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Relationships Among Early Lexical and Literacy Skills and Language-Literacy Environments at Home and School

Joseph L. Constantine
University of South Florida

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Relationships Among Early Lexical and Literacy Skills and Language-Literacy
Environments at Home and School

by

Joseph L. Constantine

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Childhood Education
College of Education
University of South Florida

Co-Major Professor: Pamela O. Fleege, Ph.D.
Co-Major Professor: Stephen B. Graves, Ph.D.
Charlotte G. Dixon, Rh.D.
William G. Emener, Ph.D.
John Ferron, Ph.D.

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ABSTRACT

This observational study examined the relationships among home literacy environments, classroom language-literacy environments, and lexical and early literacy skills for 101 (56 male, 45 female) preschool and kindergarten children between the ages of 48 and 69 months. Data for multiple regression analyses were collected from 14 classrooms across 7 early childhood education centers in central Florida using the *Home Literacy Questionnaire* (HLQ), the *Early Language & Literacy Classroom Observation Toolkit* (ELLCO), and the *Kaufman Survey of Early Academic and Language Skills* (K-SEALS). Seven classrooms scored in the proficient-to-exemplary range on the ELLCO; 3 were rated as basic, and 4 were rated as limited. A statistically significant relationship ($r = .20, p < .05$) was identified between frequency of children's visits to the public library and classroom quality ratings. The home literacy environment accounted for 8.1% of the variance in student Vocabulary scores ($r = .29, p < .01$) and 3.9% of the variance in Numbers, Letters and Words scores ($r = .20, p < .05$) above and beyond teacher and parent education levels. Correlations between ELLCO ratings and students' K-SEALS subtest scores were statistically non-significant.

Analyses revealed a statistically significant difference ($t = -4.75, p < .001$) in ELLCO scores by age group. The number of children's books at home was statistically related to vocabulary scores ($r = .26, p < .01$). Program costs were not statistically related to classroom quality ($r = -.002, p < .996$).

It was suggested that early childhood professionals gather information about home literacy environments to assist in identifying at-risk students. Parents should be provided with resources to enhance children's language-literacy experiences at home. Further, parents need assistance in evaluating and selecting high-quality early childhood education programs. The use of academic testing as an indirect measure of classroom quality was not supported. However, teachers' educational backgrounds were related to classroom quality, highlighting the need for qualified providers. Early childhood teacher mentoring programs are needed to help improve classroom language-literacy curricula. Student assessments should be informed by the kinds of learning opportunities available to young children in their homes and communities.

Chapter One

Introduction

Statement of the Problem

Literacy achievement is an elusive accomplishment for a large segment of the population in the United States. Currently, one out of five school-age children experiences reading failure (Lyons, 2001). In addition, most children with reading difficulties also present with phonological processing delays and/or oral language deficits that further impact academic performance (Catts, Fey, Zhang, & Tomblin, 1999). Research findings have made it clear that students who do not read fluently by the time they reach the 4th grade, are likely to struggle with reading problems into adulthood. Changes in society with reference to technology and access to information continue to increase the importance of developing ample literacy skills. Illiteracy is associated with numerous negative outcomes for individuals including substance abuse, teenage pregnancy, and involvement in the criminal justice system (Cramer & Ellis, 1996).

The literacy acquisition dilemma in America has reached the point of a national public health crisis. Educators, investigators, psychologists, speech-language pathologists and other professionals continue to advocate for high-quality early childhood education and intervention to help prevent reading difficulties in young children. Because of interrelated ties between early language development and literacy skills, intervention and prevention experts have become extremely interested in how children's learning

environments affect their reading abilities. Unfortunately, current literacy screening batteries do not routinely include measures of home literacy or classroom literacy characteristics.

Newly published results of longitudinal research conducted over the past 15 years (Dickinson & Tabors, 2001) have highlighted the value of using both early childhood (EC) classroom language and literacy environment data and home literacy environment data to predict language and literacy outcomes in elementary school and beyond. However, longitudinal research methods are cost-prohibitive and by definition, too time consuming to be efficacious in screening and identifying young children at risk for reading difficulties. Investigators and educators are currently in the process of developing and implementing early literacy screenings to assist in prevention of reading disabilities and future academic failure. Early childhood education research has not adequately examined home literacy environment questionnaire findings and classroom language-literacy environmental ratings in relation to children's performance on vocabulary and early reading tasks. Further, home literacy surveys with varied response formats have proven to be problematic in terms of reliability and validity. Use of simpler parent questionnaire formats has been recommended in order to obtain useable data in this area (Haney, 2000). Educators would likely benefit from the development of a practical survey that reliably quantifies the home literacy environment. Similarly, focused measures of the classroom language-literacy environment have only recently been published for research purposes (Smith, Dickinson, Sangeorge, & Anastasopoulos, 2002). Hence, little information is currently available about how results from such measures relate to children's early lexical and literacy skills.

Purpose of the Study

The purpose of this study is to examine relationships among the following variables: young children's vocabulary, literacy knowledge, the home literacy environment, and the early childhood classroom literacy environment. This study seeks to add to our existing knowledge of variables associated with literacy achievement in young children. Findings about factors related to literacy development may serve to assist early childhood professionals in designing more accurate and useful screening methods that simultaneously consider young children's home and school language-literacy backgrounds. In addition, previous studies (Dickinson & Tabors, 2001) have emphasized achievement of kindergarten children from low-income families without including preschool outcomes data. This study includes preschool and kindergarten measures of achievement across an expectedly diverse range of socioeconomic levels as recommended by Haney (2000).

Statement of Significance

It is well established that both home and school environments make substantial contributions to emerging language and literacy skills. Literacy-based experiences provide a foundation for general knowledge of print concepts. It has also been discovered that conversational language experiences enhance development of literacy-related language skills. Narrative and explanatory language interactions, for instance, prepare children for academic tasks connected to reading (e.g., vocabulary comprehension, reading comprehension, and narration) (Dickinson & Tabors, 1991). However, implementation of successful early childhood reading programs is dependent upon an understanding of children's learning opportunities and environments. Moreover, early

identification of children at risk for reading difficulties is essential for improving students' academic success.

Early developmental processes in the literacy domain are strongly influenced by social learning experiences. Caregiver expectations, aspirations, family structure, and community environments interact in complex ways that prevail upon child development. For this reason, public law has required early interventionists and other childhood education professionals to implement family-centered practices in their work. Early childhood professionals need to be sensitive to the lifestyles, cultures, and perspectives of individual families. Therefore, educators are increasingly expected to acquire a broader knowledge base for dealing with variations in childrearing. (Anderson, Lee-Wilkerson, & Chabon, 1995). By examining multiple data sources at a fixed moment in time, this study reveals relationships between family perspectives of literacy, classroom literacy environments, and children's linguistic knowledge. Knowledge of these relationships can also help to inform decision-making processes regarding skills assessment and program assessment in early childhood programs.

Research Questions

Attention to the existing body of literature on early childhood language and reading development led to the following research questions:

- 1) What is the relationship between home literacy environment (HLE) questionnaire results and classroom language-literacy environment (CLE) quality ratings?
- 2) What is the relationship between home literacy environment (HLE) questionnaire results and student scores on Vocabulary (VOC) and Numbers, Letters and Words (NLW) measures, above and beyond parent and teacher education levels?

- 3) What is the relationship between classroom language-literacy environment (CLE) quality ratings and student scores on Vocabulary (VOC) and Numbers, Letters and Words (NLW) measures, above and beyond parent and teacher education levels?
- 4) What proportion of the students' Vocabulary (VOC) and Numbers, Letters and Words (NLW) scores can be explained by classroom language-literacy environment (CLE) quality ratings, above and beyond parent and teacher education levels and the home literacy environment (HLE) questionnaire results? In other words, did using multiple data sources provide additional information for explaining student language-literacy scores?

Limitations of the Study

As with all research, there are potential limitations to this study. Researchers are expected to communicate possible limitations to readers, such that informed interpretations of results can be made. Future investigators may also benefit from consideration of studies' strengths and weaknesses. Results of this study may not be generalized to other populations of students. Data collection was limited to several local early childhood education centers located in a metropolitan area in Florida. Participating early childhood centers and parents were self-selected, which may have affected the nature of the results obtained. In addition, parent surveys and teacher interviews are subject to positive response bias although steps were taken to acquire accurately reported data. Results from this study may not be generalized to students with multilingual backgrounds or students with cognitive or medical disabilities.

Overview of the Study

Chapter 2 will provide an overview of the psychological, educational, and communication disorders research relevant to this study. Chapter 3 will provide specific descriptions of the procedures, hypotheses, participants, measures, and data analyses. In Chapter 4, the results of the study will be presented including descriptive statistics and statistical analyses. Chapter 5 will provide a discussion of the findings, a summary, and recommendations for future research.

Chapter Two

Review of Literature

Early Child Care and Education

With more than 21 million children under the age of six in the United States, and approximately 75 percent of those children attending some kind of early care program, the need for high quality early education is clear. Currently, early child care and education in America consists of a patchwork of public and private programs including Head Start, public school, state-funded prekindergarten, child care centers, and family child care homes. Although education is primarily viewed as a state responsibility, no state has a comprehensive system of preschool education in place. Hence, the burden of financing early education for young children rests primarily on families. Parents pay an estimated \$40 to \$50 billion each year on early care and education. Even publicly housed programs such as Head Start and public preschool have begun requiring parents to pay copayments for services. In addition to private funds, federal and state public funds are available to assist low-income families in affording these costs, however, public subsidies for child care are only sufficient to support about 15 percent of all eligible parents. Federal funds typically take the form of Child Care and Development Block Grants (CCDBG) and Temporary Assistance to Needy Families (TANF) (Mitchell, 2001).

Large gaps in availability and affordability of quality early childhood programs have led to discussions of universal preschool; also known as universal prekindergarten.

Universal preschool is, generally speaking, designed as a free, voluntary service that promotes early learning of skills prior to kindergarten. Universal preschool programs have now been implemented in Georgia, Oklahoma, and New York. Such programs have been consistently linked to a national agenda of improved literacy outcomes for young children and a potential solution for closing the education gap. According to the Foundation for Child Development, government policies can improve young children's access to high quality care and education by establishing regulatory standards that apply to all early childhood programs, raising staff/teacher qualifications to be consistent with kindergarten teacher licensing, finding better ways of financing all types of programs, and developing an adequate infrastructure for personnel preparation, continuing education, and teacher compensation (Mitchell, 2001).

The federal government has responded, in part, by passing the No Child Left Behind Act of 2001 (NCLB). Created to improve school quality and student performance, this law introduced new federal requirements for student outcomes, reading/literacy, teaching quality, school choice and innovation, and flexibility of federal programs. *Reading First* and *Early Reading First* grants have been made available to states, school districts, and early childhood education centers to assist in promoting reading and overall literacy skills. Specifically, professional development opportunities for early childhood teachers have been provided in the areas of phonological awareness, conventions of print, alphabet knowledge, and oral language. According to the NCLB Act (2001), "the purpose of the *Early Reading First Program* is to create preschool centers of excellence by improving the instruction and classroom environment of early childhood programs that

are located in urban or rural high-poverty communities and that serve primarily children from low-income families” (U.S. Department of Education, 2001).

Still, definitions of *centers of excellence* continue to vary among leaders in education and government. In Florida, the State Board of Education (BOE) and the Universal Pre-Kindergarten (UPK) Advisory Council have offered separate recommendations for the implementation of a state universal preschool program in 2005. (In November, 2002, Article IX of the State Constitution was amended to include voluntary universal preschool for all four-year-old children in Florida.) The State Board of Education recommendations emphasize child performance of early language and literacy skills, school readiness standards, and consequences for poor performing schools. Further, the BOE has identified the Child Development Associate (CDA) as the necessary credential for teachers in UPK classrooms by 2006-2007. In contrast, the UPK Advisory Council recommendations emphasize assessments of children, teachers, learning environments, and programs. According to the UPK council, programs should be evaluated with a focus on the quality of learning environments and interactions between children and teachers. Additionally, the UPK Advisory Council has suggested a phased implementation plan to require an associate’s degree earned by at least one classroom staff member in 5 years and a bachelor’s degree in Early Childhood Education earned by at least one teacher per classroom in 8 years. These contrasting approaches to universal preschool reflect significantly different philosophies about how to best facilitate language and literacy learning in young children (Florida Children’s Forum, 2003).

Research data and knowledge are more than sufficient to assist in designing ecologically sensitive preschool language-literacy intervention and assessment methods.

Too often, recognition of the early bases of literacy acquisition has resulted in the use of inappropriate teaching and evaluation practices. No single method of teaching (or assessment) is likely to be effective for all children. Rather, teachers who are able to use a variety of strategies and build upon children's previous knowledge and skills, are the most effective facilitators of learning. Therefore, two of the most critical pedagogical skills for teachers are dynamic assessment and dynamic formation of the social learning environment. High quality literacy environments include frequent reading of books together, exposure to a variety of print media, and social interactions rich in language (e.g., rhyme, rhythmic activities, word games). Furthermore, teachers who skillfully create literate classroom environments rooted in children's interests and experiences, set the stage for developmentally appropriate educational practices (Neuman, Copple, & Bredekamp, 2000).

An ecologically sensitive approach to literacy is not readily compatible with hard and fast curriculum standards. For instance, The Florida State Board of Education's proposed reading standards for 4-year-old children do not address individual variations in children's home and school literacy backgrounds. Currently, the proposed expectations for 4-year-olds are as follows: shows appreciation for books and reading, shows beginning understanding of concepts about print, demonstrates phonological awareness, begins to develop knowledge about letters, and comprehends and responds to stories read aloud (Florida State Board of Education, 2003). Again, this type of approach to literacy assessment focuses heavily on developmental milestones, without considering the quality of interactions experienced by the child or the impact of varied learning environments.

Perspectives of Reading Development

Until recently, theoretical constructs about young children's acquisition of reading skills were based largely upon developmental and readiness models of learning.

Developmental approaches focused on age-specific benchmarks for mastery of motor, communication, social, and/or adaptive behaviors. Readiness assessments determined how well children performed on tasks that were believed to be prerequisites to reading such as perception, acuity, and intelligence (Reid, Hresko, & Hammill, 1989, 2001).

These perspectives were based upon the following assumptions: (a) reading is primarily a visual process involving print-sound relationships, (b) children are not ready to read until they are five or six years old, (c) children require direct teaching to become literate, (d) reading instruction must be systematic and sequential, (e) basic skills must be acquired before children can behave in literate ways, and (f) basic skills are neutral or value free (Hall, 1987). However, these assumptions were challenged as new theories about the process of reading development unfolded.

Investigators began to examine literacy development as a natural, spontaneous process whereby young children acquire literacy knowledge through a variety of experiences. These experiences include, but are not restricted to, formal instruction. Research has begun to shed light on the emergence of children's early conceptions of reading and the range of abilities many children exhibit in the preschool years. Studies in this area have focused on children's understanding of the functions of print and other symbols (Eeds, 1988; Y. Goodman, 1986; Holdaway, 1979; McGee & Richgels, 1996; Snow, Burns, & Griffin, 1998), knowledge of book handling (Clay, 1966, 1985, 1991; Doake, 1981; Pinnell, 1996; Valencia, 1997), familiarity with formal, written language

structures (Bigge & Stump, 1999; Clay, 1985; Langer, 1986; Martin & Brogam, 1971; Mason, 1984; Phillips & McNaughton, 1990; Sipe, 2000; F. Smith, 1971), and the identification of letters and numerals (Clay, 1985; McGee & Richgels, 1996; Reid, 1981; Worden & Boettcher, 1990). Such abilities are no longer viewed as precursors to reading readiness; rather, they are seen as true literacy behaviors evident in young children (i.e., emergent literacy) (Crawford, 1995; Hiebert & Raphael, 1998; Teale & Sulzby, 1986; Whitehurst & Lonigan, 1998).

A review of the relevant literature revealed three conceptual themes that relate to young children's learning processes in beginning to read. Investigators have examined associated aspects of early literacy development including phonological sensitivity/speech perception, spoken language ability/semantic processing, and adult-mediated metaliteracy/print awareness.

Phonological Sensitivity

Phonological sensitivity refers to the global set of cognitive processing abilities that requires sensitivity to speech sounds. The term *phonological awareness* may also be used interchangeably with *phonological sensitivity*. Over the past 20 years, research has focused heavily on speech perception and phonologically-based explanations of reading development and reading deficits. Recently, scholars have begun to study the development of phonological awareness abilities in preschool children. Lonigan, Burgess, Anthony, and Barker (1998) investigated phonological sensitivity in 2- to 5-year-old children from lower-income and middle- to upper-income families. The purpose of their study was to, first, determine whether or not it was possible to obtain reliable measures of phonological sensitivity in children within this age range. In addition, the researchers

were interested in gaining a better understanding of phonological sensitivity as it related to age and socioeconomic status (SES) in preschool children. This study also filled a gap in the literature by utilizing large sample sizes (Total N = 356) and a wide variety of phonological sensitivity measures. Measures included syllabic, intrasyllabic, and phonemic sensitivity tasks.

Results indicated that phonological sensitivity could be evaluated in both younger and older preschool children. Children under 4 years of age did exhibit more variability in their performance across tasks and floor effects limited statistical comparisons for the 2- and 3-year-old children. Still, the younger preschool children demonstrated a certain degree of phonological sensitivity, especially for rhyme matching tasks. At 4 years of age and higher, children in this study were found to show stability in their phonological sensitivity abilities across tasks and time. As in other studies, phonological sensitivity was also found to be predictive of word reading ability, independently of language skills. Findings revealed a general index of development, whereby improved performance correlated positively with age. However, significant phonological sensitivity differences were noted between social classes. Children from the middle-income group demonstrated significantly better gains between 2 and 5 years of age than the lower-income group. The authors suggested the possibility that other SES-related factors play an important role in early phonological development such as home literacy, language, and reading experiences. These results and interpretations reflect a trend in literacy research that has consistently identified SES as a predictor of reading achievement. It was interesting to note that such findings were obtained pertaining to preschool children at the beginning stages of phonological sensitivity.

