in 55 classrooms, observers recorded no lessons devoted to the teaching of vocabulary. This confirms the initial findings from the preliminary qualitative observations. I

found no evidence that kindergarten teachers dedicate specific time periods in their schedules or stand-alone lessons to teaching vocabulary.

Rather, word meaning explanations were embedded and woven into other activities. For example, in one explanation a teacher assigned a math worksheet to a group of children, and said, [To do this activity,] "you need to get a writing *utensil*. You need a crayon or a pencil." Or in another case, during reading instruction, a teacher said, "This is what they're saying out loud, you can tell because of these *quotation marks*—these are talking marks."

Across the four days of observation in each classroom, teachers provided a mean of 32.53 word explanations or 8.13 per day. However, the range and variability was considerable. Some teachers provided no word explanations in a day, while others provided as many as 20.25. I calculated median scores to examine whether outliers might be distorting the results; although the distribution was slightly skewed with fewer teachers on the higher end of the curve, the distribution was close to normal. These findings suggest that while teachers did not engage in stand-alone vocabulary lessons, they did explain the meanings of words to children throughout the day at an average rate of 8.13 word explanations per day. See Table 2 for descriptives of the quantity of vocabulary lessons and the quantity of word explanations observed.

Table 2

Vocabulary Instruction per Day[a] (N=55)

	M (SD)	Mdn	Range
Vocabulary Lessons	0	0	0
Word Explanations	8.13 (4.24)	7.50	0-20.25

Note. Each classroom was observed for four days

To further understand the range in number of word explanations provided across the sample of teachers, I looked across the sample to determine whether certain groups of teachers systematically provide more word explanations than others. An independent samples t-test revealed no significant differences in the number of word explanations per day of observation by teachers' highest level of education, $t(52) = .46$, n.s. One way ANOVA revealed no significant differences in the number of word explanations by years of teaching experience, $F(4, 50) = .44$, n.s. See Table 3 for means and standard deviations. These findings suggest that the range in word explanations was unrelated to teachers' classroom experience or their highest degree.

Table 3

Means and Standard Deviations for Word Explanations per Day by Teacher

Characteristic (N=55)

Teacher Characteristic	Word Explanations
Highest Level of Education	
Bachelors (*n=16*)	8.55 (4.56)
Masters (*n=39*)	7.95 (4.17)
Total Years Teaching Experience	
0-5 years (*n=19*)	7.54 (4.12)
6-10 years (*n=9*)	7.22 (5.48)
11-15 years (*n=6*)	8.17 (2.55)
16-20 years (*n=7*)	8.75 (4.71)
More than 20 years (*n=14*)	9.20 (4.18)

Research Question 2: What are the features that best describe vocabulary

instruction in kindergarten?

I further examined the type of instruction that teachers provided during the 8.14 word explanations each day. I focused on two key research-based features of

vocabulary instruction: repeated explanations and the sophistication of the words that were explained.

Repeated Explanations

The importance of repetition to vocabulary learning is a robust finding in the literature (Biemiller & Boote, 2006). In planful and systematic vocabulary instruction, I would expect to see a new word meaning explained repeatedly to children – at a minimum, the teacher might discuss the meaning of a vocabulary word when it is introduced, again when it is practiced or when further examples are provided, and when the word meaning is reviewed (Beck, McKeown, & Kucan, 2002; Neuman & Dwyer, 2009). Given the lack of vocabulary lessons, I wondered whether teachers would provide purposeful repeated explanations of the word meanings they discussed with children.

I examined teachers' use of repetition by comparing the number of different words that teachers explained in comparison to the total number of explanations that they provided. Logically, if teachers provided substantial repetition, I would expect to see a smaller number of different words along with a larger number of explanations. Based on the same logic, if teachers provided less repetition, I would expect the number of different words explained to be quite close to the total word explanations, suggesting that each word was explained only a small number of times.

On average, teachers explained the meanings of 7.44 different words per day. Relating this to the findings from the first research question, I found that there were 8.14 explanations to address 7.44 different words. Each word that teachers explained was addressed on average 1.06 times. This finding indicates very limited repeated

73

explanation of the same word and suggests that teachers rarely discussed the meaning of the same word more than once per day. See Table 4 for descriptives on the features of teachers' word explanations.

Table 4

Features of Word Explanations (per day observed)

	M (SD)	*Mdn*	Range
Different Words Explained	7.44 (3.72)	7.25	0- 17.50
Number of Times Explanation of Word Repeated	1.06 (0.18)	1.07	0- 1.52
Explanation of Sophisticated Words	3.50 (2.10)	3.00	0- 8.75

Note. Each classroom was observed on four days

While there was a relatively small range in the number of repeated word meaning explanations that teachers provided for each word that they introduced (0-1.52 repeated explanations of each word), I looked across the sample of teachers to see whether certain groups of teachers systematically provide more repetition than others. Using an independent samples t-test, I found no differences by teachers' highest level of education, $t(53)=1.28$, n.s., and one-way ANOVA revealed no differences by years of teaching experience, $F(4, 50) = 1.29$, n.s., in the number of times each word was explained. See Table 5 for means and standard deviations. These findings indicate that the small range in teachers' use of repetition in explaining word meanings was unrelated to their years of teaching experience or their highest degree.

These findings, that teachers explain each word only once during the day, in conjunction with the finding that there were no vocabulary lessons, suggest that teachers may not be providing planful vocabulary instruction, but instead may be

capitalizing on "teachable moments" to introduce word meanings to young children as they come up throughout the day. This stands in contrast to the pattern of repeated discussion of word meanings that would be expected in well-planned vocabulary instruction.

Table 5

Means and Standard Deviations for Explanations of Different Words by Teacher Characteristic

Teacher Characteristic	Different Words Explained	Number of Times Word Explained
Highest Level of Education		
Bachelors (*n*=16)	7.59 (3.73)	1.11 (0.14)
Masters (*n*=39)	7.37 (3.76)	1.04 (0.19)
Total Years Teaching Experience		
0-5 years (*n*=19)	6.89 (3.39)	1.07 (0.09)
6-10 years (*n*=9)	6.52 (4.82)	0.97 (0.38)
11-15 years (*n*=6)	6.96 (1.34)	1.16 (0.18)
16-20 years (*n*=7)	7.68 (3.87)	1.04 (.04)
More than 20 years (*n*=14)	8.84 (4.04)	1.04 (.04)

Sophisticated Words

My next analysis examined the sophistication of the vocabulary words that were explained. Given that instructional time is precious, it would make sense for teachers to emphasize sophisticated or rare words of high utility that are least likely to be learned outside of school. I examined all of the words that teachers discussed during their word explanations and rated each word as common or sophisticated based on its presence or absence from the revised Dale-Chall list (1995), a word list containing 3,000 simple, common words and the derivationally-inflected forms of these words that are typically known by fourth graders. In this respect, my analysis

may be overly stringent for kindergarten children; nevertheless, it provided evidence

of the level of sophistication of the words that teachers explained while also

replicating a methodology that has been related to language and literacy outcomes for

children from low SES backgrounds in previous studies (Weizman & Snow, 2001;

Dickinson & Porche, in press). Words not on the list are considered sophisticated for

children.

I found that of the 8.14 word explanations that teacher provided per day, 3.50

addressed sophisticated words. The remaining explanations addressed more common

words on the Dale-Chall list. See Table 4. Therefore, fewer than half of the words that

teachers chose to explain (43%) were sophisticated words that are likely targets for

vocabulary instruction.

Table 6

Means and Standard Deviations for Explanations of Sophisticated Words by Teacher

Characteristic

Teacher Characteristic	Word Explanations of Sophisticated Words
Highest Level of Education	
Bachelors (*n=16*)	3.50 (2.05)
Masters (*n=39*)	3.49 (2.15)
Total Years Teaching Experience	
0-5 years (*n=19*)	3.03 (1.77)
6-10 years (*n=9*)	2.83 (2.82)
11-15 years (*n=6*)	3.83 (1.28)
16-20 years (*n=7*)	3.32 (1.84)
More than 20 years (*n=14*)	4.50 (2.28)

The range in explanations of sophisticated words was 0 to 8.75 word

explanations per day. I looked across the sample of teachers to see whether certain

groups of teachers systematically explain more sophisticated words than others. An

76

independent samples t-test revealed no differences by teachers' highest level of education, $t(53) = .01$, n.s., and one way ANOVA showed no difference by years of teaching experience, $F(4, 50) = 1.34$, n.s., in the number of times teachers' explanations addressed sophisticated words. See Table 6 for means and standard deviations. The range in teachers' explanations of sophisticated words was unrelated to their years of teaching experience or their highest degree, contributing further confirmation for a pedagogy of the "teachable moment. Word selection seemed unsystematic with teachers explaining mostly common words to children.

Research Question 3: What are the contexts in which teachers provide vocabulary instruction?

As the word explanations that were observed did not occur during dedicated vocabulary lessons but were scattered throughout the observations, I investigated the contexts where teachers explained the meaning of new words. In the following sections I examine the grouping configurations, content areas, and read-aloudgenres where teachers provided words explanations.

Word Explanations Across Grouping Configurations

In order to understand more about the context for vocabulary instruction in kindergarten, I examined teachers' word explanations across the grouping configurations that teachers used throughout the day,. I examined the number of word explanations that teachers provided when they led whole class, small group or one-on-one lessons. I also examined teachers' word explanations during times when children worked independently in work stations or play centers and during seat work. At these times, the teacher might provide brief help to individuals or small groups of

children or directions or explanations to the group, but if she sat down to work for a period of time with a small group (i.e., a guided reading lesson) or individual child, this was counted as a small group or one-on-one lesson. For all analyses, work stations and play centers are combined because it was difficult for observers to determine the goals for each area. The observers' qualitative notes suggest that much of this centers time was dedicated to literacy centers, with some classrooms spending time on free play centers (i.e., dramatic play, art area) during this time, but these different goals were combined for analysis because observers could not be sure of the teacher's intent in each center. Finally, I examined times of transition which include times when the teacher facilitated children moving from one activity to the next, bathroom breaks and clean up times.

Descriptives of word explanations that took place in each grouping configuration are provided in Table 7. As measure of centrality at times provided a limited picture of whether or not teachers explained words during each grouping configuration, Table 8 presents a look across the distribution. Of the 8.14 word explanations that teachers averaged per day of observation, a mean of 5.87 occurred in whole class settings. This finding indicates that, on average, almost three quarters of the word explanations provided by teachers (72%) occurred during times that the teacher was leading a whole class lesson. Most teachers (98.2%) provided a word explanation during whole class instruction with 21.8% providing up to three explanations per day of observation, 32.8% with up to 6 explanations, 23.6% with up to 9, and 20% of teachers providing more than 9 word explanations during whole group lessons per day observed.

Teachers explained fewer word meanings or provided no word explanations at all during the other grouping structures that were observed. The remaining word explanations occurred primarily during times when teachers worked with small groups ($M = .74$ explanations per day) or when children worked on independent seat work and teachers moved around the classroom stopping to respond to children as necessary ($M = .79$) or during transitions ($M=.26$). The majority of teachers provided up to 3 explanations per day observed during independent seat work (76.4%), small group instruction (56.3%) and transitions (50.9%), but in these settings, there was still a sizeable group of teachers who provided no word explanations at all. The majority of teachers provided no word explanations at all during play centers/work stations (58.2%) and one-on-one instruction (76.4%). Overall, these findings suggest that whole class instruction was the setting where most word explanations took place, with teachers providing very limited or no explanations of word meanings during other grouping configurations.

Table 7

Word Explanations per Day by Grouping Configuration

Grouping Configuration	*M (SD)*	*Mdn*	Range
Teacher floats/Children independent seat work	0.79 (0.81)	0.50	0.00- 3.00
Teacher floats/Children in play centers or work stations	0.26 (0.53)	0.00	0.00- 2.75
Teacher works one-on-one with child	0.19 (0.54)	0.00	0.00- 3.50
Teacher works with small group of children	0.74 (0.99)	0.25	0.00- 4.25
Teacher leads whole class lesson	5.87 (3.80)	5.25	0.00-19.50
Transition	0.26 (0.33)	0.25	0.00- 1.25

Note. Each classroom was observed for 4 days

Table 8

Distribution of Word Explanations by Grouping Configuration[a]

	Word Explanations Per Day				
Grouping Configuration	0	>0-3	>3-6	>6-9	>9
Teacher floats/Children independent seat work	23.6%	76.4%	0.0%	0.0%	0.0%
Teacher floats/Children in play centers or work stations	58.2%	41.8%	0.0%	0.0%	0.0%
Teacher works one-on-one with child	76.4%	21.8%	1.8%	0.0%	0.0%
Teacher works with small group of children	38.2%	56.3%	5.5%	0.0%	0.0%
Teacher leads whole class lesson	1.8%	21.8%	32.8%	23.6%	20.0%
Transition	49.1%	50.9%	0.0%	0.0%	0.0%

[a] Percentages in table are the percent of the sample (*N*=55) that provided the number of explanations per day observed in each column.

