Using Interactive Reading Techniques with *Word World* to Enhance Emergent Literacy

James B. Godfrey
Old Dominion University

Follow this and additional works at: https://digitalcommons.odu.edu/earlychildhood_etds

Part of the Early Childhood Education Commons, and the Language and Literacy Education Commons

Recommended Citation
Godfrey, James B.. "Using Interactive Reading Techniques with Word World to Enhance Emergent Literacy" (2014). Doctor of Philosophy (PhD), dissertation, Comm Disorders & Special Educ, Old Dominion University, DOI: 10.25777/n024-z588
https://digitalcommons.odu.edu/earlychildhood_etds/1

This Dissertation is brought to you for free and open access by the Communication Disorders & Special Education at ODU Digital Commons. It has been accepted for inclusion in Theses and Dissertations in Early Childhood Education by an authorized administrator of ODU Digital Commons. For more information, please contact digitalcommons@odu.edu.
USING INTERACTIVE READING TECHNIQUES WITH

WORD WORLD TO ENHANCE EMERGENT LITERACY

by

James B. Godfrey
B. A. May 1988, Duke University
M. S. August 1997, Old Dominion University

A Dissertation Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
Requirements for the Degree of

DOCTOR OF PHILOSOPHY

EARLY CHILDHOOD EDUCATION

OLD DOMINION UNIVERSITY
December 13, 2014

Approved by:

Stenhen Tonelson (Director)

Linda Bol (Member)

Angela Kozoff (Member)

Peter Baker (Member)
Facets of emergent literacy such as phonological awareness (PA) and alphabet knowledge (AK) are precursors to later conventional literacy (Dockrell, Stuart & King, 2010; Neuman & Dwyer, 2009; NELP, 2008). Interactive reading techniques such as dialogic reading (Whitehurst et al., 1988) and explicit print referencing (Piasta et al., 2012; Justice et al., 2010) have been used effectively with printed text to enhance emergent literacy. This quasi-experimental study was designed to determine the extent to which interactive reading techniques combined with the viewing of educational television may enhance facets of emergent literacy such as PA and AK. A convenience sample of 19 preschool children between the ages of 31- and 44-months were assigned randomly to an intervention group (n = 8) or a control group (n = 11). During a 6-week period, the intervention group viewed episodes of the educational television program Word World with their teacher, who implemented scaffolding in the form of interactive reading techniques, while the control group viewed the same episodes with no scaffolding. Before and after the intervention, students from both groups were assessed for PA and AK. Results of ANCOVAs controlling for pre-test differences indicated that children in the intervention group scored higher than did students from the control group. These differences were statistically significant. Recognizing the study’s limitations, the
A researcher recommends combining interactive reading techniques with the viewing of educational television in preschool settings to enhance emergent literacy.
This dissertation is dedicated to James, Celia, and Hollie, my precious family. I began this journey in Early Childhood Education when James was an infant, and through the eyes of my children and wife, I have been able to apply that which I learned through this process to the development of our children and our family. Though I am perceived to be an expert in Early Childhood Education with the culmination of this program, I am far from the perfect parent or teacher. I rely on the wisdom of the species that, as long as we do not make too much of a mess of children, their resilience will allow them to become the individuals they need to be.
ACKNOWLEDGMENTS

Several people contributed to the successful completion of this dedication. First, I would like to thank Dr. Stephen Tonelson, my dissertation committee chair, for his mentorship throughout the process of completing the PhD program and writing this dissertation. As interim Graduate Program Director and the professor for two of my courses, Dr. Tonelson has been instrumental in shaping my views on early childhood education, particularly with the socio-emotional welfare of young children. As my dissertation committee chair, Dr. Tonelson has read countless versions of the dissertation, providing me with the direction needed to complete a work that contributes to the body of knowledge regarding early childhood education.