Research conducted from this perspective has been driven by the belief that phonological processing and sensitivity are central to the development of early reading abilities. At the same time, it is impossible to ignore the relationships among SES, phonological development, and reading performance in young children. Additionally, it has been pointed out that strong relationships exist between phonological sensitivity and letter knowledge for both lower-income and higher-income children. These points have implications for research and intervention involving exposure to alphabet books, phonological activities, and literacy environments in general (Lonigan, et al., 1998).

Researchers have begun to study ways in which classroom instruction might help students with phonological processing problems in learning to read. Investigators have reasoned that if phonological skills are critical to reading, explicit instruction in phonological awareness is needed to assist children in bettering their decoding abilities. However, research has focused primarily on school aged children rather than preschool children. This has been the case because of methodological considerations such as inadequate and/or difficult assessment procedures and lack of access to preschool populations outside of the public schools. As suggested earlier, preschool children also demonstrate limited and varying levels of proficiency with discrete phonological tasks. Fortunately, studies of elementary school intervention programs have contributed to our knowledge of desirable teaching practices.

Torgeson and his colleagues (1999) conducted a study that compared the effectiveness of three instructional approaches designed to prevent reading failure between kindergarten and second grade. Two of the teaching approaches were based upon the notion that children with phonological processing disabilities require explicit

instruction in phonological awareness; or more specifically, phonemic decoding strategies. These two approaches varied in terms of degree of explicitness of instruction. In contrast, a third method employed greater one-on-one intervention coordinated with classroom reading activities. Results suggested that the most explicit method of phonemic instruction produced the greatest improvements in word level reading skills for participants. This approach focused heavily on word decoding and devoted little instructional time to text level interpretation.

On the other hand, the authors raise a critical question regarding the value of this finding, given the fact that the ultimate goal of reading is comprehension of contextualized information. Analysis of the post-treatment data did not reveal any significant differences across comparison groups for reading comprehension of written texts. It is likely that the careful separation of teaching methods into distinct groups in this study, in effect, neutralized any observable differences in outcomes. In other words, the design of the study was so compartmentalized that none of the intervention approaches corresponded to methods that would constitute quality instruction in the real world.

These results help to interrupt and inform *either-or* debates over phonics-based or language-based instructional approaches to reading. Clearly, the best reading intervention programs for children are those that address both word level decoding strategies and the construction of meaning from text. Additional research is needed to determine what fundamental building blocks are necessary to build balanced and effective reading intervention programs. Hence, researchers interested in the phonological processes

involved in reading development must also consider the role of spoken language ability and semantic processing in literacy acquisition.

Semantic Processing

Recent studies have begun to examine the interrelated nature of phonological processes and semantic processes with reference to reading. Findings from these studies have provided support for connectionist models of reading development that allow us to consider the compatibility of cognitive processes behind both phonetic decoding and sight-word recognition. These research endeavors have also highlighted the unique role that semantic processing plays in early word learning. Young children who are successful at mastering the basics of reading are able to make connections between phonology and orthography and between orthography and semantics (Berninger, Abbott, & Zook, 1999; Gallagher, Frith, & Snowling, 2000; Laing & Hulme, 1999).

Laing and Hulme (1999) were interested specifically in the phonological and semantic processes involved in beginning readers' word-reading abilities. Two experiments were conducted to help define relationships between visual word recognition, awareness of speech sound connections, and semantic processing in 4- to 6-year-old children. The first experiment was designed to examine the relationship between children's cognitive phonological representations and word recognition of three-letter words. A second study more directly investigated the role semantic factors played in word learning. The research designs were based upon the assumption that young readers begin to take advantage of both phonetic and semantic cues early on in order to make sense of print.

The results of experiment 1 showed that even children at the earliest stages of reading were able to utilize their understanding of speech sounds and letters to learn phonetic decoding strategies. Further, children's abilities to learn such cues were directly related to their knowledge of word *meanings*. The authors suggested that performance on a word interpretation task was analogous to normal processes in early reading development. It is believed that young children are capable of making useful associations between print cues and speech production. As in previous studies, phonological awareness skills were closely related to how well beginning readers mastered novel items. It was not clear, however, how the quality of children's underlying phonological representations was affected by their ability to access and manipulate information through metaphonological processes.

Findings from the second experiment shed greater light on higher-order metacognitive processes that form the foundation for learning to read. The investigators used *imageability* as a semantic variable with the assumption that imageability influences word recognition and comprehension. Imageable words provide a more detailed base of contextual data that lend themselves to a meaningful mental representation. Words with higher levels of imageability deliver more semantic cues than words with lower imageability ratings. Results revealed that such semantic cues uniquely explained reading performance above and beyond phonetic decoding ability. In fact, it is likely that young children initially depend more on semantic cues than phonetic cues when developing early reading skills, including phonemic awareness. These findings are important,

especially given the fact that numerous models of reading development have overlooked the role of semantic processes and focused heavily on phonological sensitivity (Laing & Hulme, 1999).

Similarly, Gallagher, Frith, and Snowling (2000) discussed the early stages of learning to construct meaning from print, prior to the acquisition of decoding abilities. In their article, the point is made that children begin to interpret symbols by making hypotheses about phonetic features and semantic relationships. Findings from the study supported this notion and highlighted the importance of higher-level language abilities critical to the task of reading. Literacy delays (LD) were found to be linked to deficient vocabulary knowledge as well as depressed spoken language ability of children between 4- and 6-years of age. These kinds of conclusions have led many researchers to interpret their observations from a connectionist perspective.

A connectionist perspective proposes that the learner analyzes connections between spelling (orthography) and the phonology of words already represented in memory. Some have suggested that it is, in fact, possible to teach word recognition without teaching phonics explicitly. Studies have indicated that short-term interventions based upon this philosophy can be effective with beginning readers. Berninger, Abbott, and Zook (1999) tested a remedial instruction program for first grade students that made connections between spoken and written words explicit; but did not employ phonics *per se*. The children made significant progress in word identification and word attack skills when taught via the whole word approach. So, it is conceivable that multiple cognitive pathways exist for learning (and teaching) relationships between spoken and written words.

The authors also mention the importance of knowledge of word meanings in developing improved reading performance. In order for preschool or school-aged children to discover semantic-orthographic connections, they must possess adequate vocabulary knowledge and the ability to access an organized mental dictionary or lexicon. Of course, metacognitive strategy use for accessing information and vocabulary development can be greatly affected by the extent to which adult caregivers facilitate these skills in young children. Adults provide models for early language development and convey implicit and explicit messages regarding expected literacy behaviors in a particular child's environment.

Metaliteracy

Caregivers play a vital role in transmitting language and literacy skills to young children. Children's social interactions with adults inform them as to the nature and purpose of literacy behaviors. As children begin to conceptualize the codes and meanings intrinsic to literacy, they develop metacognitive and metalinguistic knowledge. The research literature has addressed awareness of print, or *metaliteracy*, as a key component of metalinguistic ability. This research is based upon a notion of emergent metacognition that evolved out of Vygotsky's socio-cultural and developmental theory (Vygotsky, 1962).

Preschoolers beginning to read and write have demonstrated the ability to construct meaning from text by employing the cognitive self-management processes of planning, monitoring, and regulating action. It is believed that children learn to internalize these processes as they interact in social environments. Supportive learning environments, then, provide children with opportunities to rehearse executive control

over self-thoughts and actions. A recent study of 4- and 5-year-old children indicated that most of the participants possessed at least basic metacognitive abilities with reference to emergent literacy tasks (Fang & Cox, 1999). Evidence suggested that, in fact, many of the children demonstrated strategic planning, self-monitoring, and self-correction processes while constructing an autonomous text aloud. However, these results should be viewed with caution due a relatively small ($N = 44$) and homogeneous (all Midwestern Caucasian) sample.

It has been suggested that proficiency with higher-level self-management abilities in young children may be partly explained by the frequency and types of experiences they have had with literacy events (e.g., storybook reading). Adult-child storybook experiences often involve high levels of scaffolding, language modeling, and direct language-literacy instruction. Such interactions have the potential to increase children's metalinguistic awareness prior to conventional reading. In this respect, literacy acquisition may be viewed as, "a process of cognitive socialization" (Brown, 1956).

Recent research has provided support for conceptions of adult-mediated metaliteracy development/print awareness in young children (Ezell & Justice, 2000; Justice & Ezell, 2000; Justice & Ezell, 2002). These studies have indicated that adult-child shared book reading activities are instrumental in scaffolding children's knowledge of print concepts. Thus, parents and educators can facilitate children's awareness of the forms of print and the connection between oral language and written language. Such awareness is crucial in providing a framework for children's cognitive manipulation of linguistic elements that comprise reading and writing (e.g., phonemes, graphemes, words, and sentences, etc.).

Furthermore, adults may be trained to be more effective at building children's metacognitive and metalinguistic competency. Ezell and Justice (2000) found that when caregivers were specifically trained to use print-referencing behaviors with 4-year-old children, the frequency of child-initiated print-referencing behaviors increased significantly after five months of intervention. Children learned to call attention to and discuss discrete aspects of print including the concepts of *letter* and *word*, for instance. This finding was especially noteworthy given the fact that neither the adults nor the children in this study evidenced any substantial print-referencing behavior (verbal or non-verbal) prior to the intervention.

In another study, print and word awareness were investigated in a home-based parent intervention program aimed at improving early literacy skills in 4-year-old children. Justice and Ezell (2000) were interested in exploring the feasibility of providing an effective four-week intervention that focused on word awareness, alphabet knowledge, print recognition, word segmentation, and conventions of print. Again, pretest findings revealed low rates of verbal references (e.g., comments, requests, and questions about print) to print for parents in both an experimental group and a control group. Non-verbal references to print (tracking and pointing) were more common for parents during the pretest period. Statistically significant increases for all parental referencing behaviors measured were observed at the time of the posttest. Furthermore, shared book reading with adult print-referencing produced significant gains in children's awareness of words in print, word segmentation, and print conventions. A lack of effect for alphabet knowledge was a concern although results may have been impacted by a ceiling effect for this task at pretest. It should also be mentioned that the children in this study were

selected from a pool of typically developing preschoolers. Therefore, it is not possible to generalize the results of this study to at-risk children or children with known language or literacy delays.

To address the question of how children at-risk would respond to book reading sessions with a print focus, Justice and Ezell (2002) conducted a similar study with 30 thirty children enrolled in Head Start who were between the ages of 3 and 5. Results did reveal improved performance for the experimental group across three print awareness tasks including word awareness, print recognition, and alphabet knowledge. The intervention was conducted over an eight-week period in this case. However, the measured improvements were not found to be statistically significant, possibly due to the limited duration of the program. Also, informal measures were utilized rather than standardized measures, which had implications for reliability and validity of data obtained. Still, reading sessions with a print focus produced a gain of nearly 20 percentage points for overall print awareness, compared to a gain of 7 percent for the control group. Future research would benefit from using standardized instruments for measuring early literacy skills over a longer period of intervention.

Studies of this nature have determined that before entering elementary school, children are responsive to direct instruction in beginning reading skills. The research has suggested that shared adult-child reading activities are useful in facilitating early literacy/metaliteracy development. Effective early instruction can be provided in preschool and/or home literacy environments. Moreover, preschool literacy experiences have been shown to be predictive of later reading success. Dickinson and Tabors (1991) found that rich and varied language-literacy experiences at home and in preschool

produced beneficial effects on literacy achievement at age five. The authors discovered strong relationships between literacy-based experiences and specific print skills.

Conversational adult-child interactions, such as narrative and explanatory talk and group book reading at school, were foundational to children's vocabulary and early reading development. Further, the results of the study revealed a set of predictors for 3- and 4-year-old children that was explanatory of reading ability in kindergarten. Skills that were critical to literacy outcomes included vocabulary knowledge, story comprehension, and narrative construction.

Integrating Cognitive, Social, and Linguistic Skills

Phonological sensitivity/speech perception, spoken language ability/semantic processing, and adult-mediated metaliteracy/print awareness are essential to literacy acquisition. These themes form a framework that depicts literacy development as a multifaceted process involving layers of interrelated cognitive functions. While research has attempted to peel back the layers for closer inspection, it is becoming apparent that from an early age, children simultaneously integrate phonological, semantic, and metaliterate knowledge. The existing literature is limited by the fact that it has not yet adequately explained the complex relationships among cognitive processes in reading acquisition. Additionally, studies conducted to date have targeted relatively small sample sizes and have used primarily quantitative research designs. Future research utilizing larger samples or employing qualitative traditions may provide greater insight into reading development.

Much of the research has assumed that reading is a multi-componential skill whereby different skills are directly fostered by separate experiences. In contrast, Snow

(1991) presented a model of literacy development that depicts a variety of interactive experiences that support children's learning of decontextualized language. In this model, four domains are highlighted with respect to preschool language-literacy development: a) conversational language skills, b) decontextualized oral language skills, c) print skills, and d) emergent literacy skills. Snow has argued that social learning experiences at home and at school are inextricably related to children's contextualized and decontextualized (e.g., conveying information to a listener with limited background knowledge) spoken language skills. By the same token, subsequent development of reading comprehension abilities is believed to be dependent upon the cognitive leap from decoding to more advanced contextual understanding.

Studies of early literacy development continue to reveal the capabilities of young children who are able to understand phonological, morphological, syntactic, semantic, and pragmatic relationships. Linguistic and metalinguistic awareness can be viewed as precursors to greater automaticity of information processing. As cognitive processes become more automatic, additional time and space is available for analysis of new linguistic categories, such as recognition and interpretation of print. Hence, oral language knowledge and metaprocessing of language can serve as a bridge to reading. Even at the earliest stages of reading, children demonstrate conscious awareness of phonological, lexical, semantic, and social-pragmatic linkages. Indeed, initial performance on phonological and semantic-syntactic processing tasks is highly predictive of future linguistic and reading abilities. Therefore, it is essential for early interventionists and researchers to build integrated theoretical models of literacy, social, linguistic, and cognitive development in preschool children (Menyuk & Chesnick, 1997).

Constructing Early Literacy Knowledge

Children who live in literate societies begin learning to read long before formalized school instruction takes place (Allington & Cunningham, 1996; Burns, Griffin, & Snow, 1999; Glazer, 1989; N. Hall, 1987; Hall & Moats, 1999; Moss & Fawcett, 1995; Smith, Goodman, & Meredith, 1976; Sonnenschein, Brody, & Munsterman, 1996; Yaden, Rowe, & MacGillivray, 1999). There are at least three different but highly interrelated components of reading discovered by most children during the preschool years (Adams, 1990; Bigge & Stump, 1999; Clay, 1966, 1991; Moss & Fawcett, 1995; Pearson, 1999; Reid, et al., 2001; Snow, et al., 1998; Sulzby & Teale, 1991; Teale & Sulzby, 1986). Prior to school-age, children begin to (a) understand and utilize the alphabet, (b) deduce the arbitrary conventions of print in reading and writing, and (c) construct meaning from print. The development of these three components occurs simultaneously, not sequentially. Literacy skills start to emerge between the ages of 18 months and 2 years, as children develop the ability to recall past events and objects no longer in view. Children begin to learn that symbols such as drawings, letters, and scribbles can represent objects, events, feelings, and people. Proficiency with emergent literacy skills evolves through children's everyday experiences with environmental print. Even at very young ages, children are able to use their knowledge about people, objects, and events (i.e., environmental contexts) to interpret familiar words such as *milk* and *cookies* (Hiebert, E. 1978; Reid, et al., 1989, 2001).

Still, large numbers of American students experience difficulties in learning to read (Applebee, Langer, & Mullis, 1988; National Assessment of Educational Progress, 1985; Torgesen, 2001). Researchers have sought to gain improved understanding of the

processes that promote and/or hinder early reading development in young children. They have attempted to identify specific aspects of literacy learning that are related to later reading achievement. For example, numerous studies have suggested that alphabet knowledge (e.g., letter-naming) is an excellent predictor of beginning reading success (Bond & Dykstra, 1967; Calfee & Drum, 1986; Chall, 1967; Muehl & DiNello, 1976). However, much of the research completed has focused on school-aged children. More recently, research has addressed children's acquisition of written language/alphabet knowledge prior to school entrance and its connection to decoding and early reading abilities (Clay, 1985; Lonigan, Burgess, & Anthony, 2000; McGee & Richgels, 1996; Reid, 1981; Reid, et al., 2001; Worden & Boettcher, 1990).

Relationships between Language and Literacy

Alphabet knowledge has come to be viewed as an important piece of the reading puzzle. It is important to note, however, that research with both typically developing children and children with developmental delays has suggested that a broad range of language and literacy skills are necessary for individuals to achieve success with reading (Snow, et al., 1998). Knowledge of the conventions and meanings of print, phonological awareness, narrative abilities, and other early language factors have been found to be related to later reading performance (Badian, 1988; Badian, McAnulty, Duffy, & Als, 1990; Barnhart, 1991; Elbro, Borstrom, & Petersen, 1998; Felton & Brown, 1990; Hurford, Schauf, Bunce, Blaich, & Moore, 1994; Maclean, Bryant, & Bradley, 1987; O'connor & Jenkins, 1999; Perfetti, 1985; Rayner & Pollatsek, 1989; Roth, Speece, & Cooper, 1997; Scarborough, 1989; Snow, Tabors, Nicholson, & Kurland, 1995; Stuart, 1995; Torgesen, Burgess, Wagner, & Rashotte, 1996; Uhry, 1993; Wells, 1986).

Linkages between various aspects of child language development and literacy learning are certainly well documented in the literature, although the interrelationships involved are complex and not well understood (Catts, Fey, & Proctor-Williams, 2000; McGee & Richgels, 2000; Menyuk & Chesnick, 1997; Searfoss, Readence, & Mallette, 2001; Simpson, 2000; Snow, et al., 1998). Indeed, the range of linguistic variables examined in individual studies has often been limited to phonological awareness and/or rapid naming tasks (Catts, Fey, Zhang, & Tomblin, 2001).