Time in Grouping Configurations

I hypothesized that the number of word explanations provided might be related to the amount of time teachers spent providing instruction in a particular grouping configuration. For example, teachers might have provided most word explanations during whole group settings because they spent the bulk of their time in this setting. I begin by examining the time that teachers dedicated to each grouping configuration. See Table 9 for descriptives of time spent per day in each group context and Table 10 for the distribution of teachers' time use in each setting.

All teachers in the sample dedicated at least some time across the four days of observation to whole class instruction, independent seat work, transitions, and out of classroom activities. Teachers spent most time in whole class instruction, with on average 51.96 minutes per day observed. Another setting that teachers used for a relatively large portion of instructional time was independent seat work ($M = 30.13$ minutes per day observed). Teachers and children were out of the classroom for - on

average - 42.06 minutes per day. These times include recess as well as special

activities led by other teachers such as gym, library and music. We discontinued our

observations during these out-of-classroom times and resumed observing when the

teacher and children returned to the classroom. Teachers also spent an average of

19.69 minutes per day in transitions.

Table 9

Minutes per Day by Grouping Configuration[a]

Grouping Configuration	*M (SD)*	*Mdn*	Range
Teacher floats/Children independent seat work	30.13 (14.51)	28.00	8.75- 65.25
Teacher floats/Children in play centers or work stations	13.37 (15.76)	11.50	0.00- 80.25
Teacher works one-on-one with child	4.50 (7.44)	0.00	0.00- 29.75
Teacher works with small group of children	18.02 (18.24)	15.00	0.00- 83.00
Teacher leads whole class lesson	51.96 (16.47)	50.75	23.25-103.75
Transition	19.69 (5.68)	19.50	8.75- 34.00
Out of classroom[b]	42.06 (14.41)	42.00	7.25- 73.00

[a] Each classroom was observed for 4 days
[b] Out of classroom is time when children were out for recess or at a lesson with another teacher (e.g. library or music). We did not observe during these times.

Teachers spent less time working with small groups of children (*M*= 18.02

minutes) and in work stations/play centers (*M* = 13.37) with a sizeable percentage of

teachers (20%) never using either of these grouping configurations. Teachers rarely

provided one-on-one instruction with more than half of the teachers in the study

(54.5%) spending no time at all in this setting. These findings suggest that teachers

provided the bulk of their word explanations during the grouping configuration where

they spent the most time: whole class instruction.

Table 10

Distribution of Minutes by Grouping Configuration[a]

Grouping Configuration	Minutes Per Day Observed						
	0	>0-15	>15-30	>30-45	>45-60	>60-75	>75
Teacher floats/Children independent seat work	0.0%	14.5%	36.4%	27.3%	18.2%	3.6%	0.0%
Teacher floats/Children in play centers or work stations	20.0%	45.5%	29.0%	1.9%	0.0%	0.0%	3.6%
Teacher works one-on-one with child	54.5%	36.4%	9.1%	0.0%	0.0%	0.0%	0.0%
Teacher works with small group of children	20.0%	30.9%	30.9%	9.1%	5.5%	1.8%	1.8%
Teacher leads whole class lesson	0.0%	0.0%	9.1%	25.4%	38.2%	20.0%	7.3%
Transition	0.0%	20.0%	70.9%	9.1%	0.0%	0.0%	0.0%
Out of classroom[b]	0.0%	3.6%	14.6%	40.0%	30.9%	10.9%	0.0%

[a] Percentages in table are the percent of the sample (N=55) that provided the number of minutes per day observed in each column.
[b] Out of classroom is time when children were out for recess or at a lesson with another teacher (e.g. library or music). We did not observe during these times.

Word Explanation Density within Grouping Configurations

To further explore grouping configurations as contexts for vocabulary instruction, I created a measure of the *density* of word explanations within each group setting. Word explanation *density* was defined as the number of word explanations provided per minute in a group configuration. I divided the total number of word explanations that the teacher provided in each group configuration by the number of minutes that she spent in that setting to create an *explanations per minute of*

instruction metric. Note that this is different from the previous measure of word explanations per day observed because this calculation focuses on time teachers spent on instruction in a group configuration rather than time we spent observing in her classroom. Note also that teachers who provided zero minutes of instruction in a particular group configuration cannot be included in this calculation as the denominator would be zero resulting in an undefined equation. Teachers who provided instruction in a group configuration but did not provide any word explanations during this time are included, but their density calculation for that context would be 0. As such, the density measure answers the question: when teachers provide instruction in a particular grouping configuration, were word explanations more concentrated in certain group settings as compared to others? This question is of interest because certain grouping configurations may have been more fertile contexts for vocabulary teaching with, on average, a greater number of word explanations per minute of instruction. See Table 11 for the word explanations density within each grouping structure.

Whole class instruction is the grouping configuration where teachers provide the greatest density of word explanations, with a mean of .11 word explanations per minute spent in whole class instruction. All other grouping configurations had far lower densities of word explanations per minute. Interestingly, while independent seat work was the context with the next highest number of word explanations per day observed after whole group settings, this grouping structure is one of the lowest for density of word explanations per minute of instruction. It seems that while teachers provide a relatively high number of word meaning explanations during seat work,

these are spread over the relatively large amount of time dedicated to this grouping

configuration, about 30 minutes per day observed. Taken together these findings

suggest that whole class instruction was the most fertile setting for explaining word

meanings with very limited word explanations in other grouping contexts.

Table 11

Word Explanation Density by Grouping Configuration (Explanations Per Minute of

Instruction)[ab]

Group Configuration	*M (SD)*	*Mdn*	Range
Teacher leads whole class lesson (n=55)	0.11 (0.07)	0.10	0.00-0.40
Transition (n=55)	0.05 (0.07)	0.04	0.00-0.34
Teacher works with small group of children (n=44)	0.05 (0.05)	0.03	0.00-0.19
Teacher works one-on-one with child (n=25)	0.04 (0.05)	0.01	0.00-0.16
Teacher floats/Children independent seat work (n=55)	0.03 (0.03)	0.02	0.00-0.14
Teacher floats/Children in play centers or work stations (n=44)	0.02 (0.02)	0.01	0.00-0.11

[a] Explanation density = word explanations per minute of instruction in group
configuration
[b] This calculation could only include teachers who had >0 minutes of instruction
in a group configuration.

Word Explanations across Content Areas

In order to understand more about the contexts for vocabulary instruction in

kindergarten, I examined teachers' word meaning explanations across the enacted

curriculum, focusing first on the quantity of word explanations that teachers provided

in each content area that was covered throughout our observations, I then examine the

time dedicated to each content area as well as the density of word explanations per

minute of instruction in each content area. I examine the number of word

explanations that teachers provide per day of observation in math, morning meeting,

read aloud, reading instruction, science, social studies and writing instruction. Note

that read-aloud was examined separately from other types of reading instruction because of the heavy focus on read-alouds as a context for vocabulary instruction in vocabulary intervention studies (Biemiller & Boote, 2006; National Early Literacy Panel, 2009). Morning meeting is a whole group time where teachers lead the class through a series of routines that integrate content areas such as reading a morning message, attendance, calendar, weather and counting the days children have attended school. If the teacher moved away from these routines, for example, she began a read-aloud or writing lesson, observers coded this as a new content area. See Table 12 that provides means, standard deviations and ranges for the number of word explanations per day of observation by the content area context where the explanations were provided by the teacher. Table 13 provides a look across the distribution to examine the percent of teachers who provide a particular number of explanations during each content area.

Of the 8.14 explanations that teachers provided per day of observation, teachers on average provided 2.21 explanations during read alouds. This is the highest mean word explanations per day observed across the content areas that were examined. The majority of teachers in the sample (85.5%) provided word explanations during read-aloud contexts. Almost a third of the sample (30.9%) provided more than three word explanations per day during read alouds. Yet, 14.5% of the sample provided no word explanations at all during read-aloud contexts across the four days of observation in their classrooms.

Morning meeting was another content area with a relatively high number of word explanations per day of observation ($M = 1.49$ word explanations per day). Only

9.1% of teachers provided no word explanations at all during morning meeting.

Typically teachers who provided word explanations during morning meeting

provided fewer than during read-aloud with the majority of teachers (81.8%)

providing between 0 and 3 word explanations per day during meeting and only 9.1%

providing more than 3 explanations per day during morning meeting.

Table 12

Word Explanations per Day by Content Area[a]

Content Area	*M (SD)*	*Mdn*	Range
Math	0.80 (1.22)	0.25	0.00- 5.00
Morning Meeting	1.49 (1.19)	1.25	0.00- 5.50
Read-aloud	2.21 (2.18)	1.75	0.00-11.25
Reading Instruction	1.51 (1.39)	1.00	0.00- 6.75
Science	0.41 (0.85)	0.00	0.00- 4.00
Social Studies	0.10 (0.33)	0.00	0.00- 1.75
Writing Instruction	0.72 (0.98)	0.25	0.00- 4.00

Note. Each classroom was observed on 4 days

Reading instruction was another context in which observers documented a

relatively large number of word explanations (*M*=1.51) with 85.5% of teachers

providing word explanations during reading instruction. However 14.5% provided no

explanations at all during reading instruction. Teachers who explained word

meanings during reading instruction typically provided between 0 and 3 word

explanations per day (72.8%), with a smaller percentage of teachers (12.7%)

providing more than 3 word explanations per day.

Social studies, science, writing instruction, and math were contexts in which

teachers explained fewer words with medians at or close to 0 word explanations per

day in these content areas. Across 4 days of observation, 34.5% of the sample

provided no word explanations at all during writing, 43.6% provided no explanations

during math, 67.3% provided no explanations during science and 87.3% provided no explanations during social studies.

Taken together, these findings suggest that vocabulary instruction in kindergarten classrooms is scattered throughout the day. Most word explanations were during read alouds, reading instruction and morning meetings. (I further examine word explanations by read-aloud text genre in a later section). Teachers explained far fewer words during math, science, social studies and writing instruction. Given the vocabulary demands within these subject areas, particularly science and social studies, I further examined these counter-intuitive findings by examining the time dedicated to these subject areas.

Table 13

Distribution of Word Explanations by Content Area[a]

	Word Explanations Per Day Observed			
Content Area	0	>0-3	>3-6	>6
Math	43.6%	47.3%	9.1%	0.0%
Morning Meeting	9.1%	81.8%	9.1%	0.0%
Read-aloud	14.5%	54.6%	29.1%	1.8%
Reading Instruction	14.5%	72.8%	10.9%	1.8%
Science	67.3%	29.1%	3.6%	0.0%
Social Studies	87.3%	12.7%	0.0%	0.0%
Writing Instruction	34.5%	60.0%	5.5%	0.0%

a. Percentages in table are the percent of the sample (N=55) that provided the number of word explanations in each column.

Time Dedicated to Content Areas

To further investigate the relationship between episodes of word explanations and teachers' time use in their daily schedule, I examined the time that teachers dedicated to each content area. Table 14 shows means, standard deviations and ranges for the number of minutes per day that kindergarten teachers dedicated to each

content area that I examine. For all content areas except for reading instruction, the mean overestimates the amount of time dedicated to a content area each day, and I therefore examine these distributions in greater depth. See Table 15.

Table 14

Minutes per Day by Content Area[a]

Content Area	M (SD)	Mdn	Range
Math	9.95 (9.69)	6.25	0.00-45.50
Morning Meeting	18.45 (7.38)	17.50	0.00-43.50
Read-aloud	10.71 (7.11)	10.50	0.00-25.00
Reading Instruction	28.17 (15.52)	28.50	0.00-61.00
Science	2.30 (4.23)	0.00	0.00-19.25
Social Studies	1.19 (3.10)	0.00	0.00-16.00
Writing Instruction	19.35 (13.13)	19.00	0.00-47.25

[a] Each classroom was observed on four days

The analysis of instructional time makes it evident why there were few instances of vocabulary explanations during science and social studies: there was not much time devoted to these subject areas with medians of 0 minutes dedicated to both subject areas. The majority of teachers spent no time at all over our 4 observations on either science (56.4%) or social studies (80.0%) content. A smaller group of teachers (40.0%) spent >0 to 15 minutes on science instruction with only 3.6% of the sample providing > 15 to 30 minutes of instruction per day. In social studies, 18.2% of teachers provided >0 to 15 minutes of instruction per day observed and 1.8% provided >15 to 30 minutes of instruction. Note that each classroom visit was on a different day of the week to ensure that observers viewed a range of instruction and captured instruction in content areas that might not be covered every day. Logically, it is impossible to provide word explanations during content areas that are not

covered, and the majority of teachers in the study did not cover science or social studies during our observations.