Next, I must thank my committee members, Dr. Linda Bol, Dr. Angela Eckoff, and Dr. Peter Baker. As the professor of three of my courses in this program, Dr. Bol has been instrumental in my understanding the fundamentals of academic research and program evaluation. Dr. Bol’s guidance through the process of writing this dissertation began with the Dissertation Seminar, where she guided me through the nuances of the general process, and culminated with some much needed help in determining whether assumptions of ANCOVA had been met. As the expert in early childhood education, Dr. Eckoff’s discerning perspective has provided me with much insight into the needs of that population. Her provocative questions and comments have forced me to widen my perspective, to stretch, to grow. Dr. Peter Baker, my second set of eyes, has provided extensive feedback on the numerous drafts I have written and led me through the Results section of this dissertation, but most importantly, Dr. Baker has been a source of
encouragement and optimism throughout this entire process. All members of my
dissertation committee have been instrumental to the success of this arduous endeavor,
and I look forward to the time when I can call these exemplary people colleagues.

Without the nurturance provided by my mother, Jane Godfrey and her sister, Sara
Braaten, I would not be in this position today. My mother worked with my brother, Will,
and me tirelessly to endow us with the fundamentals needed to become literate. Hours
and hours spent on her lap reading *Curious George*, the books of Richard Scarry, and
many more placed us both on the path to successful lives. The love of literature, which
she and Aunt Sara have modelled for us continuously, has enriched our lives beyond
measure.

Most importantly, I must thank my wife, Mrs. Hollie Godfrey, for her partnership
in this process. Together, we have put the principles learned in this endeavor to raise two
loving, curious, and intelligent children, James and Celia. Through all the late nights,
early mornings, and hectic days, our mutual devotion to each other and to our children
has, and will continue, to reap the most beautiful bounty of this world.
# TABLE OF CONTENTS

LIST OF TABLES .....................................................................................................................x

INTRODUCTION .....................................................................................................................1

CHAPTER OVERVIEW ......................................................................................................1

IMPORTANCE OF EARLY FOUNDATIONS FOR LITERACY ...........................................1

EDUCATIONAL TELEVISION AS INTERVENTION ..................................................3

POTENTIAL MISUSE OF TELEVISION .........................................................................7

THEORETICAL FRAMEWORK .......................................................................................9

MAXIMIZING READING INSTRUCTION ...................................................................10

STATEMENT OF THE PROBLEM .................................................................................14

DESIGN AND METHODS ................................................................................................14

OVERVIEW OF CHAPTERS............................................................................................15

LITERATURE REVIEW .......................................................................................................16

INTRODUCTION AND CHAPTER OVERVIEW .........................................................16

POSITIVE INFLUENCE OF EDUCATIONAL TELEVISION ......................................16

  Influence of Co-Viewing .................................................................................................30

  Co-Viewing with Electronic Books .............................................................................32

POTENTIAL MISUSE OF TELEVISION .......................................................................32

  Piaget’s Cognitive Developmental Theory and Intentional Learning .........................33

  Television as Babysitter ...............................................................................................35

MAXIMIZING READING INSTRUCTION ...................................................................37

  Identification of Measures ..........................................................................................37

  Interactive Reading ......................................................................................................39

  Dialogic Reading ........................................................................................................39

  Explicit Print-Referencing .........................................................................................44