Phonological awareness has been the center of a flurry of attention, as researchers continue to confirm relationships between phonological processing and the acquisition of early reading skills. According to Liberman, Shankweiler, & Liberman (1989), reduced ability to process the phonological features of language may be the single most important indicator of reading disability. Phonological awareness and rapid automatic naming performance have been found to relate to and/or causally affect the pace at which children learn early reading skills such as word recognition (Bradley & Bryant, 1985; Fox & Routh, 1983; Liberman & Shankweiler, 1985; Lundberg, Olofsson, & Wall, 1980; Stanovich, Cunningham, & Cramer, 1984; Tunmer & Nesdale, 1985; Vellutino & Scanlon, 1987; Wagner, et al., 1997; Yopp, 1988). Studies have only recently begun to address these issues in preschool-aged children (Chaney, 1992, 1994; Maclean, Bryant, & Bradley, 1987; van Kleeck, Gillam, & McFadden, 1998). Thus, research does not yet give a definitive answer to the question of how young children make the leap from phonological awareness to conventional reading.

It has been argued that although the study of phonological processing is useful in understanding the decoding process, it provides limited information about reading

achievement in terms of actual reading comprehension. From this perspective, other language abilities (i.e., semantic-syntactic) are critical to deriving meaning from printed texts (Perfetti, 1985; Rayner & Pollatsek, 1989). In fact, some research has indicated that overall language ability (in both preschool and kindergarten) is a better predictor of later reading *comprehension* ability than phonological awareness, rapid naming ability, or other task-specific language measures (Catts, 1993; Lewis, 2000; Snow, et al., 1998). Even toddlers who later "recovered" from generalized expressive language delays and whose reading skills did not differ from peers at age 6 or 7 have been found to score lower than their comparison peers on reading tests by ages 8 or 9 (Rescorla, 2002).

In addition, young children identified with speech-language problems have been shown to be at greater risk for reading difficulties than children without histories of speech-language delays (Bishop & Adams, 1990; Catts, Fey, Zhang, & Tomblin, 1999; Menyuk & Chesnick, 1997). More precisely, children with reading problems often have related oral language deficits. This information provides further empirical evidence in support of the language-literacy connection (Catts, et al., 2000; Catts & Kamhi, 1999). In order to read at the word level, children must be skilled at bringing conscious awareness of phonology and lexical meaning to words. Moreover, efficient reading of sentences and passages requires mastery of complex semantic, syntactic, and discourse related aspects of language (Menyuk & Chesnick, 1997). Recent studies have also highlighted the fact that both phonological processing and oral language proficiency account for unique variance in reading achievement in second and fourth grade readers (Catts, Fey, Zhang, & Tomblin, 1999; Catts, et al., 2000).

Such complex linguistic requirements create barriers to reading for children with language problems. Again, only limited research has investigated precise preschool predictors of reading success in elementary school. However, initial studies have reflected the importance of developing letter knowledge and phonological sensitivity in preschool children (Lonigan, et al. 2000, Lonigan, Burgess, Anthony, & Barker, 1998; Scarborough, 1989). Catts et al. (2001) have suggested that predictive hypotheses about preschoolers' future reading skills must currently be based upon the presence of severe language and developmental disabilities and/or a family history of reading deficits.

Preschool children with language impairments frequently exhibit problems with phonological awareness, narrative, and print-related concepts essential to literacy development. Research has indicated that young children with language delays have difficulties across tasks of print awareness including responses to environmental print (Gillam & Johnston, 1985; Paul, 1996). Further, children with language impairments have been shown to demonstrate significantly less developed metaphonological (e.g., rhyming, segmentation, identification of phonemes) and morphosyntactic (e.g., meaning-grammatical) skills than typical peers (Magnusson & Naucler, 1990a, 1990b). Research with typically developing children has suggested that early literacy skills fall into a unitary construct, whereby children who perform well on one literacy task tend to perform well across a range of early literacy tasks (Barnhart, 1991; Boudreau & Hedberg, 1999).

Attempts to uncover the exact nature of the relationship between language and literacy development are confounded by the fact that not all children with language impairments experience difficulty with learning to read. It has been suggested that

reading difficulties may be dependent upon the type of language deficit present.

Language impairments that are severe in particular aspects and/or specific to certain reading-related processes such as comprehension, semantics, and/or auditory memory, might have a greater impact on reading performance (Bishop & Adams, 1990; Boudreau & Hedberg, 1999; Catts, 1993; Scarborough, 1998; Wilson & Risucci, 1988). Still, it is feasible to make reasonable predictions of reading achievement for individual children based predominantly upon early language factors (Catts, et al., 2001).

In a major epidemiologic study, Catts, et al. (2001) identified five kindergarten variables that uniquely predicted reading performance in second grade: letter identification, sentence imitation, phonological awareness, rapid naming, and maternal education level (as a socioeconomic indicator). This investigation utilized a range of kindergarten language measures that addressed receptive and expressive vocabulary, syntax, narration, phonological awareness, and rapid automatized naming. Unfortunately, this study did not include many participants from minority groups or explore predictive variables in preschool populations.

Badian (1994) investigated phonological awareness, serial naming speed, and orthographic processing in young children six months before kindergarten and again 19 to 24 months later. In order of significance, findings suggested that letter naming, sentence memory, object naming speed, orthographic knowledge, and socioeconomic status (SES) predicted first grade reading comprehension. A revised preschool screening battery accurately identified 91 percent of good and poor readers in first grade. Another study (Foy, 2001) examined rhyme awareness, phonemic awareness, articulatory skills, speech perception, vocabulary, and letter and word knowledge in 4- to 6-year-old

children who were just beginning formal reading experiences in private preschools. Results from this study did not confirm the strength of phonological representations in connection with phonological awareness skills. Rather, associations were evident between spoken language tasks and phonological awareness skills. Lonigan, Burgess, & Anthony (2000) found that letter knowledge and phonological sensitivity were unique predictors of decoding from late preschool to early elementary school.

During the preschool years and early grades, children are engaged in the process of expanding their use and comprehension of language. Language comprehension and expression abilities are directly related to children's experiences and understanding of the world. Exposure to oral and written texts (e.g., narrative and expository) is vital for learning to monitor what makes sense and what does not make sense. In addition, oral language opportunities provide a medium for beginning to question and respond to texts read during important joint literacy experiences at home. Early conversations revolving around shared sequential, associative, and/or descriptive events are critical for teaching young children to develop and test hypotheses about what will happen next (i.e., story event prediction). Such dialogue is also essential for children to become effective at comprehending both contextualized and decontextualized information and making the semantic links necessary for text comprehension (American Speech-Language-Hearing Association, 2001).

According to the National Association for the Education of Young Children (2001), caregivers should be aware that listening, speaking, reading, and writing are *integrated elements*. Early language interactions for infants and toddlers *are* literacy-learning experiences. Further, adult involvement in child language-literacy activities

supports acquisition of blended skills across communication modalities. Ideal literacy environments allow children to explore their environments and develop the conceptual and experiential foundations for learning to read and write. Opportunities for lengthy, in-depth conversations about a variety of topics prepare children for future interactive literacy experiences. Parents and caregivers also support literacy development by demonstrating a range of strategies for deriving meaning from experience. High-quality literacy environments exhibit multiple uses of language and reading skills and associate literacy activities with pleasure, enjoyment, and intrinsic value.

The Home Literacy Environment

Conventional perspectives of reading delineate two critical components: decoding and comprehension. Decoding is typically thought of as a bottom-up skill in which print is analyzed and then matched to representations in the mental lexicon. It is widely agreed that decoding skills are supported by letter name and letter-sound knowledge, phonological awareness, and other metalinguistic skills. On the other hand, comprehension is viewed as a top-down skill that requires hypothesis-forming, inferencing, predicting, and general knowledge of the world (Boudreau & Hedberg, 1999). Children begin constructing knowledge of the world during their initial experiences at home with family members.

Yet, tremendous diversity exists among individual families' home literacy environments and related parental practices with young children. Research has focused on analyzing variance in home environments through observations, parent interviews, and parent questionnaires. Considerable evidence now exists that differences in home literacy environments for preschoolers are closely associated with subsequent literacy

achievement. For example, poor and less educated families tend to provide children with fewer opportunities for verbal interaction and contextual vocabulary development. Since vocabulary knowledge is related to reading outcomes, families that exhibit reduced amounts of verbal interaction pose risks for young children's literacy development. Conversely, families that frequently engage in positive language and literacy experiences create a framework for children's communication enhancement (Snow, et al., 1998).

To be sure, low SES presents both individual and group risk factors for children learning to read and write. The problem is compounded by mediated effects of substandard schools and child care in low-income communities. Yet, according to Snow, Burns, & Griffin (1998), SES differences by themselves are relatively poor predictors of individual student achievement. When viewed as part of a larger picture that includes school quality and other variables, on the other hand, SES is a valuable piece of the literacy development puzzle.

A recent study of the home literacy environment and literacy motivation factors was conducted with 92 kindergarten participants (Frijters, Barron, & Brunello, 2000). In this project, the *Home Literacy Questionnaire* (HLQ) was used to gain information from parents about their children's literacy experiences at home. Five multiple-choice questions were asked and each received a numerical value between 1 and 5. The questions provided researchers with information related to the frequency of parent-child book reading, frequency of other caregiver-child book reading, and the frequency of visits to the public library. In addition, items asked what the child's age was when the parent first began reading to him or her and how many children's books the child had at home. Results suggested that home literacy environment and literacy interest accounted

for significant variance (21%) in oral vocabulary and letter-name and letter-sound tasks (18%). The study did not address preschool children specifically and the *Home Literacy Questionnaire* (HLQ) can be utilized in research with younger children to gather information about their early home literacy experiences.

Caregivers communicate the value of literacy to young children during their everyday lives. Early childhood experiences with reading are directly related to children's attitudes about reading. Parents have a unique opportunity to surround children with positive literacy experiences in the formative years. Parents/caregivers can encourage their children to have a positive attitude about reading and to approach books with confidence. Parental praise reinforces children's attempts at reading and telling stories. Home environments have great potential for creating opportunities for children to experience success across a variety of literacy activities. Ideally, caregivers choose reading materials that relate to children's ideas, interests, and hobbies. Parents express the value of reading by assisting children in understanding the meaning of what they read and by sharing their pleasure in books, magazines, newspapers, and other written forms.

Parents have a potential opportunity to create a book-rich environment in children's homes. The family literacy environment is developed by parents' choices regarding the type and number of books available, frequency of visits to the library, the amount of enjoyment derived from literacy acts, and the connecting of books and stories to real life. Caregivers play a pivotal role in paraphrasing stories as needed to engage beginning readers in the process of contextual discovery. Early reading skills emerge quickly as caregivers help children make sense of words and pictures on the page. Adults value reading as an important activity by reading to children, listening and talking to

them, singing, reciting poetry and nursery rhymes, and creating family language games during daily routines (Wang, 2000).

One of the most widely discussed components of the home literacy experience is parent-child reading, also referred to as shared book reading, joint book reading, or dialogic reading. (In some cases, the term *dialogic reading* is used in reference to conversational reading interactions, as opposed to rote reading aloud by an adult. For the purpose of this discussion, these terms are used interchangeably with the understanding that levels of caregiver responsiveness and conversational turn-taking vary along a continuum.) According to a position statement issued by both the International Reading Association and the National Association for the Education of Young Children (1998), reading aloud to children is the single most important preschool activity related to reading success. Parental reading behaviors that promote learning of literacy concepts include asking predictive questions and analytic questions. Such adult-child question and response patterns serve to improve children's vocabulary knowledge and understanding of texts. The language interactions that permeate parent-child reading activities are, therefore, critical for children to begin making connections between print and their own life experiences.

In addition, social experiences with books facilitate metacognitive and metalinguistic abilities. As children receive rich modeling, scaffolding, and direct instruction from adults, they become increasingly aware of their own thought processes. Reading activities offer a permanent medium for experimental problem-solving and organization of language and ideas. In this respect, cognitive-linguistic representations and literacy constructions interact as children form independent theories of language.

Reading, writing, and thinking activities all incorporate methods of mental planning, self-monitoring, and self-evaluation. Early literacy experiences/interactions reinforce and guide learners in their quest to become strategically literate. Strategic learners are highly efficient at organizing linguistic concepts and constructing meaning from text. In order to achieve maximum levels of competency, young children must be exposed to explicit discourse regarding language in print and the functions of written language across genres (Fang & Cox, 1999).

The Classroom Literacy Environment

Preschool experiences can provide strong support for children's language and literacy development. Nonetheless, studies examining preschool quality have discovered that classroom environmental language ratings are characteristically low in centers serving poor children. A study of public preschool centers in North Carolina revealed that programs serving economically disadvantaged children had lower ratings on language and reasoning measures than any other area assessed. These preschool environments lacked opportunities for dramatic play and other language-rich social interactions. Similar results were obtained when analyzing 32 Head Start classrooms in terms of language learning activities (Bryant, Peisner-Feinberg, & Clifford, 1993). Another study that focused on preschool language environments was the Bermuda Day Care Study (Phillips, McCartney, & Scarr, 1987). This investigation indicated the quality of classroom conversation and the amount of time dedicated to one-on-one or small group interactions were highly related to measures of language skills. Similarly, quality of group book reading with 4-year-old children has been correlated with kindergarten language-literacy measures (Dickinson & Smith, 1994).

Unfortunately, many preschool centers provide few opportunities for children to experience meaningful communicative exchanges. However, adult caregivers have been shown to make substantial improvements in classroom literacy interactions when given adequate resources and training. Neumann (1996) provided caregivers with children's books and training regarding book selection, reading aloud, and expanding the impact of books. Results suggested that literacy interactions increased from an average of 5 per hour to 10 per hour following intervention. Further, 93 percent of the centers developed literacy centers, compared to just a few book centers in preschools before the study.

It is encouraging to note that quality preschool experiences can make a difference in children's long-term academic outcomes. For instance, the number of months that children attend preschool has been found to correlate with achievement measures in second grade (Pianta & McCoy, 1997). Additionally, Crone & Whitehurst (1999) examined the effects of school experience on emergent literacy and early reading skills in 337 children from low-income backgrounds. Results indicated that children who began attending preschool one year earlier than same-aged peers performed these tasks better than their less experienced counterparts. In fact, the impact of an additional year of schooling on early reading abilities was 4.3 times stronger than the effects of age.

Many children begin school with a vast amount of literacy experience to draw from and build upon. They have learned the basic forms and purposes of both oral and written language and have achieved a degree of success with alphabetic and phonological awareness skills. These children are ready to continue on their journey toward mastery of conventional reading skills. Still, numerous other children have not experienced

supportive literacy environments prior to kindergarten. It is critical for these children to receive direct instruction and immersion in print-rich settings at school (Adams, 1990).

For preschoolers, physical preparation of the classroom literacy environment is essential to facilitating language and literacy development. Dunn, Beach, & Kontos (1994), for example, found that poor preschool literacy environments lacked adequate materials and were closely associated with measures of child language development. Although the importance of providing preschool children with print-rich environments is now widely agreed upon, detailed descriptions of literacy-focused settings have only emerged relatively recently. Loughlin and Martin (1987) suggested that there are seven features common to high-quality literacy environments: (a) interesting things to read and write about, (b) varied places to settle down for reading and writing, (c) books everywhere, (d) references where needed, (e) space and tools for literacy, (f) access to materials and time to become engaged, and (g) opportunities to display one's own work.

Morrow (2001) has developed the *Evaluating and Improving the Literacy Environment Checklist* to assist in assessing literacy features in early childhood settings. This checklist evaluates four areas in detail: (a) the literacy center, (b) the library corner, (c) the writing center, and (d) the literacy-rich environment for the rest of the classroom. According to Morrow, preparation of a literacy-rich physical environment is key for motivating children to read and write. She recommends the use of dramatic play centers, visually prominent functional print, signs, word walls, and charts in the classroom.

Thanks to Morrow and other early childhood education researchers, there is now a growing consensus about what exactly constitutes an ideal classroom literacy environment for young children. Both the physical environment and the social

environment play a role in either promoting or delaying literacy learning for students. The physical environment has been shown to have an active and pervasive influence on children's involvement with literacy activities. Providing books, paper, pencils, and other literacy materials in dramatic play areas results in significant gains in voluntary literacy. Literacy behaviors affected by changes in the classroom include paper handling, writing, reading, pretend reading, storytelling, and book handling (Morrow, 1990).

Still, there is relatively little research data available on existing literacy environments in early childhood classrooms (i.e., preschool to third grade). Longitudinal research (Dickinson & Tabors, 2001) has indicated that teachers can support literacy development by using varied vocabulary, challenging children to think, and creating classroom environments that stimulate curiosity about written language. Interactive book reading activities are essential to building children's literacy knowledge. Unfortunately, the same research revealed that time spent on shared book reading was often limited in early childhood classrooms. In fact, very few teachers approached classroom book use in carefully thought out ways. Weaknesses in classroom environments were consistently noted in terms of making literacy materials available and engaging children in book reading experiences.

There is valuable information present in the literature regarding social-interactionist perspectives of emerging literacy, in part because of the importance of language interactions in forming foundations for learning to read and write. Social interactionist views of learning suggest that language development occurs during everyday communicative exchanges with adults. According to this perspective, responsive (i.e., child-centered) input from adults is essential for children's learning to

take place (Bohannon & Bonvillian, 1997; Bruner, 1975; Tannock & Girolametto, 1992). Responsive adults encourage children's extended conversational turns and model semantic expansions of children's communicative attempts. Girolametto and Weitzman (2002) state that responsive strategies impact language acquisition by creating joint attention and action, enhancing motivational and attentional processes, and scaffolding children's participation at increasingly higher levels of comprehension and production.