Table 15

Distribution of Minutes by Content Area[a]

Content Area	Minutes Per Day Observed					
	0	>0-15	>15–30	>30-45	>45-60	>60
Math	12.7%	63.7%	21.8%	0.0%	1.8%	0.0%
Morning Meeting	0.0%	32.7%	58.2%	9.1%	0.0%	0.0%
Read-aloud	5.5%	65.4%	29.1%	0.0%	0.0%	0.0%
Reading Instruction	1.8%	20.0%	32.7%	36.4%	5.5%	3.6%
Science	56.4%	40.0%	3.6%	0.0%	0.0%	0.0%
Social Studies	80.0%	18.2%	1.8%	0.0%	0.0%	0.0%
Writing Instruction	5.5%	36.3%	38.2%	18.2%	1.8%	0.0%

[a] Percentages in table are the percent of the sample (*N*=55) that provided the number of minutes of instruction in each column.

Rather, most instructional time in these kindergartens was spent on language arts activities including reading instruction (*M* = 28.17 minutes per day), writing instruction ((*M*=19.35 minutes), and read-alouds (M=10.71 minutes per day). Almost all of the teachers in the study provided at least some reading instruction, with only 1.8% of the sample providing no reading instruction at all during our four observations. The majority of the sample (69.1%) provided between 15 and 45 minutes of reading instruction per day. Reading instruction was also a content area in which teachers provided a relatively high number of word explanations, suggesting that time on content area might contribute to the quantity of word explanations that teachers provided.

While writing instruction was a context with a relatively low number of word explanations per day observed, teachers dedicated a large amount of instructional time to writing. Writing instruction was second only to reading instruction in the

amount of time teachers dedicated, with the majority of teachers (74.5%) providing >0 to 30 minutes per day on writing instruction. There were 5.5% of teachers who provided no writing instruction at all over the four days of observation.

Read-aloud was the context with the highest average number of word explanations per day, yet on average teachers spent only 10.71 minutes per day providing read alouds, with 29.1% of the sample spending >15 to 30 minutes per day observed on read-alouds and 65.4% of the sample providing >0 to 15 minutes of read-aloud per day. There were some teachers in the study (5.5%) who dedicated no time at all to read-alouds across all four observations in their classrooms.

All teachers in the sample dedicated at least some of their time to a morning meeting over the course of our classroom observations ($M = 18.45$ minutes per day), with 90.9% providing >0 and up to 30 minutes of morning meeting each day. Morning meeting was another context in which teachers provided a relatively high number of word explanations, again suggesting that time might be a relevant factor in the quantity of word explanations provided.

On average, teachers dedicated only 9.95 minutes per day to math instruction. The majority of teachers in the sample (63.7%) provided >0 to 15 minutes of math instruction per day observed with 23.6% of the sample providing more than 15 minutes of instruction in math. In 12.7% of classrooms, teachers provided no math instruction at all across the 4 days of observation. While math was covered almost as much as read-alouds in most classrooms, teachers provided far fewer word explanations in math than they did in read-aloud contexts.

Results indicate that teachers focused much of their instructional time on reading instruction, writing instruction and morning meeting, with less time on read-alouds and math. Most teachers did not spend time on science and social studies at all during the four observations.

Density of Word Explanations by Content Area.

Results to this point show varying amounts of time dedicated to each content area, and I therefore examine the word explanation density within each content. Word explanation density is calculated in the same way that it was for grouping configurations, but here I answer the questions: when teachers provide instruction in a content area, were word explanations more concentrated in certain content areas than others? See Table 16 for the word explanation density within each content area.

Clearly, reading aloud showed the highest density of word explanations ($M =$ .23 word explanations per minute of read-aloud), reflecting its traditional role in providing an instructional context for vocabulary. This finding seems to reflect the relatively high number of word explanations within the relatively small amount of time teachers typically dedicated to read-alouds. Not far behind, however, were the areas of science and social studies. Science and social studies appeared, at least on first inspection, to be the content areas least likely to support word explanations with fewest word explanations per day of observation. However, science ($M = .18$ word explanations per minute of instruction) and social studies ($M=.12$ word explanations per minute of instruction) were the content areas with the next highest densities after read-aloud. These areas constituted the richest contexts for word explanations. While science and social studies was rarely addressed in kindergarten classrooms, when

time was spent on these areas, they were comparatively fertile contexts for explaining word meanings.

Math (M = .09 word explanations per minute of instruction) and morning meeting (M = .08 word explanations per minute of instruction) fell in the middle of the distribution of densities. Teachers spent relatively little time on math, but they also provided very few word explanations during this content. Morning meeting was second only to read-alouds in the number of word explanations that teachers provided per day of observation, but these explanations are spread over the relatively large amount of time that teachers spent on morning meeting, which explains the lower density for this content area.

Table 16

Word Explanation Density by Content Area (Word Explanations Per Minute of Instruction)[ab]

Content Area	M (SD)	Mdn	Range
Read-aloud (*n*=52)	0.23 (0.25)	0.17	0.00-1.50
Science (*n*=24)	0.18 (0.18)	0.14	0.00-0.67
Social Studies (*n*=11)	0.12 (0.14)	0.08	0.00-0.41
Math (*n*=48)	0.09 (0.16)	0.04	0.00-0.80
Morning Meeting (*n*=55)	0.08 (0.05)	0.06	0.00-0.26
Reading Instruction (*n*=54)	0.06 (0.08)	0.05	0.00-0.50
Writing (*n*=52)	0.04 (0.04)	0.02	0.00-0.17

[a] Word explanation density = word explanations per minute of instruction in content area
[b] This calculation could only include teachers who had >0 minutes of instruction in a content area.

The least dense content areas for word explanations were writing (M = .04 word explanations per minute of instruction), and reading instruction (M = .06 word explanations per minute of instruction). Teachers provided few explanations during

writing but dedicated a relatively large amount of time to this subject. Teachers provided a relatively high number of word explanations during reading instruction, but these are spread over the large amount of time that teachers typically dedicate to reading instruction, making this a lower density content for word explanations.

Therefore, certain content areas—specifically, read-alouds, science and social studies appeared to provide more optimal opportunities for explaining word meanings when teachers addressed these areas. However, science and social studies were also the subject areas least likely to be taught in these kindergarten settings.

Word explanations by Read-Aloud Genre

As read-aloud was the context with the greatest number and highest density of word explanations, I further examined this context by the genre of text that teachers read. When observers marked "read-aloud" as the content, they also provided the title of the text that the teacher was reading. All texts were looked up to determine if they were fiction or informational texts. Table 17 presents descriptives for the number of word explanations per day during fiction and information text read-alouds, and Table 18 presents of the distribution of teachers in the sample who provide word explanations during each genre.

In the previous analysis, I found that teachers provided an average of 2.21 word explanations per day of observation during read-alouds. Of these, on average, 1.50 occurred during read-alouds of fiction text. The majority of teachers (69.8%) provided word explanations during read-alouds of fiction text. However, the remaining 30.2% of the sample provided no word explanations during fiction read-alouds at all across the four visits to their classrooms.

Table 17

Word Explanations per Day by Read-Aloud Genre (N=55)

Content Area	Mean (SD)	Median	Range
Fiction Text	1.50 (1.72)	1.00	0.00-7.67
Informational Text	0.55 (1.06)	0.00	0.00-5.00

Note. Each classroom was observed for four days

Table 18

Distribution of Word Explanations by Read-Aloud Genre[a]

	Word Explanations Per Day Observed			
Read-aloud Genre	0	>0-3	>3-6	>6
Fiction Text	30.2%	54.7%	13.2%	1.9%
Informational Text	62.3%	33.9%	3.8%	0.0%

a. Percentages in table are the percent of the sample (N=55) that provided the number of word explanations in each column.

The median number of word explanations during informational text was 0 with the majority of teachers (62.3%) provided no word explanations at all during informational text read-alouds across the 4 days that we spent in their classrooms. The remaining teachers provided >0 to 3 word explanations during information text per day observed (33.9%) with a small percentage providing more than 3 explanations per day (3.6%). Note that these counts do not include explanations embedded within the text. As the overall study goal was to understand the scope of teachers' oral vocabulary instruction rather than more implicit text-based supports for vocabulary learning, observers were trained to record word explanations when the teacher stopped to discuss a target word before, during, or following a read-aloud. Therefore, these findings reflect the way teachers address words that were found in the text, but do not account for additional word explanations that were likely

embedded by the author in these informational texts. These findings indicate that the bulk of the word explanations that teachers provided during read-alouds occurred during read-alouds of fiction texts.

Time Dedicated to Read-Aloud Genre.

As with grouping configurations and content areas, it seemed likely that there was a relationship between the amount of time that teachers dedicated to read-alouds of fiction or informational texts and the number of word explanations that they provided during these read-alouds. I therefore examine the amount of time that teachers dedicated to each genre. Table 19 presents descriptives for the minutes per day that teachers dedicated to read-alouds in each genre. Table 20 provides a more detailed distribution of the percent of teachers who spent a specific number of minutes on read-alouds in each genre.

On average, teachers spent 10.71 minutes per day observed on read-alouds. Of this time, they spent 8.36 minutes on fiction texts, with the majority of teachers (85.2%) spending time on read-alouds of fiction texts. Logically, teachers can not provide word explanations during informational read-alouds, if they do not read-aloud from informational texts. This seems to be the case. Only 41.5% of the sample spent time reading aloud from informational texts, with a sample median of 0 minutes per day observed spent on informational text while the majority of the sample spent no time at all across four days reading aloud from informational texts.

These results suggest that there is a relationship between the amount of time teachers spend on read-alouds of each genre that was examined and the number of word explanations that teachers provide. Teachers were more likely to spend time

reading fiction and they provided more word explanations during fiction. Most

teachers spent very little or no time at all on informational read-alouds which

accounts for the low number of word explanations provided during read-alouds of this

genre.

Table 19

Minutes per Day by Read-Aloud Genre[a]

Content Area	*M (SD)*	*Mdn*	Range
Fiction Text	8.36 (6.37)	7.33	0.00-23.33
Informational Text	1.70 (2.70)	0.00	0.00-11.33

Note. Each classroom was observed 4 times for 3 hour periods

Table 20

Distribution of Minutes by Read-Aloud Genre[a]

Content Area	Minutes Per Day Observed					
	0	>0-15	>15–30	>30-45	>45-60	>60
Fiction Text	14.8%	66.7%	18.5%	0.0%	0.0%	0.0%
Informational Text	58.5%	41.5%	0.0%	0.0%	0.0%	0.0%

a. Percentages in table are the percent of the sample (*N*=55) that provided the
number minutes of instruction in each column.

Density of Word Explanations by Read-Aloud Genre

I again use a measure of density to further explore read-aloud genres as

contexts for word explanations. Here, the density measure answers the question:

when teachers read-aloud from texts of each genre, were word explanations more

concentrated in one genre than another? See Table 21 for descriptives of word

explanation density by read-aloud genre.

Read-alouds of informational texts were slightly more dense contexts for word

explanations (*M*=.31 word explanations per minute of informational text) than fiction

texts (*M* = .21 word explanations per minute of fiction text). While there were more

word explanations during read-alouds of fiction texts, these were spread over the comparatively larger amount of time that teachers spent reading fiction. If teachers read-aloud from informational texts, they provided a slightly greater number of explanations per minute than they do during fiction read-alouds. The findings indicate that while informational texts were rarely used for read-alouds in kindergarten classrooms, when they are used, they are a fertile context for explaining word meanings.

Table 21

Word Explanation Density by Read-aloud Genre (Word Explanations Per Minute of Read-Aloud)[ab]

Genre	*M (SD)*	*Mdn*	Range
Informational Text (*n=32*)	0.31 (0.22)	0.29	0.00-0.83
Fiction Text (*n=45*)	0.21 (0.24)	0.14	0.00-1.08

[a] Word explanation density = word explanations per minute of read-aloud in a genre
[b] This calculation could only include teachers who had 0 minutes of instruction in a content area.

Research Question 4: Does vocabulary instruction vary by curriculum use?

Given the legislative emphasis since No Child Left Behind on adopting a core reading program, my next question examined whether the use of these programs might relate to the quantity and features of word explanations that kindergarten teachers provided. I wondered whether core curricula might guide teachers in providing more systematic vocabulary instruction. I therefore compared vocabulary instruction for teachers who used comprehensive (core) reading curricula with teachers who used other types of materials by examining the number of word

explanations they provided, sophistication of words addressed during word explanations, and their use of repeated explanations.