CHAPTER SUMMARY .....................................................................................................50
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limitations of Study</td>
<td>91</td>
</tr>
<tr>
<td>Directions for Further Inquiry</td>
<td>96</td>
</tr>
<tr>
<td>SUMMARY AND CONCLUSION</td>
<td>98</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>103</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>124</td>
</tr>
<tr>
<td>APPENDIX A</td>
<td>124</td>
</tr>
<tr>
<td>APPENDIX B</td>
<td>127</td>
</tr>
<tr>
<td>APPENDIX C</td>
<td>131</td>
</tr>
<tr>
<td>VITA</td>
<td>148</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table                                                                                           Page
1. Components and explanations of the PEER Sequence ............................................................. 41
2. Components and explanations of the CROWD Dialogic Reading Acronym ................................. 41
3. Characteristics of Intervention Group Preschool Students .................................................... 54
4. Characteristics of Control Group Preschool Students ............................................................ 57
5. Characteristics of Teachers in the Preschool Center ............................................................... 59
6. Interactive reading intervention implementation schedule for the 6-week period ............... 65
7. Print Knowledge Domains, Targets, and Sample Print References ........................................ 68
8. Converting raw scores to FCC scores ....................................................................................... 71
9. *-test Results Comparing Intervention and Control Group Descriptive Statistics .................. 77
10. ANCOVA of PALS Assessments for AK with Pre-PALS as Only Covariate .............................. 79
11. ANCOVA of IGDIs Assessments for PA with Pre-IGDIs as Only Covariate ............................. 80
Chapter I: Introduction

Chapter Overview

This chapter will provide an introduction to the fundamental concepts related to the proposed study to determine the merits of combining interactive reading techniques with the viewing of educational television for the enhancement of emergent literacy. The importance of early foundations for literacy is explored first, followed by an examination of the benefits of the use of television to foster child development. Potential misuse of television will be addressed as well. Next, rooted in the works of Bandura and Vygotsky, the theoretical framework for the benefits of shared experience is discussed. This is followed by an exploration of the research touting the merits of interactive reading for the enhancement of emergent literacy. The chapter culminates with the research question delving into whether interactive reading techniques can be combined with the viewing of educational television to enhance emergent literacy in preschool children and an outline of the proposed experiment to test this research question.

Importance of Early Foundations for Literacy

The importance of becoming literate cannot be overstated. Whether conducting the daily chores of living or maximizing the opportunities offered by a literate society, one must be able to read. Without the ability to read fluently, an individual will find it difficult to understand and complete legal documents, bills, correspondence, or written instructions. This individual will be locked out of the written conversation that is literature, poetry, history, science, politics, and economics. Without literacy, it will be nearly impossible to succeed, let alone excel, in academics, thus likely relegating the
illiterate, or functionally literate, individual to menial, if any, employment (Alfred & Chlup, 2009).

Experts argue that the cyclical nature of illiteracy is a leading contributor to chronic poverty (Schafft & Prins, 2009), and some cite a link between chronic poverty, illiteracy, and incarceration (Alfred & Chlup, 2009). This link is supported by results of the National Assessment of Adult Prison Literacy Survey (NAAPLS) conducted by the U. S. Department of Education, which reveal substantial disparities in the literacy of those incarcerated in U. S. prisons and those not (Greenberg, Dunleavy, & Kutner, 2007).

Illiteracy in the United States is of grave concern. The 2003 National Assessment of Adult Literacy (NAAL) conducted by the National Center for Education Statistics (NCES) found that 14% (approximately 30 million) of American adults were categorized as lacking Basic Prose Literacy Skills (BPLS). These adults can perform no more than the most basic literacy tasks such as finding simple and concrete information in short segments of prose. Moreover, the assessment found that approximately 5% (approximately 11 million) of these adults could not answer simple questions or could not be tested at all due to the inability to comprehend written questions (Baker, Kutner, & Sabatini, 2009). With few to no employment options, these Americans will find it difficult to contribute to any community in a meaningful and productive manner.

Many interventions designed to address literacy have focused on the preschool population, and the long-term benefits of quality preschool experiences for children are well documented (e.g., Debruin-Parecki, 2009; Masse & Barnett, 2007; Schulman & Barnett, 2005). Conversely, because students who enter school behind their peers developmentally usually remain behind throughout subsequent school years, the lack of
these quality preschool experiences has proven to be debilitating (Keiffer, 2008; Jordan, Kaplan, Locuniak, & Ramineni, 2007). Hart and Risley (2003) report that children from lower socio-economic statuses (SES) are exposed to approximately 30 million fewer vocabulary words by the age of three than are their counterparts from professional families. Since an abundance of research suggests that attention to early language acquisition is the essential factor related to later academic success (Davidson, Fields, & Yang, 2004; Van Kleeck, 2008), this dearth of language experience places children from lower SES homes at a developmental disadvantage.