However, research on teacher-child interactions has indicated that teachers typically utilize overly directive and unresponsive talk with young children (Cicognani & Zani, 1992; Pellegrino & Scopesi, 1990; Polyzoi, 1997). Even so, few studies have examined teacher directiveness in relation to contextual differences and effects on child participation. One study found that patterns of directiveness varied depending on the activity/context (Girolametto & Weitzman, 2000). Book reading produced more behavior control (attention calls), response control (comprehension questions, yes/no questions), and topic control. During a play dough activity, teachers followed the child's lead more often and turn-taking was more balanced. Such child-directed play also yielded greater child talk. On the other hand, in some cases, directiveness may facilitate participation of children who are less linguistically competent. Hence, further research is needed to clarify ways in which classroom discourse can best support language-literacy development in varied social and cultural contexts. By the same token, one-on-one shared book reading activities also contain potential pitfalls for educators interested in fostering literacy development. Adults may fail to monitor children's engagement or fail to respond to children's interest in storybook reading. Teachers may not be sensitive to individual children's learning characteristics or to sociocultural differences in interaction

style. Further, the very nature of book reading interactions can lead to didactic patterns wherein adults fail to ensure skill maintenance (Kaderavek & Justice, 2002).

Before more individualized interventions can be implemented, however, it is vital for early childhood personnel to identify children who are at risk for delayed literacy development. Justice, Invernizzi, and Meier (2002) have offered suggestions for speech-language pathologists and other professionals interested in conducting early literacy screenings with children under 5 years of age. These authors have emphasized the importance of early identification of children at risk for later difficulties with literacy acquisition. For the most part, children who fall behind in the literacy curriculum, continue to experience ongoing literacy failure without adequate adult support. Early intervention is, therefore, critical for young children who struggle early on with literacy concepts. Speech-language pathologists can play a significant role in preventing literacy problems and assisting greater numbers of young children in achieving academic success. Well-designed literacy screening protocols can also help lay the groundwork for more intensive assessment and intervention strategies such as direct therapy and/or classroom-based initiatives.

Early literacy screenings could be constructed in a manner that reflects what is known about factors that are predictive of later literacy achievement. These factors include spoken language abilities as well as family-based risk factors such as limited English proficiency, low socioeconomic status, and familial history of reading difficulties. In addition, Justice et al. (2002) suggest attention to five areas of preschool performance that are significantly related to literacy outcomes: (a) written language awareness, (b) phonological awareness, (c) letter name knowledge, (d) literacy

motivation, and (e) the home literacy environment. Furthermore, the authors recommend comparing early literacy screening results to specific classroom literacy environments, especially in light of the extreme variability in early childhood classroom language-literacy activities and expectations.

Chapter Three

Methodology

Chapter 3 outlines the methodology for this study including hypotheses, participants, measures, procedure, and data analysis.

Hypotheses

The seven research hypotheses tested in this study were:

1. There will be a modest statistical relationship ($r = .2$ to $.45$) between home literacy environment (HLE) questionnaire results and classroom language-literacy environment (CLE) quality ratings.
2. There will be a statistically significant relationship between home literacy environment (HLE) questionnaire results and student Vocabulary (VOC) scores, above and beyond parent and teacher education levels.
3. There will be a statistically significant relationship between home literacy environment (HLE) questionnaire results and student Numbers, Letters and Words (NLW) scores, above and beyond parent and teacher education levels.
4. There will be a statistically significant relationship between classroom language-literacy environment (CLE) quality ratings and student Vocabulary (VOC) scores, above and beyond parent and teacher education levels.

5. There will be a statistically significant relationship between classroom language-literacy environment (CLE) quality ratings and student Numbers, Letters and Words (NLW) scores, above and beyond parent and teacher education levels.
6. A statistically significant proportion of the students' Vocabulary (VOC) scores will be explained by classroom language-literacy environment (CLE) quality ratings, above and beyond parent and teacher education levels and the home literacy environment (HLE) questionnaire results.
7. A statistically significant proportion of the students' Numbers, Letters and Words (NLW) scores will be explained by classroom language-literacy environment (CLE) quality ratings, above and beyond parent and teacher education levels and the home literacy environment (HLE) questionnaire results.

Participants

The sample included 101 preschool and kindergarten children enrolled across 7 early childhood education centers and 14 classrooms in a metropolitan area in central Florida. The ages of these children ranged from 4-years, 0-months to 5-years, 9 months. Only students who were English-speaking and monolingual were included in this study. Home exposure to a language (or languages) other than English also resulted in removal from this data set. In order to be included, students had to be enrolled in their current classrooms for at least 6 months. Since this study focused on environmental factors, participants were also excluded based upon known disabilities (e.g., hearing loss, autism spectrum disorder). Students who failed a hearing screening on the day of testing were not included in the data analysis. Socioeconomic backgrounds of these children were expected to range from lower class to upper middle class. Further demographic data were

collected to provide added information about the students in this study. Information was obtained regarding birth date, gender, school enrollment, and classroom teacher. Center Directors and parents were contacted about this study and participated on a voluntary basis. The early childhood education centers included in this study had previously participated in speech, language/literacy, and hearing screenings conducted by speech-language pathology graduate students at the University of South Florida. An Information Sheet described the study to Directors, teachers, and parents and offered the possibility of classrooms earning free children's literature as an incentive for participation. Participating Center Directors and teachers agreed to have an observer evaluate their classroom language-literacy environments and assisted in collection of parent questionnaires.

Measures

Vocabulary and early literacy skills were measured using the *Kaufman Survey of Early Academic and Language Skills* (K-SEALS; Kaufman & Kaufman, 1993). The K-SEALS is an individually-administered norm referenced standardized test which yields standard scores with a mean of 100 and a standard deviation of 15. This test is designed for children between the ages of 3-years, 0-months and 6-years, 11 months. Standardization of this measure was based upon results from 1000 subjects in 28 states and all 4 geographic regions in the United States. Subjects were selected to match 1990 U.S. Census population statistics for gender, socioeconomic level, and race or ethnic group. Further, item bias analyses were performed to address gender or race/ethnicity bias. Items that appeared to be biased were removed from the measure. K-SEALS technical data indicated high test-retest (Vocabulary .85; Numbers, Letters and Words

.92) and split-half reliability (Vocabulary .88; Numbers, Letters and Words .94) coefficients and substantial construct, concurrent (Vocabulary .68; Numbers, Letters and Words .61), and predictive (.76) validity. [Validity measures are in comparison to the *Peabody Picture Vocabulary Test-Revised* (PPVT-R; Dunn & Dunn, 1981), a commonly used measure in research studies.] The K-SEALS is widely used in preschool and kindergarten language and literacy screenings. In addition, the K-SEALS is designed for use as a reliable research tool. It assesses children's expressive language skills, receptive language skills, knowledge of number concepts and symbols, and knowledge of letters, and words.

Subtest scores obtained for this study included the Vocabulary Subtest and the Numbers, Letters and Words Subtest. Items on the Vocabulary Subtest were designed to correlate with measures of *g* or general intelligence. K-SEALS Vocabulary scores have high levels of concurrent validity with other commonly used tests of vocabulary and intelligence. K-SEALS vocabulary items assess vocabulary identification, naming abilities, and integrated word knowledge. Performance of these tasks is dependent upon early language development, verbal concept knowledge, and fund of information. According to the K-SEALS manual, such skills are directly related to children's early language and literacy experiences and the richness of their learning environments.

The Numbers, Letters and Words Subtest evaluates early symbolic knowledge in the areas of reading and emergent literacy skills. This subtest addresses number naming, number recognition, verbal-number concepts, letter naming, letter identification, word reading, and printed word identification. Recognition and interpretation of symbols is critical to early literacy development. The Numbers, Letters and Words Subtest was

designed to measure children's visual perception of objects and symbols and application of early literacy abilities related to language environments and experiences. According to the K-SEALS manual (Kaufman & Kaufman, 1993), symbol knowledge is rooted in children's exposure to books, magazines, and interactive language experiences.

The *Early Language & Literacy Classroom Observation Toolkit-Research Edition* (ELLCO; Smith, et al., 2002) is a recently published instrument designed to assess the extent to which classroom environments support young children's language and literacy development. The ELLCO was developed to provide quantitative data regarding classrooms for students between the ages of 3 (preschool) and 8 (third grade). ELLCO measures have been used and tested extensively in research projects in over 300 classrooms and 3 states. Data collected using the toolkit provide valuable information to researchers interested in early childhood language and literacy education. When combined with measures of student literacy skills, ELLCO toolkit results shed light on associated program methods, curriculum, and student outcomes.

The ELLCO examines features essential to exemplary literacy instruction. In this study, the Classroom Observation and Teacher Interview section was utilized to collect data on literacy practices in each classroom. The Classroom Observation scale includes 14 dimensions of the language-literacy environment that are divided into 2 broad categories: 1) General Classroom Environment and 2) Language, Literacy, and Curriculum. Each of the 14 dimensions is rated on a scale from 1 (deficient) to 5 (exemplary). According to the ELLCO manual, observers should situate their scores within one of the major score points if possible (i.e., 1, 3, or 5). The adjacent score points (i.e., 2 and 4) are to be used if evidence is mixed, when attributes of two levels are

present or when the item can not be scored with the major score points. A brief structured teacher interview serves to check reliability of results and add supplemental information to the observations. The 14 dimensions observed and rated were: organization of the classroom, contents of the classroom, presence and use of technology, opportunities for child choice and initiative, classroom management strategies, classroom climate (General Classroom Environment); oral language facilitation, presence of books, approaches to book reading, approaches to children's writing, approaches to curriculum integration, recognizing diversity in the classroom, facilitating home support for literacy, and approaches to assessment (Language, Literacy, and Curriculum).

Scores are generated using the rubric provided on the ELLCO assessment form and are combined to form subtotals and totals. Pilot testing of the Classroom Observation measure has produced considerable psychometric data supporting its reliability. Interrater reliability data indicated 90% or better agreement between observers using the Classroom Observation scale. Internal consistency was good-to-very good as indicated by Cronbach's alpha results for General Classroom Environment (.83), Language, Literacy, and Curriculum (.86), and the Classroom Observation Total (.90). Test-retest data suggested stable results for Classroom Observations conducted between Fall and Spring in control classrooms. Moderate correlations (.31 to .44) were reported between ELLCO Classroom Observation scores and a measure of overall quality of early childhood learning environments (Classroom Profile; Abbott-Shim & Sibley, 1998). Other comparisons to environmental rating instruments were not made since the Classroom Observation was developed to fill a unique need for an adequate systematic assessment of early language-literacy classroom experiences.

The authors' analyses (Smith, et al., 2002) of the ELLCO Classroom Observation as a prediction tool suggest that it can be used in correlational research. Initial findings suggested that Classroom Observation scores accounted for 15% of the variance in receptive vocabulary scores and 20% of the variance in literacy abilities above and beyond control variables. In addition, the same ELLCO measures accounted for 80% of the between-classroom variance in vocabulary and 67% of the between-classroom variance in beginning literacy skills. ELLCO measures have been tested in a variety of settings to ensure cultural appropriateness and objectivity. The ELLCO Classroom Observation was carefully designed to avoid biased perspectives of literacy acquisition. ELLCO measures were created to fit the needs of Head Start and other programs serving diverse populations, with the assumption that teachers have a responsibility to respond appropriately to different literacy skills and learning needs of individual students.

The *Home Literacy Questionnaire* (HLQ; Frijters, et al., 2000) was utilized as a measure of children's home literacy experiences. The HLQ has been employed in previous research and its authors reported a Spearman-Brown split-half reliability of .77. Results from the HLQ have been shown to account for 21% of the variance in oral vocabulary and 18% of the variance in early literacy knowledge, when combined with a measure of children's literacy interest. As mentioned earlier, the *Home Literacy Questionnaire* (HLQ) consists of 5 multiple-choice questions regarding frequency of parental shared book reading, frequency of caregiver shared book reading, frequency of visits to the library, the number of books the child has, and the age that shared book reading began. Hence, the items on the HLQ deal directly with parent-initiated supports of their children's literacy learning.

In this study, the questionnaires were completed by a parent and returned to early childhood centers. In order to minimize positive response bias, the survey text briefly described potential benefits of the study and encouraged parents to respond truthfully to each item. Since literacy skills may have been a barrier for some parents in completing forms, follow-up telephone calls were made to parents who did not return completed questionnaires. When possible, missing survey data were collected via telephone interviews. Previous research has revealed significant relationships between reports of home literacy teaching and measures of reading skills. For example, the number of storybooks at home, according to parent report, has been found to be predictive of vocabulary knowledge (Sénéchal, LeFevre, Thomas, & Daley, 1998). Item responses (a-e) were converted to numerical scores (1-5), resulting in a total possible score of 5 to 25.

An additional (sixth) item was included on the parent questionnaire to obtain information about the socioeconomic status of each subjects' parents. This item asked the parent to report the highest educational level reached by a parent or caregiver who lives with the child. Five multiple-choice responses were provided: a) junior high/middle school, b) high school or GED, c) 2 years of college or other postsecondary schooling, d) 4 years of college or other postsecondary schooling, or e) master's degree or higher. Use of parent education level is well documented in the literature as an index of socioeconomic status. (Catts, et al, 2001; Kaufman & Kaufman, 1993; National Center for Children in Poverty, 2003). In order to minimize any bias of the parent questionnaire, all items were reviewed by a panel of speech-language pathologists with expertise in assessment and diversity issues. No modifications were recommended for the items

dealing specifically with the home literacy environment. The added item regarding parent education level was revised for clarity and cultural sensitivity based upon suggestions from the panel.

An 8-item *Brief Teacher Survey* was created to gather data about teachers' educational backgrounds and practices. The teacher survey consisted of 4 items pertaining to teachers' educational preparation, 2 items regarding classroom practices, and 2 items regarding student characteristics. Potential bias of items on this measure was addressed by checking reliability with other measures and by examining internal consistency. The first question asked teachers which statement best described their educational backgrounds: a) high school graduate, b) high school plus a few college courses, c) 1 year of college or other postsecondary schooling, d) 2 years of college or other postsecondary schooling, or e) 4 years of college or more. Question 2 identified the number of hours of continuing education attended (e.g., workshops, seminars) in the past 2 years. Question 3 identified the number of continuing education hours attended in the past 2 years that focused specifically on literacy development. Alternatives included: a) 0-5 hours, b) 6-10 hours, c) 11-15 hours, d) 16-20 hours, or e) more than 20 hours. Teacher education level scores were generated from the first 3 items by assigning point values (1-5) to each response and combining into a total. The fourth question asked teachers to indicate how many times in a week they read to children in the classroom: a) not at all, b) 1-3 times per week, c) 4-6 times per week, d) 7-9 times per week, or e) more than 10 times per week. The fifth question asked teachers to report how many times in a week children participate in classroom writing activities. Response choices were identical to those listed for question 4. Question 6 asked teachers to list specific institutions where

they received their education. Additional items allowed teachers to identify any students with disabilities or students who had not been enrolled in that particular classroom for at least 6 months.

Procedure

As an ongoing service, the University of South Florida Department of Communication Sciences and Disorders provided free speech-language and literacy screenings at participating early childhood centers. Graduate clinicians in speech-language pathology administered the K-SEALS as part of the screening procedure. Prior to data collection, graduate clinicians received extensive individualized training from clinical supervisors in class meetings and tutorials that took place over a 2-week period. Two clinical supervisors participated in this study, each with an assigned team of 10 to 15 graduate clinicians enrolled in a diagnostics practicum. Each of the clinical supervisors who participated in this study had more than 20 years experience evaluating young children's language and literacy abilities. Test administration, scoring, and interpretation were supervised directly by these certified speech-language pathologists. Furthermore, accuracy of scoring for all K-SEALS testing was checked in detail by the clinical supervisors. In addition to Vocabulary and Numbers, Letters and Words measures, the children also participated in the speech articulation portion of the K-SEALS. On a day separate from the screenings, classroom observations were performed using the ELLCO Classroom Observation scale. All observations were completed within 2-3 weeks of the student screenings. Structured teacher interviews were conducted using the ELLCO toolkit and additional information was collected from teachers via a brief teacher survey. All classroom observations were conducted by the lead investigator; a licensed and

nationally certified speech-language pathologist with over 10 years experience in evaluating language environments. A graduate assistant and student in the Department of Communication Sciences and Disorders completed observations in 5 of the selected classrooms to check reliability of the obtained ELLCO measures. The graduate assistant received 9 hours of training on use of the ELLCO and completed 2 practice observations prior to the beginning of the study. The graduate assistant had already successfully completed coursework that focused on child language, learning disabilities, and symbolic development. The lead investigator collected all teacher survey and interview data. He also completed 2 practice observations before beginning actual data collection using the ELLCO. Parent questionnaires were sent home with screening permission forms and returned by the Center Directors to the screening coordinator on campus.

Data Analysis

Data were collected that identified the early childhood center, classroom teachers, children's birth dates, gender, language background, and names. Children's names were used to link data points but were kept confidential. Demographic information was analyzed informally and descriptive statistics were generated. Descriptive statistics included means, standard deviations, and ranges for all measures used. All statistical analyses were tested at the .05 level of significance.

Multiple regression analyses were used to test the hypotheses made in this study. Data analysis with regard to the research hypotheses could have been approached in two different ways. In order to determine the contributions of independent variables in explaining variance in dependent variables, partial correlations could be examined. Second, regression equations could be generated to determine predictability of outcomes.