Teachers were asked on a survey whether they use a comprehensive basal curriculum for language arts instruction in their classroom. Almost half of the sample used a comprehensive curriculum (43.3%). Three teachers did not respond to this question on the survey, and they are not included in the analysis for this question. Responses indicated that teachers who did not use a core program used teacher resource books, guided reading, or locally-generated lesson plans. Together, 39 programs were listed. Of the teachers who reported using a core curriculum, materials by Harcourt Brace was most commonly listed, followed by core programs by Houghton-Mifflin, and Scott-Foresman. Only one teacher used Open Court (SRA-McGraw Hill, 2003).

Due to the wide number of programs used, I compared those who used a core program with teachers who used other resources. I then examined the quantity and features of their word explanations. Table 22 describes the findings, showing the means and standard deviations by material use.

I used independent samples t-tests to compare the quantity of word explanations teachers provided, explanations of sophisticated words, and use of repetition for teachers who used a comprehensive curriculum and teachers who did not. I find no significant differences between the two groups on the number of word explanations, $t(50)=.08$, n.s., the number of word explanations addressing sophisticated words $t(50)=.72$, n.s., or the amount of repetition $t(50)=1.21$, n.s. that

teachers used. In each case, teachers who used resources other than the core curriculum had slightly greater numbers.

These findings indicate that use of a core reading curriculum was unrelated to the quantity or features of the word explanations that the kindergarten teachers provided, suggesting that use of a core reading curriculum did not appear to induce more planful vocabulary instruction. Rather, there was little systematic vocabulary instruction regardless of the type of resources used.

Table 22

Means and Standard Deviations for Word Explanations by Materials Use

Core Reading Curriculum	Word Explanations	Explanations of Sophisticated Words	Number of Times Explanation of Word Repeated
Core Curriculum Used (*n*=24)	2.70 (1.44)	1.10 (0.62)	1.03 (0.21)
Other Materials (*n*=28)	2.74 (1.45)	1.25 (0.80)	1.08 (0.10)

Research Question 5: Does vocabulary instruction vary by the socioeconomic status of the student population?

The research suggests that children from economically disadvantaged backgrounds arrive at school with more limited vocabulary knowledge than their middle class peers (Hart & Risley, 1995; Hoff, 2003). Therefore, in classrooms serving greater proportions of children from economically disadvantaged backgrounds, one would hope to see an emphasis on planful vocabulary instruction to meet students' needs in this area. I examined teachers' word meaning explanations in relation to the percent of children receiving free and reduced lunch in the schools where teachers worked. Here, I compared vocabulary teaching for teachers who

served more economically advantaged populations (25% or less receiving free and reduced lunch), populations from mixed economic backgrounds (>25% through 50% free and reduced lunch), and populations where majority of children (>50%) qualified for free and reduced lunch. I compare these groups on the number of word explanations, sophistication of words addressed during these explanations, and their use of repeated explanations.

I used a one-way ANOVA to compare the quantity and features of word explanations that teachers provided to children across the three groups. Means and standard deviation are shown in Table 23. I found significant differences among groups in the quantity of word explanations, $F(2, 52)=3.72$, $p < .031$. Tukey HSD post-hoc analyses indicated that these differences were between teachers serving predominantly low-income children and those serving most economically-advantaged students ($p < .05$). The effect size was large and educationally meaningful (Cohen's $d=.95$), indicating that low-income children were likely to receive significantly fewer word explanations than economically advantaged children (Cohen, 1988). To compound these problems, vocabulary explanations for low-income children addressed less sophisticated words than those for the economically advantaged group $F(2, 52) = 5.31$, $p=.008$. Once again, Tukey post-hoc analyses revealed differences between teachers serving predominantly low income children and those serving their more economically advantaged peers (Cohen's $d=.95$) as well as differences between the economically advantaged population and the more economically diverse classrooms (Cohen's $d=.85$). There were no significant differences among the groups on the amount of repetition that teachers used when explaining words.

These findings suggest a pattern of differential instruction by SES of the student population in the classroom. Teachers working with more economically advantaged student populations provided significantly more word explanations than teachers serving low SES populations. Also, teachers serving high SES student populations explain word meanings for more sophisticated words than teachers serving both middle and low SES student populations. In short, these results indicate that those children who needed vocabulary instruction the most were the least likely to receive it. The lack of repeated explanations suggests that across groups, teachers introduced vocabulary during "teachable moments" rather than providing the purposeful repeated explanations that would reflect more planful oral vocabulary instruction.

Table 23

Means and Standard Deviations for Word Explanations by SES of Student Population

School Free and Reduced Lunch percentage	Word Explanations	Explanations of Sophisticated Words	Number of Times Explanation of Word Repeated
25% or less	10.32 (4.13)$_a$	4.78 (2.25)$_a$	1.05 (0.29)
>25%-50%	7.49 (4.96)	2.92 (2.05)$_b$	1.05 0(.05)
>50%	6.88 (3.02)$_b$	2.91 (1.58)$_b$	1.08 (0.18)

Note. Differences between groups measured by ANOVA. Means with the same subscript (a,a) are not significantly different at p<.05 in a Tukey comparison. Means with different subscripts (a,b) are significantly different from one another.

Research Question 6: Is there any relationship between teachers' vocabulary instruction, teachers' general oral language discourse in the classroom, and the SES of the student population served in the classroom?

Studies suggest that features of teachers' discourse can impact children's oral language and reading comprehension outcomes (Dickinson & Porche, in press). This

question examines the relationship between the quantity and range of teachers' vocabulary in their oral language discourse and the quantity of word meaning explanations that they provide to students. This is of interest in order to understand the relationship between the type of word explanations that I observed in this study and teachers' general classroom talk.

To examine teachers' discourse, I selected a subsample of teachers who were highest ($n=8$) and lowest ($n=7$) in the quantity of word meaning explanations they provided. Descriptives for this subsample are provided in Table 24. Teachers in each group had a range in their highest level of education and teaching experience. Each group included teachers in classrooms serving students from a range of SES backgrounds.

Table 24

Demographic Characteristics of Subsample for Transcript Analysis (N=15)

	High Explanation ($n=8$)	Low Explanation ($n=7$)
Highest Level of Education		
Bachelors	37.5%	14.3%
Masters	62.5%	85.7%
Total Years Teaching Experience		
0-5	25.0%	14.3%
6-10	25.0%	42.9%
11-15	12.5%	0.0%
16-20	12.5%	28.6%
>20	25.0%	14.3%
School Free and Reduced Lunch percentage		
25% or less	50.0%	14.3%
>25%-50%	25.0%	57.1%
>50%	25.0%	28.6%

One full three-hour classroom visit was transcribed and analyzed for each teacher. I examined the number of word types (number of different words), which provides information about the range of vocabulary that teachers use in their discourse over the course of a day. I also examined the number of word tokens (total words) that each teacher provided over the course of one day. This provides information about the total quantity of words that teachers use throughout the school day. See Table 25 for means and standard deviations for each group.

I used independent samples t-tests to examine the differences between high and low word meaning explainers on these features of their talk. I find significant differences between the higher explanation and lower explanation groups on both measures. Equal variance was not assumed for word types $t(7) = 2.93$, p=.02 and equal variance was assumed for word tokens $t(13)=4.25$, p=.001. Even within this relatively small subsample of teachers, I was able to detect significant differences in the talk of teachers who explain more words and teachers who explain fewer words.

Table 25

Means and Standard Deviations for Language Environment by High and Low Explanation Teachers

Quantity of Word Explanations	Word Types	Word Tokens
High Explanation teacher (*n*=8)	1050.25 (139.95)	11224.38 (2062.94)
Low Explanation teacher (*n*=7)	718.86 (334.94)	5459.00 (3332.71)

These findings suggest that explaining word meanings is related to teachers' talkativeness and the range of vocabulary that they use in classroom discourse. Earlier findings that teachers provide minimal repetition and unsystematic word selection during their word explanations suggest that teachers capitalize on teachable moments

throughout the day to explain word meanings. These findings indicate that more talkative teachers, who use a broader range of vocabulary in their own discourse, are more likely to have these teachable moments. Thus, it seems possible that the word explanations that were captured in this study were not planful vocabulary instruction, but rather were a feature of teachers' oral language discourse.

Teachers' Discourse and Student SES

Given the earlier findings that teachers serving more economically advantaged populations provide more word meaning explanations, as well as the relationship between teachers' word meaning explanations and the quantity and range of vocabulary in their discourse, I now examine whether there is a relationship between teachers' discourse and the economic backgrounds of student in their classrooms. I examined teachers' discourse in relation to the percent of children receiving free and reduced lunch in the schools where teachers worked.

ANOVA assumes that each group has a normal distribution, but with the small sample sizes in each SES groups, I could not assume normality. As such, I use the more conservative non-parametric Kruskal Wallis test to detect differences across the three groups (Siegel & Castellan, 1988). This test uses a chi square statistic to determine whether there are significant differences across groups. Means and standard deviations are provided in Table 26.

There were significant differences on the number of word types and marginally significant differences in word tokens by the SES of the student population that teachers serve: $\chi^2(2, N = 15) = 7.47, p = .02; \chi^2(2, N = 15) = 4.50, p = .10$ respectively. Examination of sample means suggests that teachers serving the

most economically advantaged populations were more talkative and used a broader range of vocabulary in their classroom discourse compared to teachers serving more economically disadvantaged populations. Taken together, these results suggest that children who most needed vocabulary instruction experienced the fewest word meaning explanations, but they also may have least opportunity to learn vocabulary implicitly from the range and quantity of vocabulary words in their teachers' everyday classroom talk.

Table 26

Means and Standard Deviations for Language Environment by SES of the student population

SES of Student Population	Word Types	Word Tokens
25% or less free and reduced lunch (*n*=5)	1004.60 (68.77)	11001.60 (2168.71)
>25%-50% free and reduced lunch (*n*=6)	771.00 (217.98)	6554.33 (2762.24)
>50% free and reduced lunch (*n*=4)	631.75 (334.06)	6704.50 (5230.21)

Summary of Findings

The purpose of this study was to paint a portrait of vocabulary instruction in kindergarten classrooms. As we have known little about how oral vocabulary instruction is enacted when children are just beginning their formal schooling, this study observed and quantitatively described oral vocabulary instruction in a large sample of classrooms.

My analyses revealed no planful instruction in vocabulary development for these kindergarteners. Instead, word explanations were provided during 'teachable moments,' in the course of other instruction. Approximately half of the words

explained were sophisticated, and likely to be good targets for vocabulary instruction; however, few received repeated exposure. Although science and social studies were among the most optimal contexts for explanations of word meanings, they were least likely to be taught. These patterns were further exacerbated by evidence of fewer word explanations for children from lower socio-economic status communities, with teachers serving predominantly low-income children providing fewer explanations addressing less sophisticated words than teachers serving their economically-advantaged counterparts.

To compound these issues, teachers who provided more word explanations also provided more implicit vocabulary learning opportunities through the quantity and range of words in their classroom discourse, suggesting that the word explanations captured in this study may be a feature of teachers' oral language rather than a planful instructional practice. Teachers serving primarily low-income children were least talkative and used a narrower range of words in their discourse indicating that children from low SES backgrounds received fewer word explanations as well as least implicit opportunities to learn vocabulary in kindergarten.

Chapter 5

Discussion

The purpose of this study was to present a portrait of vocabulary instruction in kindergarten classrooms. The goal was to better understand the extent of vocabulary instruction and the conditions under which it might occur for children who come from a range of socio-economic backgrounds. To my knowledge, this is the first large-scale observational study of oral vocabulary instruction in naturalistic kindergarten settings that were not subject to researcher manipulation or intervention. Additionally, instruction was observed beyond the language arts block, using 660 hours of observational data to understand vocabulary instruction as it is enacted across the kindergarten curriculum and throughout the school day.

Extent and Features of Vocabulary Instruction

My analysis revealed a disturbing picture. I found no evidence of planned vocabulary instruction in any of the 55 classrooms that were observed. Though teachers spent, on average, 60 minutes per day on literacy instruction (reading, writing, read-alouds), I found no time at all dedicated to vocabulary lessons. Rather, what I did find were word explanations embedded in other contexts approximately 8 times each day. While at first glance, this may seem like a large number of words to teach each day, instruction did not align with research-based best practices for

vocabulary instruction. These word explanations, best characterized as "teachable moments," appeared to be the prevailing form of vocabulary teaching.

These teachable moments occurred throughout the day, taught in the context of other instructional foci. Although such contexts might be meaningful to children and help to extend their learning of word meanings, they more closely represented teachers' day-to-day discourse rather than a planful program of vocabulary instruction. For example, while there was a large range in the number of word explanations teachers provided each day, this range was unrelated to teachers' qualifications, such as their highest level of education or their teaching experience. Rather, the range in word explanations was correlated with teachers' general classroom discourse. Teachers who talked more and used a broader range of words in their classroom talk, also provided a greater number of word explanations to children throughout the day. Therefore, it is possible that the word explanations that were documented in this study may be more related to the general quality of the oral language environment that teachers provided in their classrooms than to more systematic vocabulary instruction.