Emergent literacy, or pre-literacy, is seen as a bridge to becoming literate. Skills such as recognizing letters, letter-sound correspondence, print conventions, and concept of word lay the foundation for conventional literacy. Much research in this area has focused on the importance of the early acquisition of phonological awareness (PA) and alphabet knowledge (AK) in becoming literate (Crim et al., 2008; Dockrell, Stuart & King, 2010; Neuman & Dwyer, 2009; NELP, 2008; NICHHD, 2000). Some research indicates that there is danger of teaching specific skills that may be developmentally inappropriate at the preschool level (Saracho, 2004), but others argue that basic skills should be taught at the preschool level, delivered in a relevant, engaging, and meaningful way (Stipek, 2006; Molfese et al., 2006; Nancolis, Lawrie, & Dodd, 2005).

**Educational Television as Intervention**

Since the advent of educational television in the 1950s, research into the potential that educational television may exert positive effects on the academic and socio-emotional development of young children has been conducted. In their review of the extant research on the ability of *Sesame Street* to assert a positive effect on children,
Fisch, Trugilo, and Cole (1999) concluded that educational television is a powerful tool for teaching children academic and social skills. Unfortunately, little of the research cited by these authors can be found in peer-reviewed journals. Instead, much of it is formative in nature, or “research and evaluation efforts designed to help producers put the best programming on screen” (Meilke, 1990, p. 9). Fisch, Truglio & Cole (1999) refer to a total of seven empirical studies published in peer-reviewed academic journals, four of which were related to academic skills (Rice, Huston, Truglio & Wright, 1990; Reiser, Williamson & Suzukie, 1988; Reiser, Tessmer, & Phelps, 1984; Diaz-Guerrero & Holtzman, 1974) and three of which were designed to test the enhancement of social goals such as cooperation and race relations (Zielinska & Chambers, 1995; Lovelace & Scheiner, 1994; Paulson, 1974). There are, however, four more empirical studies from non-peer-reviewed publications (Ball & Bogatz, 1970; Bogatz & Ball, 1971; Wright & Huston, 1995; Zill, Davies, & Daly, 1994), which shed light on the impact *Sesame Street* may exert on the academic skills and knowledge of preschool children.

More contemporary research supports the notion that television programming content is a factor influencing the child’s academic future. In a review of the literature, Moses (2008) concludes that children’s literacy can be enhanced though viewing educational television programming. This review addresses all the studies found in Fisch et al. (1999), and examines others exploring the influence of viewing educational programming on the literacy of young children (Prince, Grace, Linebarger, Atkinson, & Huffman, 2002; Rice & Woodsmall, 1984; Sproull, 1973; Vandewater & Bickham, 2004; Wright et al., 2001).
Rice & Woodsmall (1988) found that children who viewed educational television performed better on vocabulary measures than did control group children. More recent research found that children exposed to educational programming were more academically oriented, creative, and less aggressive than those children who viewed general television programming (Anderson, Huston, Schmitt, Linebarger & Wright, 2001). Wright et al. (2001) concluded that children who viewed academically oriented programming fared better on measures of academic performance than did children who viewed general television programming. Mates and Strommen (1996) provide a caveat to this positive view of the merits of educational television. They assert that educational programming aimed at increasing literacy must include content reflective of the incremental process of becoming literate instead of content that merely focuses on discrete skills such as phonological awareness and vocabulary acquisition.