Both of these approaches were taken in order to provide different perspectives and to check for consistency. Standard scores were used in analyzing student performance data because they are universally understood by professionals and allow for cross-comparison, with age already accounted for. Additionally, no statistically significant differences in effects were expected based on age differences. The dependent variables in this study were Vocabulary (VOC) scores and Numbers, Letters and Words (NLW) scores. The independent variables were home literacy environment (HLE) and classroom language-literacy environment (CLE). Children's socioeconomic indices, that is, parent education level, and teacher education level were used as control variables. Items 1-3 from the *Brief Teacher Survey* were assigned weights of 1 to 5 and totaled to determine relationships between teacher variables and the other variables examined in this study. A correlation analysis and reliability table were completed to reveal internal consistency and explain the use of a single score for teacher education level. A correlation analysis and reliability table were also completed for the parent questionnaire. Internal consistency of both of these measures (teacher education level and home literacy environment) was estimated using Cronbach's alpha. Analysis of the teacher survey results also served as a reliability check for classroom observation findings. As in previous research, total weighted HLQ scores were used in multiple regression analyses. Table 1 indicates specific statistical methods and variables involved in testing each of the hypotheses in this study.

Table 1

Variables and Statistical Procedures Associated with Hypotheses

Hypothesis	Independent Variables	Dependent Variable	Tests
1	home literacy environment classroom literacy environment	n/a	linear regression (r)
2	home literacy environment parent education level teacher education level	VOC	multiple regression squared semipartial correlation β or b F-test t-test
3	home literacy environment parent education level teacher education level	NLW	multiple regression squared semipartial correlation β or b F-test t-test
4	classroom literacy environment parent education level teacher education level	VOC	multiple regression squared semipartial correlation β or b F-test t-test
5	classroom literacy environment parent education level teacher education level	NLW	multiple regression squared semipartial correlation β or b F-test t-test
6	classroom literacy environment parent education level teacher education level home literacy environment	VOC	multiple regression squared semipartial correlation β or b
7	classroom literacy environment parent education level teacher education level home literacy environment	NLW	multiple regression squared semipartial correlation β or b

Chapter Four

Results

In order to assess the relationships among home literacy environments, classroom language-literacy environments, and student performance on measures of vocabulary and early literacy skills, data from five church-affiliated and nine non-church affiliated early childhood classrooms were collected and examined. A total of 144 preschool and kindergarten students participated in the speech-language and literacy screenings. Based upon established exclusion criteria for this study, 43 students in all were removed from the sample. Of the 43 students excluded, 22 students were removed due to multilingual backgrounds. One student failed the hearing screening and was also reported to reside in a bilingual home environment. Two students with multilingual backgrounds had not been enrolled in the classroom of interest for at least 6 months. Thirteen children were excluded from the study because they did not pass the hearing screening on the day of testing. One additional student did not meet the 6-month minimum classroom enrollment requirement and one child was removed based on a diagnosis of selective mutism. Three students were removed from the data set because parent HLE surveys were not completed via hard copy or telephone interview.

One parent survey was returned by fax; eight were completed entirely by telephone; and four surveys were completed partially by telephone due to missing or

ambiguous responses. The overall parent survey response rate for this study was 88% for hard copy responses and 97% when fax and telephone surveys were included.

After removing 43 participants, one-hundred and one (101) students, 56 (55.4%) males and 45 (44.6%) females remained in the data set for analysis. The children averaged 57.83 (SD = 5.77) months of age and ranged from 48 months to 69 months old. Descriptive statistics were calculated to assess the nature of the distributions obtained (Table 2). With reference to multiple regression analyses, the assumptions of normality, multicollinearity, and constant variance were considered. Data were screened for skewness, or symmetry of distribution, and kurtosis. Data screenings indicated that the normality assumption did not appear to be violated. Residuals were plotted versus predicted values and the assumptions of linearity and constant variance were met. Correlations among the variables in this study are provided in Table 3.

Table 2

Means and Standard Deviations of Variables

Variable	M	SD	Min	Max
HLE	16.90	2.63	11	25
CLE	54.15	12.00	30	68
PEL	3.90	0.90	2	5
TEL	10.63	2.07	6	13
VOC	105.59	10.91	78	145
NLW	108.92	10.86	74	135

Note. HLE = home literacy environment; CLE = classroom language-literacy environment; PEL = parent education level; TEL = teacher education level; VOC = Vocabulary; NLW = Numbers, Letters and Words. n = 101.

Table 3

Correlations among Variables in this Study

	HLE	CLE	PEL	TEL	VOC	NLW
HLE	--	.03	.24*	.01	.28**	.21*
CLE	--	--	-.01	.004	.05	-.18
PEL	--	--	--	.11	.02	.09
TEL	--	--	--	--	.07	.14
VOC	--	--	--	--	--	.39**

Note. HLE = home literacy environment; CLE = classroom language-literacy environment; PEL = parent education level; TEL = teacher education level; VOC = Vocabulary; NLW = Numbers, Letters and Words. n = 101, * $p < .05$, ** $p < .01$.

Parent Education Level

Parent education level (PEL) data were collected as part of the parent questionnaire. Contrary to expectations, results for this survey item indicated that the obtained sample consisted mainly of middle- to upper-middle class students with well-educated parents ($M = 3.9$, $SD = .9$). Of 101 parents, 29% reported having a Master's degree or higher; 40% of the parents reported having four years of college experience. Survey findings indicated that 25% of the parents had two years of college or other postsecondary schooling, and 6% reported high school or GED achievement. Zero respondents indicated junior high/middle school as the highest educational level attained.

Teacher Surveys

Teacher surveys were obtained and analyzed for all 14 female teachers who participated in this study. Scores from items one (1) through three (3) measured years of education, general continuing education hours, and literacy-focused continuing education hours earned by teachers over the past two years. Collectively, these three items formed the TEL composite score. Table 4 displays the number and percentage of teacher responses by response choice for item one of the TEL survey. As seen in Table 4, many of the teachers in this sample reported taking at least some college courses. Five out of 14 teachers had 4 or more years of college. Another 5 teachers reported having 1 or 2 years of college, while the remainder graduated from high school.

Nine out of 14, that is, 64% of the teachers in this sample reported having attended greater than 20 hours of continuing education in the past 24 months. The remaining 5 teachers (36%) reported attending 16 to 20 hours of continuing education in the same time period. These results suggested substantial amounts of ongoing training.

Table 4

Classroom Teachers' Years of Education

Survey Choices	n	% of Teachers
High school graduate	2	14.3
High school plus a few college courses	2	14.3
1 year of college or other postsecondary schooling	2	14.3
2 years of college or other postsecondary schooling	3	21.4
4 years of college or more	5	35.7

Note. n = 14

Interestingly, non-significant statistical correlations were noted between teachers' years of education, $r = .42$, $p < .14$ and CLE, and general continuing education hours, $r = .098$, $p < .739$ and CLE. Composite TEL scores were not related to CLE, $r = -.05$, $p < .871$. An inverse relationship between hours of literacy-oriented continuing education and CLE, $r = -.56$, $p < .036$ was identified. However, conclusions derived from these results were limited based on a small number of classrooms in this study. Table 5 indicates the number of continuing education hours that focused specifically on literacy development. Although teachers indicated frequent involvement in professional development activities, self-reported teaching practices did not suggest a balanced approach to literacy. Consistent with classroom observations, teachers reported a heavier emphasis on reading to children than providing opportunities for writing in the classroom (Tables 6 and 7).

Table 5

Continuing Education Hours that Focused on Literacy

Survey Choices	n	Percentage of Teachers
0 to 5 hours	3	21.4
6 to 10 hours	3	21.4
11 to 15 hours	4	28.6
16 to 20 hours	2	14.3
More than 20 hours	2	14.3

Note. n = 14

Table 6 displays teacher reports regarding the number of times they read to children per week in the classroom. Table 7 displays percentages of teacher responses regarding the number of times children participate in writing activities per week.

Table 6

Frequency of Teacher Reading to Children

Survey Choices	n	Percentage of Teachers
Not at all	0	0
1 to 3 times per week	1	7.1
4 to 6 times per week	0	0
7 to 9 times per week	7	50.0
More than 10 times per week	6	42.9

Note. n = 14

Table 7

Frequency of Classroom Writing Activities

Survey Choices	n	Percentage of Teachers
Not at all	1	7.1
1 to 3 times per week	4	28.6
4 to 6 times per week	4	28.6
7 to 9 times per week	4	28.6
More than 10 times per week	1	7.1

Note. n = 14

An open-ended teacher survey item asked participants to state where they received their education. Nine out of 14 teachers had attended major four-year universities, while 5 of the teachers received their training solely from high schools, community colleges, or vocational/technical schools. Responses were examined for emergent trends and/or relationships connected to the present study.

Classroom Language-Literacy Measures

Examination of the ELLCO Classroom Observation data did reveal a distinctive pattern. The 7 teachers who received the highest classroom language-literacy scores had all attended major four-year universities. These teachers were responsible for creating classroom environments with mean area scores that were consistent with the *proficient-to-exemplary* range on the ELLCO (M = 4.0 - 5.0). Obtained ELLCO Classroom Observation scores for these teachers ranged from 56 to 68 out of 70 possible points or a mean of 4.0 to 4.86. Figure 1 displays the mean CLE area scores for each classroom.

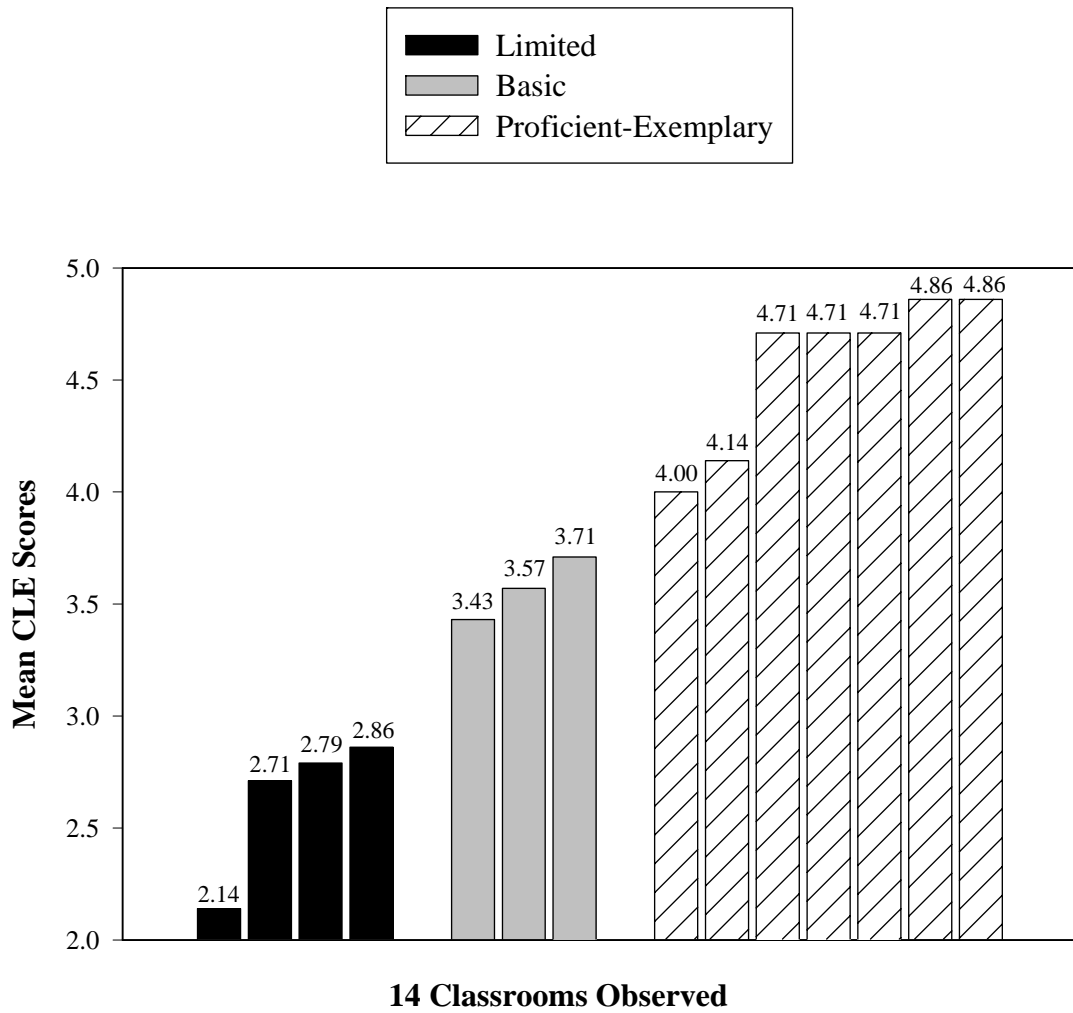


Figure 1. Mean classroom language-literacy environment (CLE) scores for limited (M = 2.0 – 2.9), basic (M = 3.0 – 3.9), and proficient-to-exemplary (M = 4.0 – 5.0) classrooms.

Three of the 14 classrooms observed received mean area scores that were consistent with *basic* supports for language and literacy development (M = 3.0 - 3.9). Basic classrooms in this study had total scores ranging from 48 to 52 or a mean of 3.43 to 3.71. The remaining 4 classrooms received CLE ratings that suggested *limited* (M = 2.0 - 2.9) opportunities overall for language and literacy learning (CLE = 30 to 40, M = 2.14 - 2.86). Thus, half of the classrooms observed during this investigation exhibited less-than-proficient renderings of literacy-rich learning environments (Figure 1).

CLE total scores were calculated as a composite of 14 individual area scores on the ELLCO Classroom Observation instrument. Table 8 presents the CLE individual areas scores ranked by highest (CLE = 68) to lowest (CLE = 30) CLE total scores. ELLCO Classroom Observation area scores were assigned using a rubric with a five-point scale (1 = deficient, 2 = limited, 3 = basic, 4 = proficient, 5 = exemplary). Area score columns one through 14 in Table 8 correspond to the following domains assessed: 1) Organization of the Classroom, 2) Contents of the Classroom, 3) Presence and Use of Technology, 4) Opportunities for Child Choice and Initiative, 5) Classroom Management Strategies, 6) Classroom Climate, 7) Oral Language Facilitation, 8) Presence of Books, 9) Approaches to Book Reading, 10) Approaches to Children's Writing, 11) Approaches to Curriculum Integration, 12) Recognizing Diversity in the Classroom, 13) Facilitating Home Support for Literacy, and 14) Approaches to Assessment.

Table 9 summarizes the number of classrooms with particular CLE scores/categories (e.g., exemplary, basic, deficient) for each area. Recall that scores of 2 and 4 are seldom used according to scoring procedures outlined in the ELLCO manual.

Table 8

Language-Literacy Environment Scores by Classroom and Domain

Class	CLE Area Scores													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	5	5	5	5	5	5	5	5	5	5	3	5	5	5
2	5	5	3	5	5	5	5	5	5	5	5	5	5	5
3	5	5	3	5	5	5	5	5	5	5	3	5	5	5
4	5	5	5	5	5	5	5	5	5	3	3	5	5	5
5	5	5	3	5	5	5	5	5	5	5	3	5	5	5
6	5	5	5	3	5	3	5	5	3	5	1	3	5	5
7	1	3	5	3	5	5	5	5	5	3	3	5	5	3
8	5	3	1	3	5	3	3	5	5	3	5	5	3	3
9	1	3	5	3	3	3	3	5	5	3	3	5	5	3
10	5	3	3	5	5	5	3	3	3	3	1	3	3	3
11	5	3	1	3	3	3	3	3	3	3	1	5	3	1
12	5	3	3	3	3	3	3	3	2	3	1	3	3	1
13	1	3	1	3	3	3	3	5	3	3	1	3	3	3
14	1	3	1	1	1	1	3	5	3	3	1	3	3	1

Note. CLE = classroom language-literacy environment; Columns: 1 = Organization of the Classroom, 2 = Contents of the Classroom, 3 = Presence and Use of Technology, 4 = Opportunities for Child Choice and Initiative, 5 = Classroom Management Strategies, 6 = Classroom Climate, 7 = Oral Language Facilitation, 8 = Presence of Books, 9 = Approaches to Book Reading, 10 = Approaches to Children’s Writing, 11 = Approaches to Curriculum Integration, 12 = Recognizing Diversity in the Classroom, 13 = Facilitating Home Support for Literacy, and 14 = Approaches to Assessment. n = 14.

Table 9

Number of Classrooms with Exemplary, Proficient, Basic, Limited, or Deficient Ratings

Area	Exemplary	Proficient	Basic	Limited	Deficient
1. Organization	10	0	0	0	4
2. Contents	6	0	8	0	0
3. Technology	5	0	5	0	4
4. Child Choice	6	0	7	0	1
5. Management	9	0	4	0	1
6. Climate	7	0	6	0	1
7. Oral Language	7	0	7	0	0
8. Book Presence	11	0	3	0	0
9. Book Reading	8	0	5	1	0
10. Writing	5	0	9	0	0
11. Integration	2	0	6	0	6
12. Diversity	9	0	5	0	0
13. Home Support	8	0	6	0	0
14. Assessment	6	0	5	0	3

Note. n = 14

Organization of the classroom. This item assesses the classroom furnishings and traffic flow as well as activities and materials available to children. Ten out of 14 classrooms received a rating of 5 (i.e., exemplary) for organization of the classroom. Four classrooms were rated as deficient in this area and received a score of 1.

Contents of the classroom. This item evaluates the content of materials and classroom displays. Six classrooms were rated as exemplary in terms of their contents. The eight classrooms with the lowest CLE total scores received a score of 3 indicating basic contents and organization of materials.

Presence and use of technology. Technology in the classroom was assessed by examining use of audiotape recorders, cameras, overhead projectors, computers, and so on. Five classrooms exhibited exemplary presence and use of technology. Basic use (area score = 3) of technology was observed in five other classrooms. Four classrooms displayed deficient presence and use of technology.

Opportunities for child choice and initiative. Evidence for this item can include posted or observed schedules, routines, and the ways in which teachers utilize the classroom and materials. Exemplary opportunities for child choice and initiative were observed in 6 of the 14 classrooms. Seven classroom settings were rated as basic and one was rated as deficient in this area. Thus, a large proportion of the classrooms in this sample did not have strong evidence of child-centered learning opportunities.