The lack of planned vocabulary instruction may have important implications for word learning. As these results show, teachable moments rarely emphasize multiple exposures to words.   Children, by far, in this study were exposed to a word explanation only once. This type of teaching relies on the *fast mapping* of a word to its referent (Carey, 1978), an hypothesized mental process in which a new word can be learned based on a single exposure to a given unit of information. Although it was once thought to help explain the prodigious rate at which children gain vocabulary,

recent evidence suggests that children do not learn words through fast mapping, but by predictive relationships between objects, sounds, and actions that develop over time (Stahl, 2003).

Beck and McKeown (2002, p.32) argue that "providing word meaning information is only the first step in building word knowledge. Just providing information – even rich, meaningful explanations – will not result in deep or sustained knowledge of a word. Multiple encounters over time are called for if the goal is more than a temporary surface-level understanding and if new words are to become permanently and flexibly represented in students' vocabulary repertoires." In line with this argument, a recent study found that young children need 32 repeated exposures to a new word and its referent before they can accurately use it in their expressive vocabulary (Pinkham, Neuman, & Lillard, in preparation). Single word explanations may provide meaning, but this knowledge is far from complete, particularly if the goal is to promote children's depth of processing of new vocabulary words (Coyne et al., 2009; Nagy & Scott, 2000).

Recent research provides converging evidence on the effective features of oral vocabulary instruction for young children. Children need repeated exposure to words that may challenge them, and they need to practice these words in multiple contexts to promote depth of processing (Biemiller & Boote, 2006). Neuman and Dwyer (2009), for example, have emphasized an instructional regime, one that involves the planful selection of words, instruction, practice, review, and progress-monitoring. In the most recent meta-analysis, Marulis and Neuman (2010) reported that vocabulary

interventions that provide for both explicit and implicit instruction have been shown to be highly effective for young children, demonstrating effect sizes of over 1.0.

Yet the analysis in the present study revealed no evidence of an instructional regime. Rather, word explanations most closely resembled Durkin's (1978-1979) notion of *mentioning*, brief snippets of partial meaning. For example, an explanation of *weed,* as a plant that's growing where you don't want it," doesn't reflect its general meaning--that it is an undesirable plant. In fact, since these explanations were in the service of other activity, teachers seemed to provide just enough about a word to give an assignment. "*Rhyming* means that the words have to sound alike. They have the same ending sound. Assignment: "Let's listen to these words and see if they rhyme."

Researchers have found that with a single exposure to an explanation of a new word, children learn 22% of the taught words (Biemiller & Boote, 2006). Using this estimate, one could assume that children in the kindergartens in this study might learn 22% of the 3.5 new words that were addressed each day. This would amount to only 138 new vocabulary words learned over the entire 180-day year of kindergarten. One estimate suggests that children should acquire, on average, 15 new vocabulary words per day to learn the 80,000 words they will need in order to score well on the verbal portion of their SAT test at the end of high school (Hirsch, 2003). That is, children need to learn over 5000 new word meanings per year. While explicit instruction could not address all of these words, the estimate based on observations in this study of 138 new words learned per year in school does not make a consequential dent in children's vocabulary learning needs. In fact, the minimal instruction observed in this study may serve to elucidate the finding that a year of schooling does not impact

110

children's vocabulary development (Christian, Morrison, Frazier, & Massetti, 2000). Interestingly, when teachers in Biemiller and Boote's study added only two additional reviews of the meanings of target words, they found that children learned 41%, rather than 22%, of the target words. This suggests that even with a relatively minimal additional focus on planful instruction, children's vocabulary learning during a school year could potentially double.

Vocabulary Instruction and the Curriculum

Researchers have suggested that vocabulary learning should be a focus across the curriculum (Hirsch, 2003; Wright & Neuman, 2009). This study examined whether or not different content areas within the curriculum or core curricular materials might promote greater vocabulary instruction. I examined these contextual factors to better understand how or when vocabulary instruction occurs in kindergarten classrooms.

While read-alouds were the most common context for vocabulary teaching--children were likely to encounter sophisticated words in social studies and science. Density calculations revealed that these subject areas provided rich opportunities for teachers to discuss word meanings. Ironically, however, subject areas that appeared to support explanations were the least likely to occur. Children received on average about two and half minutes of science instruction, even less of social studies in over 12 hours of observation per teacher. Several scholars have argued that such limited attention to content reflects the unintended consequences of No Child Left Behind (Ravitch, 2010; Teale, Paciga, & Hoffman, 2007). Although such causal inferences are beyond the scope of this study, clearly further replications and subsequent

research are necessary to explore the causes of such limited exposure to content instruction in kindergarten.

One hypothesis explaining the strong connection between vocabulary and reading comprehension suggests that vocabulary words represent knowledge, and this conceptual knowledge facilitates comprehension (Anderson & Freebody, 1981; Hirsh, 2003). As such the minimal attention to these subjects that was observed in this study might limit children's opportunities to develop both background knowledge as well as vocabulary. Neuman and colleagues have suggested that content-rich literacy instruction is key to promoting simultaneous vocabulary and conceptual knowledge development, and their curriculum intervention studies have demonstrated the effectiveness of this type of instruction for young children's vocabulary learning and conceptual knowledge development (Neuman 2010a; Neuman & Dwyer, in press; Neuman, Roskos, Wright, & Lenhart, 2007; Wright & Neuman, 2009).

Moreover, there has been a policy emphasis on the use of core reading curricula in Reading First and Early Reading First legislation (Al Otaiba et al., 2008; Carlisle, Cortina, & Zeng, 2010). Presumably, these curricula provide for a more systematic, sequenced program of instruction in oral vocabulary development. Nevertheless, although approximately half of the teachers in this study purported to use these curricula, there were no significant differences in the frequency or quality of vocabulary teaching between these classrooms and those that used a variety of materials. Whether or not the lack of differences may be due to the limited treatment of vocabulary in core reading programs (Neuman & Dwyer, 2009; Watts, 2003) or to the limited enactment of the vocabulary instruction specified by the curricula in these

112

classrooms is a topic that I intend to explore in future research. It is also possible that there is a range in how often core curricula address vocabulary (Otaiba et al., 2008) that was missed here by examining all teachers using core curricula as a single group.

Vocabulary Instruction and Student SES

Finally, to compound these problems, the portrait of vocabulary teaching revealed that low-income children were significantly less likely to receive word explanations than those who were more economically advantaged. Low-income children not only received fewer explanations, the words that were explained were of lesser sophistication. If these findings are projected over the course of a school year, the differences would translate into a troubling equation: Low income children would receive only two-thirds of the more sophisticated words that their economically advantaged peers receive (523 compared to 860 words).

Researchers have demonstrated that quality teaching carefully calibrates instruction to students' needs (Connor, Morrison, & Slomiski, 2006). Using this logic, if teachers serving low SES children find that children arrive at school with lower vocabulary levels, they might be more likely to explain common words, rather than sophisticated words, to their students. However, in this case, we would expect teachers serving this population to explain as many or more word meanings than teachers serving higher income populations, but the sophistication of explained words might differ. This does not reflect the findings in this study. Teachers serving in classrooms in which majority of children received free and reduced lunch provided fewer total word explanations than those serving more economically advantaged populations.

113

Adding to this concern are the findings related to teacher discourse based on the transcript analysis. These findings suggest that teachers serving higher income populations use more words and a greater range of words in their general oral language discourse than teachers serving low-income children. Taking this research in conjunction with findings from previous research in children's homes, children from low-SES backgrounds might experience fewer opportunities to learn new vocabulary in their homes (Hart & Risley, 1995, 2003; Hoff, 2003) and in their schools. In short, these results suggest that rather than ameliorating or potentially closing the vocabulary gap, the current state of vocabulary instruction may actually be exacerbating the gap.

Limitations

There are, of course, limitations to this study. Most importantly, the implications of these findings must be taken with caution. Studies connecting vocabulary knowledge to reading comprehension are correlational (see Chapter 2 for a full discussion of this literature). As such, while vocabulary instruction is a recommended practice in kindergarten classrooms, we do not know whether increased attention to oral vocabulary instruction would lead to improved reading comprehension in the long-term. This remains a hypothesis which should be tested empirically in future research.

In the sections below, I address additional limitations to the design of the study and to the analysis strategies that I employed:

Design Limitations

For one, the primary goal of this project was to examine vocabulary teaching. The primary focus of the observation protocol was on attempting to find examples of vocabulary instruction rather than on more broad-based features of the classroom oral language environment. It is possible that the discourse of the teacher is a more powerful instructional intervention than vocabulary teaching. Preliminary analysis of a subsample of transcripts of teacher discourse suggests that the word explanations described in this study are a feature of teachers' oral language rather than planful instruction, but this needs further analysis with a larger sample of transcripts.

This study measured only a representative sample of instruction over the year. The four classroom visits were two weeks apart rather than on consecutive days. This sampling strategy was used to gain a sense of typical instruction, but I was unable to follow instruction over time and could not examine repetition from day to day. Additional replications are necessary to examine how vocabulary teaching in kindergarten might evolve throughout the year.

Also, because many kindergartens in this study were three-hour, half-day programs, this was the observation period for each visit. Full day classrooms were observed in the morning because afternoons encompassed lunch and rest limiting the opportunity to view instruction. As we did not observe during the afternoons in full day programs, it is possible that teachers in these settings provided additional vocabulary teaching in the afternoons. This data collection strategy does not allow me to address the relationship between vocabulary instruction and program length.

The sampling strategy for this study was to follow a randomly selected sample of prekindergarten children into their kindergarten year. In the cases of fifteen children, the schools refused access. As such, there is some selection bias involved in the final sample whereby the population of schools and teachers included in this study were those who were comfortable with the presence of researchers observing their instruction. Also, the final sample included 55 classrooms in 46 schools, which meant there was some clustering of classrooms in the same schools. However, these concerns are mitigated by the large sample of schools (n=39) where only one classroom was observed per school, the general lack of planful vocabulary instruction across all classrooms in this study, as well as the finding that curriculum materials did not influence the quantity or features of vocabulary instruction.

Finally, this study focused on instruction and data that were collected at the teacher level. Here, I assume based on findings from previous studies, that vocabulary teaching leads to improvement in children's vocabulary learning (Marulis & Neuman, 2010). However, this study was an observational study of instruction, which meant that I could not specifically link the type of word teaching observed in this study to child outcomes.

Analysis Limitations

I attempted to be as inclusive as possible in counting teachers' word explanations. For example, I did not rate the quality of the explanations that teachers provided for each word but instead accepted all attempts to provide word meanings to children. In doing this, some might argue that I was overly generous in my counts and therefore have over-estimated the vocabulary teaching that children currently receive.

For example, Pinkham and her colleagues (Pinkham, Kaefer, & Neuman, 2010) have reported that accuracy of word explanations contributes to children's understanding of words and that a careful calibration of what an adult knows with certainty versus uncertainty is strongly linked to increases in children's vocabulary. Further research on the accuracy of these explanations is an important area to explore.

I examined the sophistication of words using the revised Dale-Chall list, which might have been an overly stringent criterion for examining the rigor of word selection for kindergarten children. This list was selected based on previous studies that related parent' and teachers' use of sophisticated words, defined using this list, to children's long-term vocabulary and reading comprehension outcomes (Weizman & Snow, 2001; Dickinson & Porche, in press). Nevertheless, it is likely that other lists or rating systems may be more appropriate for kindergarten teachers to use when selecting words for vocabulary instruction. Further, the Dale-Chall list should not be used as a guide for word selection during vocabulary instruction in kindergarten. As Nagy and Hiebert (2010) have argued that word selection is a key area for further study. However, given this limitation, my results suggest that there were differences in the quantity of explanations teachers provided of these sophisticated words by the SES of the student population. This is a concerning pattern of differential learning opportunities for children that warrants further attention.

It could be argued that I underestimated science and social studies vocabulary teaching that was included in morning meeting, read-alouds or reading instruction as these might be multidisciplinary contexts. Both observers and coders were trained to ensure that time was counted towards content areas if teachers veered away from the

basic morning meeting routines. Informational read-alouds took place for only 1.7 minutes per day, with a mean of only .5 word explanations per day provided during this time. Interestingly, in a now ten year-old study where Duke (2000a) visited first grade classrooms, she found a mean of 3.6 minutes dedicated to activities centered around informational text. While we looked only at read-alouds and did not add in time for other informational texts (i.e. children's readers), findings suggest that after a decade has passed and researcher attention has been focused on the importance of informational texts, they remain in infrequent use in the kindergarten classrooms in this study. Therefore informational read-aloud context likely did not account for many more science or social studies vocabulary learning opportunities. Finally, while children may have been learning to read informational texts, at the kindergarten level these books are designed to support decoding and are unlikely to introduce vocabulary (Beck & McKeown, 2007). While there is always room for improved measurement, for these reasons, it is likely these interdisciplinary times provided limited opportunities for additional science and social studies vocabulary instruction.

Contributions to the Literature Base

This study contributes to the literature base on vocabulary instruction for young children in several ways. First, this study focused on observing oral language vocabulary instruction. Neuman (2010b) suggests that much of the research on vocabulary instruction has focused on instruction for children who are already reading independently. As such, intervention studies have relied on instructional strategies such as wide reading (Cunningham & Stanovich, 1991), determining meaning from context (Swanborn & de Glopper, 1999), and morphological awareness

(Nagy, Berninger, & Abbott, 2006) as a means of promoting vocabulary development as students read text. Likewise, previous observational studies of vocabulary instruction have focused on instruction in upper elementary school and beyond, when children are already able to decode.

In contrast, the primary goal of this observational study was to learn more about the oral language vocabulary instruction that is currently provided to young kindergarten children who are only beginning to learn to decode. Young pre-reading children learn vocabulary that is transmitted to them orally through verbal interactions with other adults (Beck, McGowan, & Kucan, 2002). For example, even the equivalent of "wide reading" for young children would require an adult as the conduit between the text and the child during a read-aloud context. In contrast to previous research, this study focused on examining the oral language vocabulary instruction that kindergarten teachers provide to their students.

In the classroom environment, there is the potential for the teacher to provide incidental exposure to vocabulary through general oral language discourse (Dickson & Porche, in press). However, knowing the particular importance of children's oral language vocabulary knowledge for their long term comprehension, researchers have recommended that teachers can also provide more planful and explicit vocabulary instruction. (Beck, McKeown, & Kucan, 2002; Marulis & Neuman, 2010). This study was the first to examine whether the current state of oral vocabulary teaching in kindergartens is in line with research recommendations for instruction in this critical area for children's literacy.

The findings of this study indicate that there is a divide between research and practice in the area of vocabulary instruction. For example, in their meta-analysis, Marulis and Neuman found 67 studies of vocabulary instruction that targeted children from birth through kindergarten. This suggests considerable researcher attention to intervention studies in the area of oral language vocabulary instruction for young children. Yet, this study found limited attention to vocabulary instruction in daily practice in kindergarten classrooms. As such, this study contributes to the research-base by indicating a critical need to address the disconnect between research-based findings and classroom instruction in the area of vocabulary.

Finally, results from this study suggest a disturbing divide in the word explanations provided to wealthy children compared to children from low-income backgrounds. Prior research has suggested that poor children receive fewer opportunities to learn vocabulary at home. These findings add to this concerning picture by pointing to educationally meaningful differences in the oral language environment that children are exposed to at school as well. Taking in conjunction, the findings from this study suggest an instructional *Matthew Effect* (Stanovich, 1986), whereby children who arrive at school with the most vocabulary knowledge get more instruction at school, and children most in need of learning vocabulary are currently receiving least teaching in this area when they arrive at elementary school. This finding, while concerning, is perhaps not surprising as others have document differential instructional opportunities by SES in other key areas for children's literacy (e.g. print access, Duke, 2000b). Yet, this observational study contributes to the research literature on language and literacy instruction by bringing a new area of

unequal instruction to light. This study adds to the accumulating evidence suggesting an imperative need to remedy instructional inequality in our schools.

Areas for Future Research

Further research is needed to examine how teacher education programs and professional development opportunities might contribute to enhancing the quantity and quality of vocabulary instruction and to decreasing the disparities for children of different socio-economic groups. The first step in designing this type of teacher training might be to determine *why* teachers currently provide little planful instruction in this area. This study documented instructional practices, but did not interview the teachers to determine the reasons behind their instructional decision-making and time use or their perspective on vocabulary instruction in kindergarten.

For example, it is possible that teachers do not have sufficient knowledge of instructional methods for teaching vocabulary, or that they do not believe that vocabulary is an important area to address. It is also possible that teachers believe they are effectively teaching vocabulary by explaining word meanings as they come up throughout the day. If teachers lack knowledge of best practices, future research might focus on improved teacher education and professional development in the area of vocabulary instruction. Other areas for additional research include examining current language arts curricula to determine why they do not seem to impact enacted vocabulary instruction, as well as to develop new curricula that support teachers in providing research-based vocabulary teaching.

It is also possible that teachers do understand the importance of knowing word meanings, as is suggested by their regular attempts to address word meanings during

teachable moments throughout the day, but are more focused on other areas of the curriculum. Some researchers (Juel, Biancarosa, Coker, & Deffes, 2003; Neuman, 2010a) have suggested that teachers' instructional foci have been impacted by recent policy initiatives and research recommendations that privilege code-based skills over developing oral language and background knowledge for young children. If this is the case, a goal for future research might be to develop instructional methods and curricula that enable teachers to integrate more systematic vocabulary instruction into their daily teaching while still addressing the early reading skills that children should master at this age.

Current research is still in the early stages of developing instructional practices to improve young children's vocabulary learning. Additional research should focus on refining our understanding of instructional practices in this area that lead to children's vocabulary learning. In particular, if the goal is to remedy vocabulary gaps that exist before the start of school, research might focus on developing generative vocabulary teaching strategies that support students in increasing the pace of their vocabulary learning, particularly for student populations who typically fall behind in this critical area.

Also, future research should carefully investigate the effect of child by instruction interactions. For example, Connor, Morrison and their colleagues (Connor, Morrison, & Katch, 2004; Connor, Morrison, & Petrella, 2004) found that children with different beginning-of-year profiles with regards to their language and literacy skills, benefit from specialized instructional foci and instructional strategies. For example, in studies of preschool classrooms (Connor, Morrison, & Slomiski,

2006), these researchers found that children who arrive at school with weaker vocabulary skills make more gains when they experience targeted, explicit, meaning-focused instruction compared to children who arrive with stronger skills, who are able to make gains in vocabulary even when instruction is more implicit or code-focused. As such, even within a classroom, quality vocabulary instruction might vary according to the skills and knowledge that children bring to their schooling experience.

A final area for future research that is suggested by the findings from this study is related to the measurement of vocabulary instruction. For example, to my knowledge, there are currently no tools that a researcher or school leader might use during a classroom observation to determine whether a teacher is providing high quality vocabulary instruction to her students. While large-scale observational studies like this one can provide a broad-strokes view of the type of vocabulary instruction currently provided across a large sample of classrooms, this type of descriptive data is for documentation and research purposes. The type of observations used in this study are not an effective means of capturing and rating the quality of daily instruction for the purposes of teacher evaluation or for professional development needs-assessments. Future research might develop more fine-grained tools that practitioners and researchers can use to measure and evaluate changes in daily vocabulary instruction over time as part of instructional improvement initiatives.

Conclusion

This study paints a troubling portrait of vocabulary teaching in kindergarten. In so far as the scarcity of vocabulary instruction observed is representative of

kindergartens more broadly, it reveals that a critical component of early literacy development is being seriously neglected in classroom instruction. Despite research-based programs and curricula that have demonstrated powerful effects on vocabulary development (Marulis & Neuman, 2010), there is no evidence that these programs are currently being implemented in a wide range of kindergarten classrooms. Unfortunately, such paucity of instruction and great disparity in opportunities to learn vocabulary may have long-term consequences for children's literacy development and success in school.

Appendix A

Sample Completed Observation Sheet

VOCABULARY OBSERVATION MEASURE
Observation Sheet

Assessor Name: XXX

Teacher Name: XXX

Teacher ID: XXX

Focus Child ID: XXX

School Name: XXX

Date of Observation (month/day/year): XXX

Kindergarten Type: (AM/PM/full day): full day

Observation Start Time: 8:25

Observation End Time: 11:25

Activity Setting Start Time	Activity Setting	Content	Vocabulary Episodes (dialogue)
8:25	Whole Group	Morning Meeting (lunch choices, "surprise box" [show and tell], school-wide announcements) Reading (reviewing letter sounds and sight words)	

		Morning Meeting (calendar, weather, counting days of school, show and tell) Reading (explanation of alphabet worksheet)	
9:16	Transition (moving to tables, handing out worksheets)		
9:19	Independent	Reading (filling in missing letters of alphabet, reading silently when finished)	
9:33	Other (Snack)	Other (Snack)	
9:46	Transition (cleaning up, moving to carpet)		
9:51	Whole Group	Read-aloud (<u>Stop Picking on Me</u>) Writing	1. "The only way they know how to get what they want is by being **cruel**." (read) C: What's cruel? T: It means they're mean. 1. You're going to put these in **sequence**. That means you're going

		(explaining story sequencing worksheet)	to tell me what happens first. What happens second, Kerita? What's third, Christian? And what's the last one, Rachel?
10:03	Transition (moving to tables, handing out worksheets)		
10:05	Independent	Writing (story sequencing worksheets, reading or doing puzzles when finished)	1. Your family would have a **fit** if you did that. C: What's a fit? C: It's when they get really angry.
10:45	Transition (cleaning up, moving to tables)		
10:49	Whole Group	Other (discussion of behavior) Reading (reading sentences and coloring pictures to match words)	
11:01	Transition (stapling papers together,		

	putting papers in bags, moving to carpet)		
11:11	Whole Group	Other (discussion of behavior) Read-aloud Read Aloud (<u>Silly Sally</u> and <u>What a Day it was at School</u>)	1. "I'm off to the **infirmary**." (read) Do you know what that is? C: No. T: What does the picture look like? C: (Can't hear) T: To the nurse's office. 2. "No matter how I **plead**." (read) That means how much you beg.
11:21	Transition (getting lunch boxes, lining up for lunch)		
11:25	Out of Classroom- End of Observation		

Appendix B

Episodes of Word Explanations

1. Teacher explains target word:

> Teacher: *To be an **uncle** means that it is someone's brother or sister, either your mom or dad. That is your mom's brother. That's why he is your uncle. If your mom or dad has lots of brothers and sisters, then you would have lots of uncles and aunts.*

2. Teacher facilitates children's determination of definition:

> Teacher: ***Harm** means what? Do you know what the word harm means?*
>
> Child: ***Harm** it um means that it's not good.*
>
> Child: *Well someone's **harming** the animals it's making it difficult to survive.*
>
> Teacher: *Right. Another word for **harm** is hurt.*

3. Child initiates teacher explanation

> Teacher (reads): *"And the octopus emerged from the darkness."*
>
> Child: *What does **emerge** mean?*
>
> Teacher: ***Emerge** means they came out, that you can see them.*

4. Standard definition

> Teacher: *A baby whale is called a **calf.***

5. Child friendly word explanation

Teacher: *This one is not a circle. A circle is flat. This is round. That is a* **sphere.** *Like a ball could be a* **sphere.** *What is this sphere?*

Child: *An eyeball.*

Teacher: *What is this* **sphere?**

Child: *A basketball.*

Teacher: *Almost every ball will be a sphere. It's only a circle if it's flat. If it's round like that, it's a* **sphere.**

6. Brief explanation

Teacher: *I'm on the* **cover.** *The cover is the front.*

7. Long conversation explanation

Teacher: **Miserable.** *Who know what* **miserable** *is? Jacob?*

Child: *It means mad.*

Teacher: *Could mean mad, what else could* **miserable** *be, Caleb?*

Child: *Sad, really, really sad.*

Teacher. *Yes. Abby?*

Child: *Tired.*

Teacher: *Tired, might be.*

Child: *Alone.*

Teacher: *Alone, maybe? You could be* **miserable** *in a lot of ways, you could be really sad, you could feel sick and say, I just feel* **miserable** *because you're really sick. Or, maybe you're hurt or you just don't feel good. So* **miserable**

*could have lots of meanings. She's feeling **miserable** about her eggs because*

they hadn't hatched yet.

8. Rephrasing

Teacher: *Raise your hand if you can tell me the **setting**? Where did the story*

happen?

9. Partial definition/explanation

Teacher: *A **weed** is just a plant that's growing where you don't want it.*

10. Antonym

Teacher: *A **fiction** story, it's not a true story, it's not information.*

11. Category Membership

Teacher: *A **tarantula**, that's a kind of spider.*

12. Example

Teacher: *John [names changed], you and Ben are kind of **camouflaged** with*

each other because you are both wearing green striped shirts that have about

the same width of stripes so I couldn't tell how many people there were. Just

like zebras in a herd, it's hard to count them because their stripes get all

mixed up.