Classroom management strategies. This item was evaluated by observing interactions between teachers and students, rules and routines, as well as conflict resolution strategies implemented. Classroom management strategies were rated as

exemplary in nine cases. Four classrooms were characterized by basic use of classroom management techniques. One classroom was rated as deficient in this area.

Classroom climate. Classroom climate was assessed by noting interactions between teachers and students, between students and other students, the tone of conversations, and equality of treatment. One-half of the classrooms evaluated had exemplary classroom climates that clearly respected individual children and their contributions to the classroom. The classroom climate was judged to be basic in six classrooms and deficient in one case.

Oral language facilitation. Oral language activities were evaluated based on teacher-student interactions, lessons and activities, conversations, and vocabulary expansion. Assessment of oral language environments indicated that the top seven classrooms in terms of CLE total scores (i.e., proficient-to-exemplary classrooms) displayed exemplary oral language facilitation. Classrooms 8 –14 (i.e., classrooms ranked as basic or limited overall) displayed basic facilitation of oral language (area scores = 3). One-half, that is, 7 of the classrooms in this study, lacked strong supports for oral language development.

Presence of books. This item was assessed by examining the presence, setting, condition, and content of books. The majority of classrooms in this study (11) received a score of 5, or a rating of exemplary, for presence of books in the classroom. Only three classrooms received lower ratings and these reflected a basic presence of books. Classroom teachers generally appeared to understand the value of providing numerous opportunities for book exploration and high-quality children's literature.

Approaches to book reading. Book reading activities were evaluated by observing various reading events, settings, and discussions. Eight classrooms received exemplary ratings for approaches to book reading. Five classrooms displayed basic approaches to book reading and one classroom was found to be limited with regard to book reading events (area score = 2). Classrooms in this study typically offered students at least basic experiences with books and book-related discussions.

Approaches to children's writing. This item focuses on evidence of writing materials and opportunities for students and teachers to participate in writing activities. Only 5 classrooms were rated as exemplary based upon their approaches to children's writing. Nine of the 14 classrooms exhibited basic approaches to writing. These results were consistent with teacher survey findings that indicated there were fewer opportunities for writing than for reading activities. Clearly, a lack of writing opportunities for students and rare modeling of writing by teachers represented gaps in the literacy curriculum for a large proportion of the classrooms observed.

Approaches to curriculum integration. Curriculum integration includes ongoing blending of curriculum and activities, language and literacy across content areas, and the use of themes to unify learning. Scores in this area were consistently low across the sample. Just 2 of 14 classrooms displayed strong evidence of an integrated curriculum and received exemplary ratings. Basic ratings were assigned to 6 classrooms and deficient ratings were assigned to 6 classrooms. Thus, the overwhelming majority of classrooms showed less-than-proficient integration of information and skills, and nearly one-half of the classrooms displayed minimal evidence of meaningful thematic approaches to language and literacy.

Recognizing diversity in the classroom. Diversity recognition was evaluated by observing ongoing activities, interactions, and curricula with reference to children's individual backgrounds, interests, homes, and communities. Nine classrooms were exemplary at recognizing diversity in the classroom. Five classrooms exhibited some basic recognition of diverse individual, family, and cultural backgrounds.

Facilitating home support for literacy. Classroom support of home literacy activities was assessed by examining the use of homework, newsletters, and other home-school contact methods. Exemplary facilitation of home support for literacy was identified in eight classrooms. Six classrooms received basic scores in this area. The relationship between classroom supports and home literacy environments was also addressed by testing Hypothesis 1.

Approaches to assessment. This item was evaluated by observing opportunities for individual interactions, use of varied assessment techniques, and adjustment of instruction to individual students. Six classrooms displayed exemplary approaches to assessment. Five classrooms were rated as basic and three were deficient in this domain. These results suggested that assessments of language and literacy were often minimal in depth, individualization, and variety.

Home Literacy Surveys

Responses for each item on the home literacy environment (HLE) questionnaire were analyzed. Frequencies of parent responses for multiple-choice (a through e) questions were calculated and listed in frequency tables (Tables 10, 11, 12, 13, and 14). Table 10 describes the distribution of responses for item number one on the survey. A

high percentage of parents (84%) reported that they started reading to their children when they were 6 months old. Frequency of parent reading is presented in Table 11.

Table 10

Age when Parents Began Reading to Child

Survey Choices	Number of Parents
6 months	84
1 year	10
18 months	4
2 years	3
3 years or older	0

Note. n = 101

Table 11

Frequency of Parent Reading to Child

Survey Choices	Number of Parents
Not at all	2
1 to 3 times per week	34
4 to 6 times per week	29
7 to 9 times per week	24
More than 10 times per week	12

Note. n = 101

The frequency with which another caregiver read to the child was the subject of the third item. Survey responses for this item are presented in Table 12.

Table 12

Frequency of Caregiver Reading to Child

Survey Choices	Number of Parents
Not at all	10
1 to 3 times per week	29
4 to 6 times per week	46
7 to 9 times per week	8
More than 10 times per week	8

Note. n = 101

Table 13 displays the results obtained from the fourth survey item. More than two-thirds of the parents surveyed (68%) reported having more than 50 children’s books at home. Zero parents reported owning less than 11 children’s books.

Table 13

Number of Children’s Books at Home

Survey Choices	Number of Parents
1 to 10	0
11 to 20	4
21 to 30	6
31 to 50	23
More than 50	68

Note. n = 101

Table 14

Frequency of Child Visits to the Public Library

Survey Choices	Number of Parents
Not at all	47
1 time per month	35
2 to 4 times per month	16
5 to 10 times per month	2
More than 10 times per month	1

Note. n = 101

Nearly one-half (47%) of the parent responses indicated that their children did not visit the public library at all. It should be noted that 4 parents did indicate that they visit a local bookstore instead. Thirty-five percent (35%) reported that their children visit the public library once per month, while 16% identified 2-4 times per month as their response. Of 101 parents, 2 responded that they visit the library 5 to 10 times per month and 1 response indicated more than 10 times per month.

Student Test Scores

Results from the *Kaufman Survey of Early Academic and Language Skills (K-SEALS)* were organized into descriptive categories according to test guidelines.

Although these categories range from a lower extreme (SS = 69 and below) to an upper extreme (SS = 130 and higher), none of the students in this sample received a standard score below 70. Hence, the lower extreme category was not needed to explain scores. The obtained distribution of Vocabulary (VOC) scores is illustrated in Table 15.

Table 15

Student Vocabulary Scores by Descriptive Category

Descriptive Category	SS Range	Number of Students
Well below average	70-79	1
Below average	80-89	5
Average	90-109	59
Above average	110-119	29
Well above average	120-129	6
Upper extreme	130+	1

Note. See Table 2 for mean, standard deviation, and range. n = 101.

More students achieved scores that were well above average or in the upper extreme on NLW compared to VOC. NLW results are provided in Table 16.

Table 16

Student Numbers, Letters and Words Scores by Descriptive Category

Descriptive Category	SS Range	Number of Students
Well below average	70-79	1
Below average	80-89	2
Average	90-109	54
Above average	110-119	27
Well above average	120-129	13
Upper extreme	130+	4

Note. See Table 2 for mean, standard deviation, and range. n = 101.

Hypothesis 1

The first research hypothesis stated that a modest statistical relationship ($r = .20$ to $.45$) would exist between CLE and HLE scores. Linear regression analyses were completed to find correlations between individual items on the HLE measure (HLE 1 to HLE 5) and CLE ratings. The relationship between the HLE composite scores and CLE was also assessed. Table 17 reveals that HLE 5 was significantly related to CLE, $r(97) = .20, p < .05$. HLE 5 measured the frequency of child visits to the public library. As HLE 5 scores increased, CLE scores increased. No other correlations were statistically significant. This hypothesis is partially accepted.

Table 17

*Correlations between HLE
Subscores and CLE*

HLE	CLE
HLE	.03
HLE 1	-.01
HLE 2	.00
HLE 3	-.03
HLE 4	-.07
HLE 5	.20*

Note. HLE = home literacy environment; CLE = classroom language-literacy environment; HLE 1-5 = individual home literacy survey items. $n = 101$; * $p < .05$.

Hypothesis 2

The second research hypothesis stated that a statistically significant relationship would exist between VOC (as the criterion) and HLE (as the predictor), above and beyond parent and teacher education levels. Multiple regression models were formulated to test this hypothesis. The difference in the amount of variance accounted for by Model 1 ($R^2 = .5\%$) and Model 2 ($R^2 = 8.6\%$) revealed the unique contribution of HLE in explaining variance in VOC scores. Table 18 shows that home literacy environment (HLE) was a significant predictor, above and beyond education level, accounting for an additional 8.1% of the variance in Vocabulary (VOC) scores. Parent education level (PEL) was not related to vocabulary scores, possibly because there was not enough variability in PEL to show a pattern relative to student performance. Partial correlations between HLE and VOC, controlling for parent and teacher education levels, resulted in a statistically significant correlation, $r(97) = .29, p < .01$ (Table 19). This correlation indicated that as home literacy environment scores (HLE) increased, Vocabulary (VOC) scores increased. This hypothesis is accepted. Table 19 displays the partial correlations among CLE, HLE, VOC, and NLW above and beyond parent education level (PEL) and teacher education level (TEL).

Table 18

Regression on VOC by HLE, Controlling for Education

Model	Predictor	B	SE	Beta	t	Sig.
1	PEL	.127	1.229	.010	.103	.918
	TEL	.359	.534	.068	.673	.503
2	PEL	-.721	1.219	-.059	-.591	.556
	TEL	.389	.514	.074	.757	.451
	HLE	1.214	.414	.293	2.934	.004

Note. HLE = home literacy environment; PEL = parent education level; TEL = teacher education level; VOC = Vocabulary. Model 1, $F(2, 98) = .24$, ns ($R^2 = 0.5\%$). Model 2, $F(3, 97) = 3.04$, $p < .05$ ($R^2 = 8.6\%$).

Table 19

Correlations among CLE, HLE, VOC, and NLW, Controlling for Parent and Teacher Education Levels

	CLE	VOC	NLW
HLE	.03	.29**	.20*
CLE	--	.05	-.18
VOC		--	.38***

Note. HLE = home literacy environment; CLE = classroom language-literacy environment; VOC = Vocabulary; NLW = Numbers, Letters and Words. $n = 97$. * $p < .05$, ** $p < .01$, *** $p < .001$.

Hypothesis 3

The third research hypothesis stated that a statistically significant relationship would exist between NLW (as the criterion) and HLE (as the predictor), above and beyond parent and teacher education levels. Multiple regression models were formulated to test this hypothesis. The difference in the amount of variance accounted for by Model 1 ($R^2 = 2.6\%$) and Model 2 ($R^2 = 6.5\%$) revealed the unique contribution of HLE in explaining variance in NLW scores. Home literacy environment (HLE) accounted for an additional 3.9% of the variance in NLW scores above and beyond education level. Table 20 shows that HLE was statistically significant in the model. The correlation between HLE and NLW, controlling for parent and teacher education levels, resulted in a statistically significant correlation, $r(97) = .20, p < .05$ (Table 19). This correlation indicated that as HLE increased, NLW scores increased. This hypothesis is accepted.

Table 20

Regression on NLW by HLE, Controlling for Education

Model	Predictor	B	SE	Beta	t	Sig.
1	PEL	.864	1.211	.072	.714	.477
	TEL	.712	.526	.136	1.354	.179
2	PEL	.279	1.227	.023	.227	.821
	TEL	.732	.518	.140	1.414	.161
	HLE	.839	.417	.203	2.013	.047

Note. HLE = home literacy environment; PEL = parent education level; TEL = teacher education level; NLW = Numbers, Letters and Words. Model 1, $F(2, 98) = 1.23, ns (R^2 = 2.6\%)$. Model 2, $F(3, 97) = 2.24, ns (R^2 = 6.5\%)$.

Hypothesis 4

The fourth research hypothesis stated that a statistically significant relationship would exist between VOC (as the criterion) and classroom language-literacy environment (CLE) (as the predictor), above and beyond parent and teacher education levels. Table 21 reveals that CLE was not a significant predictor, beyond education level, accounting for an additional 0.2% of the variance in VOC scores. The partial correlation between CLE and VOC, controlling for parent and teacher education levels, resulted in a non-significant correlation, $r(97) = .05, ns$ (Table 19). This hypothesis is rejected.

Table 21

Regression on VOC by CLE, Controlling for Education

Model	Predictor	B	SE	Beta	t	Sig.
1	PEL	.127	1.229	.010	.103	.918
	TEL	.359	.534	.068	.673	.503
2	PEL	.134	1.234	.011	.109	.914
	TEL	.358	.536	.068	.668	.506
	CLE	.044	.092	.048	.477	.635

Note. CLE = classroom language-literacy environment; PEL = parent education level; TEL = teacher education level; VOC = Vocabulary. Model 1, $F(2, 98) = .24, ns$ ($R^2 = 0.5\%$). Model 2, $F(3, 97) = .24, ns$ ($R^2 = 0.7\%$).

Hypothesis 5

The fifth research hypothesis stated that a statistically significant relationship would exist between NLW (as the criterion) and CLE (as the predictor), above and beyond parent and teacher education levels. Table 22 shows that CLE was not a significant predictor, beyond education level, accounting for an additional 3.2% of the variance in NLW scores. The partial correlation between NLW and CLE, controlling for parent and teacher education levels, resulted in a non-significant correlation, $r(97) = -.18, ns$ (Table 19). This hypothesis is rejected.

Table 22

Regression on NLW by CLE, Controlling for Education

Model	Predictor	B	SE	Beta	t	Sig.
1	PEL	.864	1.211	.072	.714	.477
	TEL	.712	.526	.136	1.354	.179
2	PEL	.838	1.196	.069	.700	.485
	TEL	.717	.520	.137	1.380	.171
	CLE	-.163	.089	-.180	-1.827	.071

Note. CLE = classroom language-literacy environment; PEL = parent education level; TEL = teacher education level; NLW = Numbers, Letters and Words. Model 1, $F(2, 98) = 1.30, ns$ ($R^2 = 2.6\%$). Model 2, $F(3, 97) = 2.00, ns$ ($R^2 = 5.8\%$).

Hypothesis 6

The sixth research hypothesis stated that a statistically significant relationship would exist between VOC (as the criterion) and CLE (as the predictor), above and beyond parent and teacher education levels and HLE scores. Multiple regression models were formulated to test this hypothesis. The difference in the amount of variance accounted for by Model 1 ($R^2 = 8.6\%$) and Model 2 ($R^2 = 8.8\%$) revealed the unique contribution of CLE in explaining variance in VOC scores. Table 23 reveals that CLE was not a significant predictor, beyond education level and HLE, accounting for an additional 0.2% of the variance in VOC scores. This hypothesis is rejected.

Table 23

Regression on VOC by CLE, Controlling for Education and HLE

Model	Predictor	B	SE	Beta	t	Sig.
1	PEL	-.721	1.219	-.059	-.591	.556
	TEL	.389	.514	.074	.757	.451
	HLE	1.214	.414	.293	2.934	.004
2	PEL	-.711	1.224	-.059	-.581	.563
	TEL	.388	.517	.074	.751	.455
	HLE	1.209	.416	.292	2.906	.005
	CLE	.035	.089	.039	.397	.692

Note. HLE = home literacy environment; CLE = classroom language-literacy environment; PEL = parent education level; TEL = teacher education level; VOC = Vocabulary. Model 1, $F(3, 97) = 3.04, p < .05$ ($R^2 = 8.6\%$). Model 2, $F(4, 96) = 2.30, ns$ ($R^2 = 8.8\%$).

Hypothesis 7

The seventh research hypothesis stated that a statistically relationship would exist between NLW (as the criterion) and CLE (as the predictor), above and beyond parent and teacher education levels and HLE. Multiple regression models were formulated to test this hypothesis. The difference in the amount of variance accounted for by Model 1 ($R^2 = 6.5\%$) and Model 2 ($R^2 = 10.0\%$) revealed the unique contribution of CLE in explaining variance in NLW scores. Table 24 shows that CLE was not a significant predictor, beyond education level and HLE, accounting for an additional 3.5% of the variance in NLW scores. This hypothesis is rejected.

Table 24

Regression on NLW by CLE, Controlling for Education and HLE

Model	Predictor	B	SE	Beta	t	Sig.
1	PEL	.279	1.227	.023	.227	.821
	TEL	.732	.518	.140	1.414	.161
	HLE	.839	.417	.203	2.013	.047
2	PEL	.233	1.210	.019	.192	.848
	TEL	.738	.511	.141	1.446	.151
	HLE	.865	.411	.210	2.104	.038
	CLE	-.169	.088	-.187	-1.928	.057

Note. HLE = home literacy environment; CLE = classroom language-literacy environment; PEL = parent education level; TEL = teacher education level; NLW = Numbers, Letters and Words. Model 1, $F(3, 97) = 2.24$, ns ($R^2 = 6.5\%$). Model 2, $F(4, 96) = 2.66$, $p < .05$ ($R^2 = 10.0\%$).

Post Hoc Analyses

In addition to descriptive statistics and hypothesis testing, several post hoc procedures were conducted. A between group t-test was performed on classroom language-literacy (CLE) scores by age group. A comparison was made between classrooms serving younger children (under 60 months of age) and classrooms serving older children (60 months and older). The Levene test of equality was not significant suggesting that variability in each group was about equal. There was a statistically significant difference by group, $t(12) = -4.75, p < .001$. Children in 4- to 5-year-old classrooms ($M = 60.67, SD = 7.87$) had statistically significantly higher CLE scores than children in 3- to 4-year-old classrooms ($M = 49.80, SD = 7.89$). The seven classrooms categorized as proficient-to-exemplary all served 4- to 5-year-olds. Conversely, classroom language-literacy environments were statistically poorer in classrooms containing younger children. The four bottom-ranked (i.e., limited) classrooms all served children who were under 5 years of age (Figure 1). Children in lower aged groupings were afforded fewer resources and fewer opportunities for language and literacy development (See *Classroom Characteristics: Limited classrooms* section in Chapter 5).