Appendix C

Grouping Configuration and Area Content Codes

Grouping Configuration:

a. Whole group

The teacher is leading instruction or discussion that includes all or most of the children in the class. Children are typically sitting on the floor and teacher is working with the whole group at once. Children may also be sitting at tables, but the teacher is still talking to and working with all children in the class. NOTE: *Do not* use this code if children are working independently and the teacher is checking on them, select the *independent* code.

b. Centers

The teacher is moving around the classroom working with children or groups of children as needed. Children are working at a variety of centers/stations/tables around the classroom. Children in the same center/station are working on the same activity. For example, children in one area may be playing with blocks, children in another area are reading books, children in a third area are doing a worksheet. The teacher is walking around and helping children in different groups. NOTE: *Do* not use this code if the teacher is sitting down and working with one specific group of children, use the *small group* code. *Do not* use this code if all children are working on the same activity, use the *independent* code.

132

c. Small group

The teacher is sitting and working with a small group of children. She is teaching a lesson or working with these children. She may give instructions or correct behaviors for the whole group, but her focus is working with the small group. Other children in the class may be working individually or participating in centers.

d. Independent

The teacher is moving around helping individual children as needed. All children in the classroom are working on the same activity or project, but they are working independently around the room. For example, all children are at tables writing in their journals and teacher is conferencing/meeting with individual children as needed.

e. Transition

The teacher is directing children to move from one activity to another, or is otherwise spending time on something that is not instructional. This could include waiting for children to clean up, taking attendance, moving from one area of the room to another, getting books or supplies, giving directions, bathroom or water breaks etc.

f. Out of Classroom

The teacher takes the children out of the classroom to recess or an assembly. Wait in the classroom until they return and then continue coding when class resumes. Or, the teacher leaves the classroom while the children remain in the classroom.

g. Prep time

The teacher has a break while children are with another teacher. For example, if children go to art, music, library or gym. Wait in the classroom until the children return and then continue coding when class resumes.

h. Other

If you are unsure about which of the other Activity Setting codes to use or if none of the codes are applicable, use this code. NOTE: *Provide additional information to allow the reader to understand which Activity Setting is occurring in the classroom.*

Content Codes:

a. Reading

The teacher is engaging children in learning how to read, including:

- Reading activities focusing on the letters and sounds of the alphabet, including: chanting the alphabet, practicing the sounds each letter makes, recognizing written words that start or end with a letter of the alphabet, worksheets on learning the letters of the alphabet or how sounds match with letters. NOTE, if worksheet focuses on handwriting, select the *Writing* code.

- Hearing sounds in words including: hearing words that rhyme or are in the same "word family," being able to hear words that start or end with the same sound.

- Learning about how print or books work including: recognizing punctuation, recognizing simple words by sight, reading along as the teacher points to words, or child is pointing to the words as the teacher reads a simple text, turning pages of a book.

- Sounding out words including: sounding out individual words, helping children to read and sound out words in a simple book.

- How to fluently read and pronounce words in text including: chanting along as teacher points to words in a text, repeating after the teacher to practice reading with expression.

- Reading activities focusing on the meaning of a text that children *are reading by themselves*. Note: this is separate from a *read-aloud* because it is focused on a text that *children are trying to read by themselves*. This could include discussions about the content of a non-fiction or fictional text before, during, or after *children's reading*; talking about the characters, setting, problem, and solution in a story. For example, if the teacher is working with a small guided reading group where children are learning to read little books, she may ask them to retell or describe what they have read.

- Children looking at books independently, including if children are looking at the pictures in books by themselves or children trying to sound out or actually read words in book.

b. Read-Aloud

- The teacher is reading aloud from a fiction or non-fiction text.

- Children are listening to, asking or answering questions about or discussing the text *that the teacher is reading*. Note: if a child is reading aloud from a text, select *Reading. Note, discussion of the text might happen before, during or after the read aloud, count this as part of the Read Aloud.*

c. Writing

The teacher is engaging children in

- Writing activities that focus on handwriting or practicing how to form letters

- Composing including if the teacher is demonstrating how to write down words, if the teacher dictates words and the child is trying to write those words, children are

drawing a picture in a journal or on a worksheet and then trying to write words to describe or label the picture, child is trying to write a letter or list during play.

- Spelling including activities where children are practicing spelling words or the teacher is showing children how to sound out and write a word, children are spelling words using magnetic letters, cut out letters, or Styrofoam letters.

- NOTE: If children are drawing in journals or on a worksheet as part of a writing activity or writing workshop, count this as *Writing*.

d. Math

The teacher engages the children in instruction, activities, or assessment related to:

- Numbers

- Patterns

- Shapes

- Adding

- Subtracting

- Quantity (size or amount, more than, less than)

- Measurement

Note: Children may be using/playing with mathematics manipulatives which are physical objects to help them learn math concepts. These include counters (objects to count), objects to use to make patterns, objects/tools for measuring. Count this as *Math*.

e. Social Studies

The teacher engages children in instruction, activities or assessment related to human interactions This could include:

- Friendship

- Family

- Holidays

- Other cultures

- Government including voting or politics (who's the president?)

- Current events

- Studying the neighborhood (i.e. why do we need parks) or community helpers or jobs (i.e. fire fighters)

- Problem solving strategies or other discussions of classroom community (i.e. jobs, rules) etc.

f. Science

The teacher engages children in instruction, activities or assessment that foster learning about the physical or natural world. This includes:

- Animals

- Plants

- The environment (saving water, recycling)

- Life-cycles and growing

- Human body

- Senses

- Rocks

- Weather

- Dinosaurs

- Space

- Geographic features (mountains, lakes, volcanoes)

- Water and sink or float

g. Morning Meeting

Teacher is engaging children in morning meeting activities. Morning meeting is a whole group activity that generally occurs at the start of the day, although it can happen at other times. Often included in morning meeting are:

- Greetings and news (i.e. tell something about your weekend)

- Morning message which is a written note from the teacher to the students that is read or chanted

- Recitation of the schedule for the day

- Calendar or day of the week activities

- Observations or charting of the weather or discussion of the season

- Counting the days of school

- NOTE: Watch carefully because teachers often transition quickly from the morning meet routine into another content area. For example, the teacher may read a book (code: *Read Aloud*) or have children chant together from a poem or big book (code: *Reading*) immediately following morning meeting.

h. Free play

Children are playing in the classroom. This could include:

- Imaginary/dramatic play which is dressing up or pretending with dolls, toys, plastic animals, plastic food or other objects.

- Playing with blocks, legos or other building toys.

- Puzzles

- Note: If children are playing with mathematics manipulatives (counters, unifix cubes, pattern blocks etc.), code this as *math*.

i. Art

Children are drawing, painting, or doing a crafts activity.

- NOTE: if children are drawing in journals or worksheet as part of a writing activity, code this as *writing*.

- NOTE**:** only select art if it is clear that this is an isolated art activity that is not part of another subject area.

j. Vocabulary

The teacher engages children in instruction, activities, or assessment designed specifically to help children learn the meaning of words. The focus of the lesson is on learning the meaning of words.

- NOTE: Select this code if it is a lesson focused on vocabulary and there is no other content focus of the lesson. Select this code if the teacher indicates that she is doing a lesson on vocabulary or word meanings. For example, the teacher might ask children to think of a series of synonyms for a word, count this as vocabulary. Or, the teacher might review the meanings of several words, count this as vocabulary.

- NOTE: If teacher briefly explains a word as part of another content area, select the code for that content area.

- NOTE: Do not select this code if the teacher is reviewing how to recognize words in print such as work on sight words, word wall words, or chanting words on a chart. These should be coded as *Reading*.

k. Other

If you are unsure about which of the other codes to use or if none of the codes are

applicable, use this code. NOTE: *Provide additional information to allow the reader*

to understand what content is occurring in the classroom.

References

Al Otaiba, S., Connor, C. Lane, H. Kosanovich, M. L., Schatschneider, C. , Dyrlund, A. K., Miller, M. S., & Wright, T. L. (2008). Reading First kindergarten classroom instruction and students' growth in phonological awareness and letter naming–decoding fluency. *Journal of School Psychology, 46*, 281-314.

Anderson, R.C., & Freebody, P. (1981) Vocabulary knowledge. In John T. Guthrie (Ed), *Comprehension and teaching: Research reviews.* Newark, DE: International Reading Association.

Beck, I. L., & McKeown, M. G. (2007). Increasing young low-income children's oral vocabulary repertoires through rich and focused instruction. *Elementary School Journal, 107*, 251-273.

Beck, I.L., McKeown, M.G., & Kucan, L. (2002). *Bringing words to life: Robust vocabulary instruction.* New York: The Guilford Press.

Biemiller, A. (2003). Oral Comprehension Sets the Ceiling on Reading Comprehension. *American Educator, 27*, 23, 44.

Biemiller, A. (2006). Vocabulary development and instruction: A prerequisite for school learning. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of early literacy research (Vol. 2)* (pp. 41-51). New York: Guildford Press.

Biemiller, A., & Boote, C. (2006). An effective method for building meaning vocabulary in primary grades. *Journal of Educational Psychology, 98*, 44-62.

Biemiller, A., & Slonim, N. (2001). Estimating root vocabulary growth in normative and advantaged populations: Evidence for a common sequence of vocabulary acquisition. *Journal of Educational Psychology, 93*, 498-520.

Blanchowitz, C. (1987). Vocabulary instruction: What goes on in the classroom? *Reading Teacher, 41*, 132-137.

Blanton, W., & Moorman, G. (1990). The presentation of reading lessons. *Reading Research and Instruction, 29*, 35-55.

Booth, A. E. (2009). Causal supports for word learning. *Child development, 80*, 1243-1250.

Carey, S. (1978). The child as word learner. In Halle, M., Bresnan, J., & Miller, G. A. (Eds.) *Linguistic Theory and Psychological Reality* (pp. 264-293). Cambridge, MA: MIT Press.

Carlisle, J. F., Cortina, K. S., & Zeng, J. (2010). Reading achievement in Reading First schools in Michigan. *Journal of Literacy Research, 42*, 49-70.

Catts, H. W., Adlof, S. M., & Weismer, S. E. (2006). Language deficits in poor comprehenders: A case for the simple view of reading. *Journal of Speech, Language, and Hearing Research, 49*, 278-293.

Chall, J., & Dale, E. (1995). *Readability revisited and 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.

Christian, K, Morrison, F. J., Frazier, J. A., & Massetti, G. (2000). Specificity in the nature and timing of cognitive growth in kindergarten and first grade. *Journal of Cognition and Development, 1*, 429-448.

Connor, C. M., Morrison, F. J., & Katch, L. E. (2004). Beyond the reading wars: Exploring the effect of child-instruction interactions on growth in early reading. *Scientific Studies of Reading, 8*, 305-336.

Connor, C. M., Morrison, F. J., & Petrella, J. N. (2004). Effective reading comprehension instruction: Examining child x instruction interactions. *Journal of Educational Psychology, 96*, 682-698.

Connor, C. M., Morrison, F. J., & Slomiski, L. (2006). Preschool instruction and children's emergent literacy growth. *Journal of Educational Psychology, 98*, 665-689.

Coyne, M., McCoach, D. B., Loftus, S., Zipoli, R., & Kapp, S. (2009). Direct vocabulary instruction in kindergarten: Teaching for breadth versus depth. *The Elementary School Journal, 110*, 1, 1-18.

Cunningham, A.E. & Stanovich, K.E. (1991) Tracking the unique effects of print exposure in children: Associations with vocabulary, general knowledge and spelling. *Journal of Educational Psychology, 83*, 264-274.

Cunningham, A. E., & Stanovich, K. E. (1997). Early reading acquisition and its relation to reading experience and ability 10 years later. *Developmental Psychology, 33*, 934-945.

Dickinson, D. K., & Porche, M. V. (in press). Relationship between language experiences in preschool classrooms and children's kindergarten and fourth grade language and reading abilities. *Child Development.*

Dickinson, D.K., & Smith, M.W. (1994) Long-term effects of preschool teachers' book reading on low-income children's vocabulary and story comprehension. *Reading Research Quarterly, 29*, 104-102.

Dickinson, D. K., & Snow, C. E. (1987). Interrelationships among pre-reading and oral language skills in kindergarteners from two social classes. *Early Childhood Research Quarterly, 2*, 1-25.

Dickinson, D. K., & Tabors, P. O. (2001). *Beginning literacy with language*. Baltimore, MD, Brookes.

Duke, N. K. (2000a). 3.6 minutes per day: The scarcity of informational texts in first grade. *Reading Research Quarterly, 35*, 202-224.

Duke, N. K. (2000b). For the rich it's richer: Print experience and environments offered to children in very low- and very high-socioeconomic first-grade classrooms. *American Educational Research Journal, 37*, 441-478.

Dunn, L., & Dunn, D. (1997). Peabody *Picture Vocabulary Test, Third Edition*. Circle Pines, MN: American Guidance Service.

Durkin, D. (1978-1979). What classroom observations reveal about reading comprehension instruction. *Reading Research Quarterly, 14*, 481-533.

Elley, W. B. (1989). Vocabulary acquisition from listening to stories. *Reading Research Quarterly 24)*, 174-187.

Farkas, G., & Beron, K. (2004). The detailed age trajectory of oral vocabulary knowledge: Differences by class and race. *Social Science Research, 33*, 464–497.

Goldin-Meadow, S. (2003). *How our hands help us to think*. Cambridge, MA: Harvard University Press.

Goswami, U. (2002). Early phonological development and the acquisition of literacy. In S.B. Neuman & D.K. Dickinson (Eds.), *Handbook of early literacy research*. (pp. 111-125). New York: Guildford Press.

Han, M, Moore, N., Vukelich, C. & Buell, M. (in press). Does play make a difference?: Effects of play intervention on at-risk preschoolers' vocabulary learning. *American Journal of Play.*

Hargrave, A. C., & Sénéchal, 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*, 75–90.

Harris, J, Golinkoff, R. M., Hirsh-Pasek, K (2010). Lessons from the crib for the classroom. How children really learn vocabulary. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research (Vol. 3)* (pp. 49-65). New York: Guildford Press.

Hart, B., & Risley, T. R. (1995). *Meaningful differences*. Baltimore, MD: Brookes.

Hart, B., & Risley, T. R. (2003). The early catastrophe: The 30 million word gap by age 3. *American Educator, 27*, 4-9.

Heath, S. B. (1986). What no bedtime story means: Narrative skills at home and school. In B. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.), *Theoretical models and processes of reading, 4th ed.* (pp. 83-103). Newark, DE: International Reading Association.

Hindman, A. H., Conner, C. M., Jewkes, A. M., & Morrison, F. J. (2008). Untangling the effects of shared book reading: Multiple factors and their associations with preschool literacy outcomes. *Early Childhood Research Quarterly, 23*, 330-350.

Hirsch, E. D. (2003). Reading comprehension requires knowledge – of words and the world. *American Educator, 27*, 10-13, 16-22, 28-29, 48.

Hoff, E. (2003). The specificity of environment influence: Socioeconomic status affects early vocabulary development via maternal speech. *Child Development, 74*, 1368-1378.

Hoff, E. (2006). Environmental supports for language acquisition. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of early literacy research (Vol. 2)* (pp. 163-172). New York: Guildford Press.

Hoover, W. A., & Gough, P. B. (1990). The simple view of reading. *Reading and Writing, 2*, 127-160.

Huttenlocher, J., Vasilyeva, M., Cymerman, E., & Levine, S. (2002). Language input and child syntax. *Cognitive Psychology, 45*, 337-374.

Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology, 80*, 437-447.

Juel, C., Biancarosa, G., Coker, D., & Deffes, R. (2003). Walking with Rosie: A cautionary tale of early reading instruction. *Educational Leadership, 60*, 12-18.

Lee, V. E., & Burkam, D. T. (2002). *Inequality at the starting gate: Social background differences in achievement as children begin school.* Washington, D.C.: Economic Policy Institute.

Leung, C. B. (2008). Preschoolers' acquisition of scientific vocabulary through repeated read-aloud events, retellings, and hands-on science activities. *Reading Psychology, 29*, 165 - 193

MacWhinney, B. (2000). *The CHILDES Project: Tools for analyzing talk* (3rd ed., Vol. 1 & 2). Mahwah, NJ: Erlbaum

Marulis, L. & Neuman, S. B. (2010). The effects of vocabulary intervention on young children's word learning: A meta-analysis. *Review of Educational Research, 80*, 300-335.

Marzano (2004a). *Building background knowledge for academic achievement: Research on what works in schools.* Alexandria, VA: ASCD.

Marzano (2004b). The developing vision of vocabulary instruction. In Baumann, J. F., & Keme'enui, E. J. (Eds.). *Vocabulary instruction: Research to practice* (pp. 100-117). New York: Guildford.

Mol, S., Bus, A., & deJong, M. (2009). Interactive book reading in early education: A tool to stimulate print knowledge as well as oral language. *Review of Educational Research, 79*, 979–1007.

Morrow, L. M., & Smith, J. K. (1990). The effects of group size on interactive storybook reading. *Reading Research Quarterly, 25*, 213-231.

Muter, V., Hulme, C, Snowling, M. J., & Stevenson, J. (2004). Phonemes, rimes, vocabulary, and grammatical skills as a foundations of early reading development: Evidence from a longitudinal study. *Developmental Psychology, 40*, 665-681.

Nagy, W.E., Berninger, V.W., & Abbott, R.D. (2006). Contribution of morphology beyond phonology to literacy outcomes of upper elementary and middle-school students. *Journal of Educational Psychology, 98*, 134-147.

Nagy, W. E., & Hiebert, E. H. (2010) Toward a theory of word selection. In M.K. Kamil, P. D. Pearson, P. A. Afflerbach, & E. B. Moje (Eds.), *Handbook of Reading Research (Vol. 4).* New York: Longman.

Nagy, W., & Scott, J. (2000). Vocabulary Processes. In M. Kamil, P. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Handbook of Reading Research, Volume III* (pp. 269-284). Mahwah, NJ: Erlbaum.

National Early Literacy Panel (2009). *Developing early literacy: Report of the National Early Literacy Panel.* Jessup, MD: National Institute for Literacy.

National Institute of Child Health and Development (2000). Report of the National Reading Panel. *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (NIH Publication no. 00-4769). Washington, DC: US Government Printing Office.

National Institute of Child Healthy and Development Early Child Care Research Network. (2005). Pathways to reading: The role of oral language in the transition to reading. *Developmental Psychology, 41*, 428-442.

Neuman, S. B. (2006). The knowledge gap: Implications for early education. In D. Dickinson & S.B. Neuman (Eds*.). Handbook of early literacy research (Vol. 2, pp 29-40).* New York: Guildford.

Neuman, S. B. (Ed.). (2008*). Educating the other America.* Baltimore, MD: Brookes.

Neuman, S. B. (2010a). Lessons from my mother: Reflections on the National Early Literacy Panel Report. *Educational Researcher, 39*, 301-304.

Neuman, S. B. (2010b). The challenge of teaching vocabulary in early education. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research (Vol. 3)* (pp. 360-374). New York: Guildford Press.

Neuman, S. B., & Celano, D. (2001). Access to print in low-income and middle-income communities: An ecological study of four neighborhoods. *Reading Research Quarterly, 36*, 8-26.

Neuman, S. B., & Dwyer, J. (2009). Missing in action: Vocabulary instruction in pre-k. *The Reading Teacher, 62,* 384-392.

Neuman, S. B., & Dwyer, J. (in press). Developing vocabulary and conceptual knowledge for low-income preschoolers: A design experiment. *Journal of Literacy Research.*

Neuman, S.B., Dwyer, J., Koh, S. & Wright, T. S. (2007). *The World of Words: A vocabulary intervention for preschoolers.* Ann Arbor, MI: Ready to Learn Research Program.

Neuman, S.B., & Gallagher, P. (1994). Joining together in literacy learning: Teenage mothers and children. *Reading Research Quarterly, 29*, 382-401.

Neuman, S. B., Newman, E., & Dwyer, J. (2009). *Educational effects of an embedded multimedia vocabulary intervention for economically disadvantaged pre-K children: A randomized trial.* Paper given at the Literacy Reading Conference/National Reading Conference, Albuquerque, New Mexico.

Neuman, S. B., & Roskos, K. (1992). Literacy objects as cultural tools: Effects on children's literacy behaviors in play. *Reading Research Quarterly, 27*, 202-225.

Neuman, S.B., Roskos, K., Wright, T.S., & Lenhart, L. (2007). *Nurturing knowledge: Building a foundation for school success by linking early literacy to math, science, art and social studies.* New York, Scholastic, Inc.

Pan, B. A., Rowe, M. L., Singer, J. D., Snow, C. E. (2005). Maternal correlates of growth in toddler vocabulary production in low-income families. *Child Development, 76*, 763-782.

Penno, J.F., Wilkinson, A.G., & 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*, 23-33.

Pinkham, A., Kaefer, T., & Neuman, S. B. (2010). Does mother know best?: Maternal knowledge calibration predicts children's vocabulary knowledge. *Manuscript submitted for publication.*

Pinkham, A. M., Neuman, S. B., & Lillard, A. S. (in preparation). You can say that again! Preschoolers need repeated exposure to gain expressive vocabulary.

Powell, D., Burchinal, M., File, N., & Kontos, S. (2008). An eco-behavioral analysis of children's engagement in urban public school preschool classrooms. *Early Childhood Research Quarterly, 23*, 108-123.

Ravitch, D. (2010). *The death and life of the great American school: How testing and choice are undermining education*. New York, Basic Books.

Ricketts, J., Nation, K., & Bishop, D. V. M. (2007). Vocabulary is important for some but now all reading skills. *Scientific Studies of Reading, 11*, 235-257.

Scarborough, H. S. (1998). Early identification of children at risk of reading disabilities: Phonological awareness and some other promising predictors. In Shapiro, Accerdo, & Capute (Eds.). *Specific reading disability: A view of the spectrum* (pp. 75-199). Timoniuum, MD: York Press.

Scarborough, H. S. (2002). Connecting early language and literacy to later reading (dis)abilities. In S. B. Neuman & D. Dickinson (Eds.), *Handbook of early literacy research (pp. 97-110)*. New York: Guilford Press.

Scott, J. A., Jamieson-Noel, D., & Asselin, M. (2003). Vocabulary instruction throughout the day in twenty-three Canadian upper elementary classrooms. *The Elementary School Journal, 103*, 269-286.

Sénéchal, M., Ouellette, G. Rodney, D. (2006). The misunderstood giant: On the predictive role of early vocabulary to future reading. In D.K. Dickinson & S.B. Neuman, *Handbook of early literacy (Vol. 2).* (pp.173-182). New York: Guildford Press.

Siegel, S. & Castellan, N. J., (1988). Nonparametric *Statistics for the Behavioral Sciences (2nd Ed.).* New York: McGraw-Hill.

Silverman, R. (2007). A comparison of three methods of vocabulary instruction during read-alouds in kindergarten. *Elementary School Journal, 108*, 97-113.

Silverman, R. & Crandell, J. D. (2010). Vocabulary practices in prekindergarten and kindergarten classrooms. *Reading Research Quarterly, 45*, 318-341.

Snow, C. E., Burns, M. S., & Griffith, P. (Eds.). (1998). *Preventing reading difficulties in young children.* Washington, D.C.: National Academy Press.

Stahl, S. A. (2003). Words are learned incrementally over multiple exposures. *American Educator, 27*, 18-19, 24.

Stahl, S. A., & Clark, C. H. (1987). The effects of participatory expectations in classroom discussion on the learning of science vocabulary. *American Educational Research Journal, 24*, 541-555.

Stahl, S.A., & Fairbanks, M. M. (1986). The effects of vocabulary instruction: A model-based meta-analysis. *Review of Educational Research, 56*, 72-110.

Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*, 360-407.

Storch, S. A., & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: Evidence from a longitudinal structural model. *Developmental Psychology, 38*, 943-947.

Swanborn, M. S. L., & de Glopper, K. (1999). Incidental word learning while reading: A metaanalysis. *Review of Educational Research, 69*, 261-285.

Teale, W. H. Paciga, K. A., Hoffman, J. L. (2007). Beginning reading instruction in urban schools: The curriculum gap ensures a continuing achievement gap. *The Reading Teacher, 61*, 334-348.

U.S. Department of Education Office of Elementary and Secondary Education. (2002). *Final guidance for the Reading First Program*. Washington, DC: U.S. Department of Education. Retrieved July 21, 2010 from http://www2.ed.gov/programs/readingfirst/legislation.html

Walsh, K. (2003). Basal readers: The lost opportunity to build the knowledge that propels comprehension. *American Educator, 27*, 24-27.

Wasik, B., & Bond, M. (2001). Beyond the pages of a book: Interactive book reading and language development in preschool classrooms. *Journal of Educational Psychology, 93,* 243-250.

Wasik, B., Bond, M., & Hindman, A. (2006). The effects of a language and literacy intervention on Head Start children and teachers. *Journal of Educational Psychology, 98*, 63-74.

Watts, S. (1995). Vocabulary instruction during reading lessons in six classrooms. *Journal of Reading Behavior, 27*, 399-424.

Weizman, Z. O., & Snow, C. E. (2001). Lexical input as related to children's vocabulary acquisition: Effects of sophisticated exposure and support for its meaning. *Developmental Psychology, 37*, 265-279.

Whitehurst, G. J., Arnold, D. S., Epstein, J. N. Angell, A. L., Smith, M., & Fischel, J. E. (1994). Picture book reading intervention in day care and home for children from low-income families. *Developmental Psychology, 30*, 679-689

Wright, T. S., & Neuman, S. B. (2009). Purposeful, playful pre-K: Building on children's natural proclivity to learn language, literacy, mathematics and science. *American Educator, 33*, 33-39.