Reliability analyses were conducted for the measures in this research project and are displayed in Table 25. The ELLCO Classroom Observation instrument used to measure CLE produced a Cronbach's alpha reliability of .92. Analysis of internal consistency for the home literacy environment (HLE) instrument produced a Cronbach's alpha reliability rating of .53 while analysis of the teacher education level (TEL) measure revealed a Cronbach's alpha reliability rating of -.18. Correlations of .4 are often considered moderate and a value of .7 may be considered high. Alpha coefficients of .8 to

.9 are desirable (Anastasi, 1988). Results of the obtained alpha reliability statistics may be a function of sample size and the number of items included on the measure.

Table 25

*Alpha Reliability for CLE, HLE,
and TEL Measures*

	Cronbach's alpha
CLE	.92*
HLE	.53**
TEL	-.18***

Note. HLE = home literacy environment; CLE = classroom language-literacy environment; TEL = teacher education level. n (of items); *n = 14, **n = 5, ***n = 3.

Upon further reflection, the internal consistency measure was judged to be inadequate for assessing reliability of the TEL survey. Negative inter-item correlations on the TEL questionnaire revealed dissimilar results. In retrospect, the TEL measure functioned as a composite variable. Negative correlations were apparent between TEL 1 and TEL 3 as well as TEL 2 and TEL 3. A correlation matrix is provided in Table 26 to display the relationships between items on the teacher survey. Further, because reliability of the TEL survey was an issue, alternative methods of analyzing the data were considered. Many educational research studies have measured teacher education level strictly in terms of *years of education*. Therefore, the multiple regression analyses in this study were repeated using the first survey item, TEL 1 (i.e., a measure of years of

schooling) instead of the TEL composite score. Data analysis with TEL 1 did not produce substantive changes in the conclusions of this study. The only notable change was an increase in the probability value for HLE from .047 to .057 with Hypothesis 3.

Table 26

Correlations among TEL 1, TEL 2, and TEL 3

	TEL 1	TEL 2	TEL 3
TEL 1	--	.26	-.21
TEL 2	--	--	-.01

Note. TEL 1 = teacher education level item 1 (years of education); TEL 2 = teacher education level item 2 (hours of general continuing education); TEL 3 = teacher education level item 3 (hours of literacy-related continuing education).

Reliability between observers for CLE measures was also assessed based upon five separate classroom observations. Inter-rater reliability on the ELLCO ranged from 89% to 100% with a mean agreement of 97% overall.

Stepwise regression analyses were conducted to determine if any of the individual items on the home literacy environment (HLE) survey accounted for significant variance in VOC or NLW scores. Although the HLE composite score was the strongest predictor ($p < .004$) of Vocabulary (VOC), the relationship between HLE 4 and VOC was also found to be statistically significant, $r(97) = .26, p < .01$. As the number of children's books in the home increased, Vocabulary scores increased. The other relationships tested

were found to be statistically non-significant. The relationship between HLE 4 and NLW was not statistically significant at the .05 level but may be considered a trend, $r(97) = .2$, $p < .051$.

In addition, data regarding the financial costs to parents were gathered for each of the early childhood centers in this study. Enrollment costs ranged from \$2.82 per hour to \$11.00 per hour. Assessment of cost and classroom quality variables indicated that cost did not necessarily correspond to quality, $r = -.002$, $p < .996$, *ns*. In fact, substantial differences in quality often varied from classroom to classroom within centers. As an example, one of the less expensive centers in this study (\$3.20 per hour) housed four classrooms that ranged from limited (CLE = 2.14; CLE = 2.71) to basic (CLE = 3.57) to proficient/exemplary (CLE = 4.0) in quality. These findings posed questions about parent knowledge and/or information needed to select high-quality early learning programs at a reasonable cost.

Chapter Five

Discussion

The present study explored relationships among preschool and kindergarten children's early lexical skills, literacy skills, and their learning environments at home and at school. Data analyses provided information for testing the stated hypotheses as well as for describing family and classroom supports for language-literacy development. Interpretation of results including post hoc analyses, implications of the study, and suggestions for future research are presented in this chapter.

Findings Associated with Hypotheses

Hypothesis 1. Hypothesis 1 stated that there would be a modest statistical relationship ($r = .20$ to $.45$) between classroom language-literacy environment (CLE) scores and home literacy environment (HLE) scores. Finding a statistically significant relationship between these two variables would be plausible, given the fact that parents exercise choice in selecting early child care and education for their preschool and kindergarten children. Even though choices may be limited by cost or location factors, selection of early childhood programs may be linked to what parents value in child care (e.g., literacy, arts, play). It was expected that, to some degree, similarities would exist between the quality of children's home literacy environments and the quality of their classroom literacy environments.

A modest statistically significant relationship was identified between frequency of children's visits to the public library and children's classroom quality ratings. Several interpretations of this finding are possible. This result may be a product of how focused parents were on seeking literacy experiences for their children outside of the home. It is possible that parents who brought their children to the public library more frequently were also more likely to shop for early childhood classrooms that had strong literacy curricula. In other words, the extent to which parents sought library literacy experiences for their children may have corresponded with the extent to which they looked for (and found) school literacy experiences for their children. This explanation is appealing since the only item on the home literacy survey that correlated significantly with classroom quality was the one that addressed literacy activities *outside* the home (i.e., library visits). Home literacy composite scores and other individual item scores dealing with *at home* experiences did not relate significantly to CLE. Active pursuit of literacy experiences away from home and in the community might reflect parents' beliefs about the value of literacy, their knowledge of literacy environments, and an explicit press for literacy achievement.

It is also possible that classroom quality ratings were indicative of the degree to which classroom teachers encouraged parents to utilize the public library. Higher quality early childhood settings might have been more successful than lower rated classrooms in promoting family trips to the library. Conversely, lower quality classrooms and their staff may have been less successful at diversifying parent-child literacy activities in the community. However, this explanation may be viewed as less appealing than the first in light of recent research conducted in central Florida. Loeb, Fuller, Kagan and Carrol

(2004) found that when parent choices regarding child care were more restricted, there was no relationship between classroom quality and family library visits.

A third explanation relates to age groupings of the children. Since the lower quality classrooms in this study tended to contain younger children (i.e., 3- to 4-year-olds), age may have played a role in parents' decisions about library visits. Perhaps parent and teacher beliefs about the appropriateness of bringing younger children to the library influenced the frequency of family visits to the library. This view would be consistent with additional findings to be discussed later in this chapter. These findings indicated that teachers underestimated the language and literacy abilities of children in 3- to 4-year-old classrooms. Of course, practical considerations about parent expectations, child behaviors, and the quiet atmospheres of libraries may have been factors as well.

Hypothesis 2. Hypothesis 2 stated that there would be a statistically significant relationship between student vocabulary (VOC) scores and the home literacy environment (HLE), above and beyond parent and teacher education levels. As expected, results indicated that there was a statistically significant relationship between VOC and HLE controlling for education levels. The home literacy environment accounted for 8.1% of the variance in student vocabulary scores. This finding was consistent with other studies that have identified significant relationships between children's vocabulary skills and literacy experiences provided by parents or other caregivers at home (e.g., Burgess, Hecht, & Lonigan, 2002; Frijters, Barron, & Brunello, 2000; Sénéchal, et al., 1998). Frijters and others (2000), for instance, discovered that *Home Literacy Questionnaire* (HLQ) scores accounted for unique variance (13%, $p < .001$) in PPVT-R (Dunn & Dunn, 1981) scores controlling for phonological awareness, letter-name, and letter-sound

knowledge. Moreover, both the Frijters, et al. (2000) study and the current study found that composite HLE scores measuring a broad array of home literacy activities accounted for more variance in vocabulary than single items (such as parent-child joint book reading). Thus, gathering information from homes about frequency of reading to children, onset of reading to children, frequency of library visits, and numbers of children's books available can be useful in explaining children's vocabulary development. Consistent with Sénéchal, et al. (1998) and Frijters, et al. (2000), results of this study indicate a direct relationship between home literacy activities and young children's performance on oral vocabulary measures.

Hypothesis 3. Hypothesis 3 stated that there would be a statistically significant relationship between student Numbers, Letters and Words (NLW) scores and the home literacy environment (HLE), above and beyond parent and teacher education levels. Findings indicated that there was indeed a statistically significant relationship between NLW and HLE controlling for education levels. As was the case with Hypothesis 2, parent and teacher education levels were not predictive of student test scores. The home literacy environment explained 3.9% of the variance in student literacy scores. This finding was consistent with other studies that have uncovered significant relationships between children's early literacy skills and home literacy experiences (e.g., Frijters, et al., 2000; Zhou, 2000). Frijters and others (2000) reported that the home literacy environment uniquely accounted for 12% of the variance in letter-name and letter-sound measures. Zhou (2000) analyzed data from 4,423 preschool children using the 1993 National Household Education Survey results and concluded that home literacy activities made significant contributions to emerging literacy skills, above and beyond parent education

level. Reading to children, telling them stories, teaching them letters and words, and visiting the library were all associated with early literacy achievement.

It was not surprising that, in the current study, HLE explained less variance in early literacy abilities (3.9%) compared to vocabulary (8.1%). This difference was in keeping with research investigating other variables related to measures of emerging literacy. For example, Frijters and others (2000) made the point that the relationship between home literacy activities and letter-name and letter-sound knowledge depends upon children's phonological awareness abilities. It is also possible that in this sample, vocabulary learning occurred more naturally during home interactions than print-related learning. Research has indicated that varied levels of explicit parent teaching are predictive of children's early written-language skills. Oral language skills, on the other hand, have been found to be significantly related to home literacy activities (i.e., shared book reading) regardless of parent teaching behaviors (Sénéchal, et al., 1998). It is not known to what extent parents in this study focused on specific aspects of print at home (e.g., letter-name, letter-sound relationships). However, it is reasonable to conclude that stronger associations between HLE and vocabulary may exist because young children's vocabulary learning requires less explicit teaching than print-related learning.

Hypotheses 4 and 5. Hypothesis 4 stated that there would be a statistically significant relationship between vocabulary (VOC) scores and classroom language-literacy environment (CLE) scores, above and beyond parent and teacher education levels. Hypothesis 5 stated that there would be a statistically significant relationship between Numbers, Letters and Words (NLW) scores and CLE scores, above and beyond parent and teacher education levels. Research data did not support these hypotheses.

Statistical analyses revealed non-significant correlations in both cases. These findings did not lend support to the notion that measures of student performance on cognitive tests are equivalent to measures of program quality. In fact, a negative correlation $r(97) = -.18, p < .071, ns$ between CLE and NLW scores underscored the dissimilarities between the data sets. (In the case of NLW performance, it was conceivable for narrowly focused, skills-driven classrooms to produce higher student scores and receive lower CLE scores on a comprehensive environmental rating like the ELLCO.)

One explanation for these results is that the effects of the classroom may not yet be apparent. In order to be included in this study, students were required to have been enrolled in the classroom of interest for at least 6 months. A longer period of time might be necessary before the impact of classroom environments becomes evident in student performance. Longitudinal research has indicated that classroom language-literacy environments are related to long-term student outcomes for low-income students (e.g., Dickinson & Tabors, 2001). However, it is more difficult to demonstrate the impact of early childhood classroom environments on students from middle-class backgrounds. Although high-quality child care has been linked to better cognitive and social development gains for students over time, effect sizes have proven to be modest across social classes and weaker for middle-income students in particular (Peisner-Feinberg, et al., 2001). Findings from the current study were consistent with other studies that have found no significant relationship between program quality and children's cognitive and language development (e.g., Clarke-Stewart, Gruber, & Fitzgerald, 1994; Kontos, 1991). Parent education level can also moderate the influence of classroom environments on

young children's learning (Peisner-Feinberg, et al., 2001). In the current investigation, therefore, the considerable presence of well-educated parents in the sample may have been a factor.

Hypotheses 6 and 7. Hypothesis 6 stated that there would be a statistically significant relationship between VOC and CLE, above and beyond parent and teacher education levels and HLE scores. Hypothesis 7 stated that there would be a statistically significant relationship between NLW and CLE, above and beyond parent and teacher education levels and HLE scores. Statistical results did not support these hypotheses; analyses revealed non-significant values. Combining CLE data and HLE data did not provide additional information for explaining student language-literacy scores. Instead, these findings highlighted the importance of home literacy environment data in explaining children's vocabulary and early literacy scores. Still, classroom observations did provide compelling information regarding differences in the quality of early educational environments.

Classroom Quality

Given the fact that the early childhood centers in this study all served middle- to upper-middle class communities, it was surprising that only one-half (i.e., 7 out of 14) of the classrooms observed had high levels of support for language and literacy acquisition. This meant that the other seven (50%) of the classrooms studied in this sample exhibited substantial gaps in their language-literacy curricula. Variations in classroom language-literacy environments were considered with respect to teacher preparation, student age groupings, and enrollment costs.

Teacher preparation. CLE ratings were not statistically related to teachers' years of education or numbers of general continuing education hours. Incidentally, greater numbers of continuing education (CE) hours geared specifically toward enhancing teachers' approaches to literacy were not associated with higher classroom quality scores. Nonetheless, the type of educational institution where teachers received their training did appear to be connected to classroom quality ratings. Teachers responsible for constructing proficient-to-exemplary classroom language-literacy environments (CLE) had all attended major four-year universities. Their classrooms consistently exhibited high-quality resources for language and literacy development. Teachers whose classrooms ranked in the middle (i.e., basic category) received their educations at high schools, community colleges and vocational/technical schools. Of the 4 teachers whose CLE scores fell in the lowest category (i.e., limited), 1 reported attending community college workshops, 1 reported earning a CDA through a local high school training program, 1 had attended a community college and was beginning studies at a four-year university, and 1 had attended a community college and was now a university psychology student.

These results raised questions about potential differences in teacher preparation programs. It is possible that academic courses at major four-year universities better equipped teachers with the necessary knowledge and skills in this area, in comparison to high schools, community colleges/technical schools, and CE courses. Literacy-focused continuing education hours had an unexpected inverse relationship with classroom quality measures. In some cases, teacher education activities may have provided educators with flawed or incomplete information about early literacy development that

negatively impacted teaching practices. Teachers in proficient-to-exemplary classrooms clearly demonstrated the ability to translate theoretical philosophies about emergent literacy into everyday practices. Teachers who were educated at high schools, community colleges, or vocational/technical schools and relied heavily on local CE literacy workshops for training, demonstrated limited to mediocre language and literacy classroom environments.

It may also be that variations in classroom quality were rooted in teachers' career goals. In this sample, teachers who had attended major four-year universities worked predominantly with older children (i.e., 4- to 5-year-olds), while teachers who had attended high schools, community colleges, and technical schools worked more often with younger children (i.e., 3- to 4-year-olds). These parallels may suggest a bias among teachers either toward an interest in implementing a broad literacy curriculum (with older children) or an interest in teaching rote literacy concepts (e.g., letter and number skills). Such results underscore the need for high-quality teacher education programs that fully prepare teachers to promote literacy acquisition across all ages. These findings further exemplify the diversity of early childhood professional preparation programs in the U.S. and wide differences present in teacher training (National Institute on Early Childhood Development and Education and the U.S. Department of Education, 2000).

Student age groupings. Results from this study revealed a difference in classroom quality ratings by age group that was statistically significant. As mentioned above, CLE scores were statistically significantly higher in classrooms serving older children ($M = 60.67$ months) in comparison to younger children ($M = 49.80$ months). This finding indicated that children in 3- to 4-year-old age groupings received inferior classroom

supports for language and literacy learning in relation to children in 4- to 5-year-old classes. Of the five classrooms serving younger children, four received classroom language-literacy environment (CLE) scores that were in the limited category (i.e., 2.0 – 2.9 out of 5.0). The remaining classroom fell in the basic category for quality. These results, in fact, signified developmentally inappropriate practices with children below 5 years of age. Classrooms for younger children in this investigation lacked adequate space, materials, and teacher facilitation of language-literacy learning. Classroom observations raised serious concerns about the nature of learning environments for 3-year-olds and young 4-year-old children in this study (See *Classroom Characteristics*). Although this occurrence was not anticipated, it was congruous with literacy instruction issues and debates in early childhood education (National Institute on Early Childhood Development and Education and the U.S. Department of Education, 2000).

Enrollment costs. Data regarding enrollment costs to parents were collected, although exploration of cost and quality relationships was not the main focus of this study. Cost and quality patterns were comparable to other research findings depicting wide ranges of classroom quality that are not necessarily dependent upon financial measures (Peisner-Feinberg, et al., 1999). Classroom quality varied considerably across the sample as well as within early childhood centers. Classroom language-literacy environment (CLE) scores within centers were not consistent in terms of quality categories suggesting that quality was perhaps more closely linked to individual differences between teachers than differences between centers.

Classroom Characteristics

Classrooms fell into three quality categories according to total CLE scores: proficient-to-exemplary, basic, and limited (See Figure 1).

Proficient-to-exemplary classrooms. Proficient-to-exemplary classrooms were characterized by high-quality supports overall for language and literacy learning. These classrooms routinely displayed exemplary organization of supplies and materials. There was strong evidence of appropriate furnishings, traffic flow, and use of space. Contents of the classroom were typically labeled and accessible to children, with a predominance of child-generated work on display. Presence and use of technology were apparent in children's regular access to audiotape recorders and computers. Technology was often used for a variety of purposes including literacy activities. Daily schedules provided children with time for independent learning and self-directed projects. In most cases, teachers actively facilitated children's independent exploration of materials.

Teachers in proficient-to-exemplary classrooms uniformly displayed exemplary classroom management strategies. Children appeared to know and understand classroom routines and they were able to participate in conflict resolution with teachers and peers. Teachers clearly communicated expectations to children in multiple ways. Teachers frequently exhibited respect for children's contributions and created a positive climate for conversation. Interactions between students and teachers revealed strong evidence of oral language facilitation in these seven classrooms. Teachers encouraged students to use language to discuss experiences, plan actions, and analyze ideas. Systematic efforts were made to increase children's spoken vocabularies. In addition, these classrooms uniformly exhibited exemplary presence of books. Book areas were well devised, with adequate

numbers of books in good condition. Classrooms provided books across a variety of genres, topics, and levels. In addition, approaches to book reading were consistently excellent, with a combination of planned and informal reading opportunities.

Approaches to children's writing were mostly exemplary, characterized by sufficient access to writing materials, written work on display, and instructional support as needed. There was also strong evidence that proficient-to-exemplary classrooms recognized diverse personal, family, and cultural backgrounds. Home support for literacy was exemplary. Teachers consistently communicated with families about children's language, literacy, and learning. These classrooms often provided parents with materials to bring home (e.g., book bags) that enhanced literacy development. Impressions of teachers' approaches to assessment indicated regular use of appropriate, continuous evaluation methods.

Basic classrooms. Three classrooms fell in the basic quality category suggesting that they possessed some of the basic supports necessary for language and literacy learning. These classrooms demonstrated relative strengths (i.e., two of the three classrooms received an exemplary score) in classroom organization, classroom management, presence of books, approaches to book reading, and recognizing diversity. Basic supports were provided for contents of the classroom, oral language facilitation, children's writing, and assessment. Although there was some evidence of classroom organization, accessibility of materials to children was somewhat limited. Classroom displays often lacked originality and consisted of arts and crafts replications. Systematic teaching of vocabulary was not observed. Oral language use was encouraged but was not utilized for higher-level analytical purposes. Some opportunities and supplies were

present for children's writing. However, teachers were not regularly available for assistance. Approaches to assessment were marked by some communication between teachers and specialists. Still, shared information was not consistently used to modify instruction.

Two of the three classrooms received basic scores for child choice and initiative, classroom climate, and facilitation of home support for literacy. Daily schedules did not regularly allow for deep, self-guided investigations by children. Classrooms generally displayed a positive tone, yet they did not encourage children's conversations with each other. Families were not routinely advised to seek out and use community resources to aid in children's language and literacy learning. Weaknesses were also identified in the presence and use of technology and curriculum integration.

Limited classrooms. The four classrooms in this category provided limited supports for children's language and literacy learning. Two of these classrooms received exemplary scores for organization of the room and presence of books in the classroom. One classroom achieved an exemplary rating for recognition of diversity. All other scores obtained indicated basic, limited, or deficient evidence of CLE quality. These results described characteristically low-quality learning environments for young children. Two classrooms demonstrated deficient organization of space and materials. These classrooms were extremely small and did not provide children with multiple areas for grouping or exploration. Limited classrooms contained basic supplies that were inaccessible to children. Presence and use of technology were consistently deficient. Computers and other technologies were typically absent from these classrooms.

Low levels of success with facilitating child choice, classroom management, and a positive classroom climate were observed. Materials were commonly unavailable without the teacher's presence and activities were lacking in individualization. Expectations for children's behavior were sometimes confusing or inconsistent. Evidence of respect for children's contributions was limited and marred by impressions of teachers' harshness toward students. Basic supports for oral language development were uniformly observed. Two classrooms displayed some evidence that books were used routinely to support learning. Approaches to reading and writing in limited classrooms were essentially consistent with basic levels of teacher support. Integration of curriculum, on the other hand, was deficient in all four of these classrooms. Classroom themes were consistently narrow in scope and lacking in meaningful significance to children. Recognition of diversity and facilitation of home support for literacy were generally basic, while deficiencies were common in teachers' approaches to assessment. Clearly, information gathered through student assessment did not significantly impact decisions about teaching practices.

Curriculum integration. The single weakest classroom characteristic across all 14 classrooms in this study was curriculum integration. Only two classrooms received exemplary ratings in this area. Six classrooms exhibited basic aspects of curriculum integration and the remaining six were deficient in this area. Teachers in this study overwhelmingly chose language themes that were extremely narrow in scope and lacking in connectedness to children's interests and experiences. For the most part, themes were selected based upon the *letter of the week* resulting in unrelated target vocabulary (e.g., *daddy* and *doghouses* as part of the *letter d* theme). Furthermore, shifting of themes on a

weekly basis did not allow for long-term investigations or analyses of topics. The two classrooms that provided children with interesting topics to explore over time (e.g., learning about butterflies) stood out as unique in this sample.

Learning opportunities were not consistently related to children's conceptual understandings. Although classroom activities were often goal-directed, teachers displayed infrequent attempts at making meaningful connections for children. As such, integration of language and literacy skills with content-area activities was scarcely observed. For example, classrooms in this study seldom combined book-related themes and concepts with learning centers, play activities, the arts, or ongoing classroom discussions. Integration of literacy activities across the curriculum was also lacking with regard to placing books and writing materials in children's learning centers.

It was not clear whether a pattern of poor curriculum integration in this investigation was symptomatic of widespread trends in early childhood education. Measures of early childhood classroom language-literacy environments such as the ELLCO are relatively new and just beginning to be utilized in research studies. These results contributed information about specific components of school language-literacy environments (e.g., curriculum integration) to the educational research literature. It is possible that the teacher preparation and CE programs attended by professionals in this study did not adequately emphasize the critical importance of unifying and integrating learning experiences for young children. Alternately, these results may represent teachers' beliefs and orientations toward skills-driven methods as opposed to theme-driven teaching strategies.

Access to Children's Books at Home

In addition to the between-group statistical procedure described earlier in this chapter, post hoc analyses included stepwise regression analyses to discover if any of the individual items on the home literacy environment (HLE) survey explained variance in student test scores. Results confirmed that although the composite HLE score was the best predictor of vocabulary ($p < .004$) and early literacy skills ($p < .047$), the number of children's books in the home was also a statistically significant predictor of vocabulary scores ($p < .01$). Greater numbers of children's books at home were positively related to higher vocabulary scores. A similar trend regarding the number of children's books at home and Numbers, Letters and Words (NLW) scores was also noted but was not statistically significant ($p = .051$). These findings were consistent with other studies that reported particularly stable relationships between children's access to books at home and performance on vocabulary and school readiness instruments (Loeb, et al., 2004; Sénéchal, et al., 1998). Children's books can provide parents with opportunities to introduce new vocabulary and characteristics of print to children. Further, the mere presence of children's literature might also play a unique role in children's explorations of word meanings and print concepts. Hence, information about children's access to books in the home environment may serve as an additional marker for identifying children at risk for academic difficulty.

Implications of the Study

The current investigation had implications for identification of children at risk, program selection, program assessment, teacher mentoring, and student assessment.

Identification of children at risk. Early identification of children predisposed to language and/or literacy delays is critical in order for prevention and intervention efforts to be effective. This study reiterated findings regarding links between family literacy activities and children's performance on vocabulary and early literacy measures. It is thus suggested that early childhood professionals gather information about home literacy environments to assist in identifying children at risk for academic difficulties. Information concerning a wide array of home literacy activities (e.g., onset of reading to children, frequency of parent and caregiver reading to children, number of children's books at home, and frequency of visits to the public library) can aid in risk assessment. Further, data regarding the number of children's books available at home may be particularly useful to teachers and other professionals.

Moreover, given the differences identified in home literacy environments among well-educated households and their relations to early academic abilities, parents should be provided with extensive supports and resources to enhance children's language-literacy experiences at home. These supports and resources should be made available to parents as early as possible (e.g., during prenatal visits, infancy) and continue throughout early childhood. Schools, early childhood centers, clinics, and other community agencies ought to be prepared to offer language-literacy materials and related educational activities regularly to parents and families. Services may include educational playgroups, parent conferences, book sharing programs, and early language and literacy classes for parents.

Program selection. Early childhood professionals should also assist parents in evaluating and selecting preschool and kindergarten environments for children that display strong commitments to rich language and literacy experiences. Results from this

study revealed wide variations in classroom quality that were not attributed to financial costs of enrollment. Parents would benefit from information about characteristics of proficient-to-exemplary versus basic or limited classrooms. Finding high-quality care and education for younger children (e.g., 3- to 4-years-old) may be of special concern given the importance of early learning opportunities and the disturbing prospects of developmentally inappropriate practices with young learners. The present investigation revealed that parents from middle- to upper-middle class backgrounds require education regarding early childhood education environments. With guidance, parents can make more informed decisions about what to look for in children's early language and literacy programs. In addition, collaborative efforts between early childhood professionals and parents may result in better continuity between children's home and school literacy experiences.

Program assessment. Findings from this study did not lend support to the notion that measures of student performance on language and literacy measures are equivalent to measures of program quality. Relationships between student test scores and classroom environmental ratings were statistically non-significant. In fact, children's standardized test scores had more to do with differences in their home environments than variations in classroom quality. These findings have potential policy implications for early childhood education in an era when academic testing of students is often purported to be an acceptable substitute for direct measures of program quality. By measuring student performance and classroom quality separately, clear differences emerged from this investigation. Wide variations in classroom quality were obviously unrelated to student

test scores. Hence, the use of academic testing as an indirect measure of early childhood program quality was not supported by this study.

Instead, evidence pointed to a remarkable relationship between teachers' educational backgrounds and classroom quality measures. Participants who had attended teacher education programs at major four-year universities consistently received higher classroom quality ratings than teachers trained at high schools, community colleges, and vocational/technical schools. Indeed, the results of this study spoke to the necessity for high-quality early childhood teacher preparation. These findings were consistent with a recent report supporting professional preparation of early childhood teachers (American Association of Colleges for Teacher Education, 2004). The AACTE report emphasized the need for exemplary teacher preparation including bachelor's degrees for all early childhood educators. In order to promote consistency and quality in teacher education, AACTE recommendations also called for increased collaboration between 2- and 4-year colleges as well as between non-profit and for-profit teacher credentialing programs.

In the current investigation, it is also important to note that continuing education (CE) courses geared to enhance teachers' literacy instruction did not appear to improve teachers' approaches to reading and writing. Rather, data suggested that CE courses may have provided teachers with flawed or incomplete information regarding the teaching of literacy skills. Results of this study indicated that high-quality early childhood classrooms that facilitated literacy development were associated with well-educated teachers who had received university educations. Therefore, parents and policy makers are urged to carefully consider the educational histories and qualifications of early childhood educators when selecting or designing early child care and education programs.

Direct measures of classroom quality in this study did provide comprehensive data about classroom language-literacy supports. Results from rubric-scored classroom assessments allowed for systematic comparisons and detailed descriptions of young children's learning environments. These findings suggested that important features of early childhood language and literacy curricula can be elucidated using well-constructed instruments designed for that purpose. Early childhood education programs should be directly assessed to ensure high-quality learning experiences for students. Following classroom assessment, teachers should be provided with assistance as needed in improving classroom environments in critical areas such as curriculum integration.

Teacher mentoring. An alarming proportion of teachers in this study routinely underestimated the intellectual abilities of young children. During conversations with teachers in basic and limited classrooms, 5 out of 7 teachers made statements reflecting low expectations for students such as, *They are too young to write*, and, *You have to keep the vocabulary simple and related to the letter of the day*. The classrooms observed in this investigation frequently lacked adequate literacy supplies and activities, opportunities for long-term, theme-driven investigations, and teacher facilitation of language skills for higher-level analysis and problem-solving. Early childhood teachers in such classrooms need ongoing mentoring to help give young children the language-literacy learning opportunities they deserve. Teacher mentoring programs should be developed to provide teachers with direct supports for improving classroom language and literacy environments (e.g., print-rich displays, theme/book-related play and art centers, books, reading, and writing across content areas). Teacher preparation programs of all kinds need to stress the critical importance of an integrated curriculum in early childhood

classrooms. University faculty, master teachers, early interventionists, and speech-language pathologists are strongly encouraged to implement intensive teacher mentoring programs to assist in meeting the needs of children who are currently languishing in low-quality educational settings.

Student assessment. When formal tests are used to evaluate the abilities of young children, interpretations should be informed by the kinds of learning opportunities available to children in their homes and communities. In many cases, children arrive at preschool or kindergarten with limited linguistic and literary experiences to draw upon. Children's home lives are characterized by marked diversity in terms of culture, values, and appreciation for traditional literacy experiences. Logically, it follows that assessments of young children's learning should be diversified, in terms of method, compatibility with children's interests and prior knowledge, and consideration of previous learning environments.

In this study, home literacy environment was the strongest predictor of student test scores even though the sample consisted of relatively advantaged middle- to upper-middle SES children. Despite the fact that the children in this study lived predominantly in well-educated households, notable differences in their home literacy experiences helped to explain variations in early academic skills. Somewhat surprisingly, parents whose social/academic backgrounds might be considered homogeneous, reportedly implemented the aforementioned literacy activities to remarkably different degrees. These results further advanced the research literature by revealing substantial differences in home literacy environments within a group of highly educated middle-class

households. Such findings reinforced the idea that individual differences among young children should be contemplated with respect to academic assessment.

Suggestions for Future Research

Additional research is needed to improve our understanding of classroom language and literacy environments. Specifically, studies that focus on literacy resources provided to younger children, program improvements, and early childhood classroom curriculum integration are recommended. Research studies can help to determine if language-literacy environments are consistently poorer in classrooms serving younger (e.g., 3- or 4-year-old) children compared to older children. Gathering and analyzing data regarding classroom quality also can assist in program modifications and interventions. Collaborative support may be provided to teachers, for example, to assist in raising classroom environmental quality ratings. Early childhood research is required to reveal extant deficiencies in critical areas such as curriculum integration. The degree to which early childhood teacher preparation programs attune future professionals to early literacy issues such as these also should be explored. Analyses of differences in teacher education programs by focus and type (i.e., community colleges/technical schools, major four-year universities, continuing education courses) may help explain teachers' patterns of practice with regard to language and literacy.

Follow-up testing of students would allow for evaluation of student performance from a longitudinal perspective. Home literacy environment and classroom language-literacy environment data could be used, for instance, to test predictions about student's future language and literacy skills. Future studies similar to the present project should also include children from a wider SES range to provide a fuller spectrum of information

across social classes. Additional research regarding the ways parents teach aspects of print and vocabulary at home would better inform investigators about relationships between home literacy experiences and children's learning of these skills. Furthermore, research regarding the effectiveness of providing various language-literacy supports and resources to parents is needed.

Admittedly, the current study defined literacy and home literacy environments in relatively traditional ways. It is recommended that a variety of media (e.g., television, internet, computer software) be investigated in terms of how they facilitate young children's reading skills at home and at school. Other literacy experiences for children (e.g., visits to bookstores, live theater performances, literacy-oriented play) also should be explored relative to children's literacy interests and abilities. Additionally, literacy measures that were not included in this study could provide a broader picture of student learning. Qualitative forms of assessment (e.g., anecdotal notes, observational assessments, portfolios) might better capture aspects of children's language and literacy development in relation to classroom teaching practices.

Currently, literacy measures for young children tend to be narrowly focused and often do not include cultural and experiential aspects of literacy. A broader view of literacy assessment holds potential for adapting to diverse individual and cultural backgrounds. It is suggested that future studies incorporate broad literacy measures (e.g., children's conversations and attitudes about books, participation in book-related play and art activities, etc.). Assessment of progress in early childhood must also be practical in terms of time consumption. Individualized language or writing sample analyses, for instance, may be too time-consuming for many teachers. Furthermore, some literacy

skills are difficult to measure with formal instruments over short time intervals. Literacy interest and flexible synthesis of literacy concepts, for example, develop over time and do not lend themselves to static assessment. Additional longitudinal research is needed in order to fully reveal the impact early childhood classrooms have on literacy achievement.

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Appendices

Appendix A: Brief Teacher Survey

Teacher's Name _____

Directions: Please complete the following questionnaire. Results will be used for research purposes and will be kept confidential. Your participation will assist us in providing improved services for children in the future. Please respond truthfully to each question, as there are no right or wrong answers on this survey.

1. Which of the following best describes your educational background?
 - a) High school graduate
 - b) High school plus a few college courses
 - c) 1 year of college or other postsecondary schooling
 - d) 2 years of college or other postsecondary schooling
 - e) 4 years of college or more

2. How many hours of continuing education (e.g., workshops, seminars) have you attended in the past 2 years?
 - a) 0-5 hours
 - b) 6-10 hours
 - c) 11-15 hours
 - d) 16-20 hours
 - e) more than 20 hours

3. How many hours of continuing education (e.g., workshops, seminars) have you attended in the past 2 years that focused specifically on literacy development?
 - a) 0-5 hours
 - b) 6-10 hours
 - c) 11-15 hours
 - d) 16-20 hours
 - e) more than 20 hours

Appendix A: (Continued)

4. How many times in a week do you read to the children in your classroom?
 - a) not at all
 - b) 1-3 times per week
 - c) 4-6 times per week
 - d) 7-9 times per week
 - e) more than 10 times per week

5. How many times in a week do children participate in writing activities in your classroom?
 - a) not at all
 - b) 1-3 times per week
 - c) 4-6 times per week
 - d) 7-9 times per week
 - e) more than 10 times per week

6. Where did you receive your education? Please list specific names of schools attended:

7. Please list any students in your class who have a disability (or multiple disabilities):

8. Please list any students who have not been enrolled in your class for at least 6 months:

About the Author

Joseph Constantine received Bachelor's and Master's Degrees from the University of South Florida Department of Communication Sciences & Disorders in 1991 and 1993 respectively. After working as a public school speech-language pathologist, he went on to a faculty position at the University of Louisville School of Medicine in 1996. Mr. Constantine later returned to Florida to work as a therapist for a pediatric rehabilitation clinic. He became a supervising therapist at the University of South Florida in 1998 and entered the Curriculum and Instruction Ph.D. program in 1999.

While in the Ph.D. program at USF, Mr. Constantine was actively involved in a variety of family- and community-based interventions. He presented numerous seminars, authored one research publication, and coauthored several studies. He was also awarded a research grant from the USF Collaborative for Children, Families and Communities in 2004.