While educational television, in general, has shown positive effects for children, some empirical research has examined the notion that the quality of specific programming may be the crucial factor in influencing child development in an appropriate manner. Crawley, Anderson, Wilder, Williams & Santomero (1999) found that with repetition of Blue’s Clues episodes, learning and program involvement were enhanced and program comprehension improved for preschool children, and Crawley et al. (2002) concluded that more experienced Blue’s Clues viewers were more likely to benefit from programming than less experienced viewers. Overall, the Blue’s Clues show has been found to exert a positive effect on the cognitive development of preschool children (Anderson et al., 2000).
*Between the Lions* and *Dora the Explorer* are two more examples of educational programming found to have positive effects on preschool children. Uchikoshi (2006) found that viewing *Between the Lions* is beneficial to children’s early literacy skills, while Jennings et al. (2009) found that preschool children who regularly viewed episodes of *Between the Lions* experienced improvements in both oral language and code-related skills. Carter (2008) found that repeated exposure to *Dora the Explorer* programming improved preschoolers’ geographic knowledge. With repeated exposure to these specific episodes of educational programming, preschoolers’ story knowledge and narrative skills may be enhanced (Linebarger & Piotrowski, 2009).

Although specific shows with appropriate educational content have been shown to enhance child development, other research suggests that co-viewing television with an adult is the most influential factor in this development. Kirkorian, Wartella & Anderson (2008) assert that besides choosing those shows with appropriate educational content instead of pure entertainment, parents and teachers have the ability to enhance learning by co-viewing the programs with the children in their care. Jinqiu and Xiaoming (2004) found that parent-child co-viewing of educational television enhanced the cognitive abilities of 5-year-old preschoolers. Research into the merits of parent-child co-viewing is not new. Singer and Singer (1976) argued that with adult guidance, television can enhance imaginative play, and Friedrich-Cofer, Huston-Stein, Kipnis, Susman & Clewett (1979) found that children who viewed pro-social programming with supplemental material and adult co-viewing were more likely to exhibit positive behavior on a number of measures than children who viewed alone.
Schmidt, Crawley-Davis, & Anderson (2007) provide sobering data with which to view the strides made from viewing educational television. This experiment sought to determine whether 2-year-old children could use information provided by video or live spoken directions more successfully in order to find an object. Results indicated that very young children give priority to direct experience over mediated information. The authors are critical of the notion, marketed by the creators of such products as Baby Einstein and Teletubbies that children will engage in meaningful learning by watching these videos.

**Potential Misuse of Television**

Television use has become pervasive in American culture raising concerns that when the television is on, the subsequent background noise can disrupt the quantity and quality of parent-child interactions (Kirkorian, Pempek, Murphy, Schmidt, & Anderson, 2009). Background television has been associated with decreased toy play and focused attention in young children (Schmidt, Pempek, Kirkorian, Lund, & Anderson, 2008). Anand and Krosnick (2005) found that children increase their television viewing significantly between the ages of 6 to 42 months and that children of parents with less formal education spend more time in rooms with the television running. In a study to ascertain the amount of television viewing that takes place in child care settings, Christakis and Garrison (2009) found that children in home-based settings viewed 2 to 3 hours per day, while children in center-based settings watched 1.5 hours per day. This, the authors assert, is suggestive that previous estimates of preschool television viewing are underestimated by more than 100 per cent, perhaps doubling the amount of screen time each child experiences. The authors recommend pediatricians council parents to be proactive in limiting the amount of screen time their children experience.
Many experts assert that a major impediment to the developmental welfare of young children is this constant presence of television in their lives (Miller et al., 2007; Christakis, Zimmerman, DiGiuseppe, & McCarty, 2004). Concerns over the inhibition of creative play with the use of the television as a de facto baby-sitter were raised as early as the 1970s (Gadberry, 1974). Since the 1980s, the American Academy of Pediatrics (AAP) has warned of the potential negative effects of television on children including the decline of imaginative play as well as the onset of attention problems and obesity. Blass et al. (2006) found that children consume more high density foods while watching television, thus contributing to the incidence of obesity. In 1999, the AAP recommended that children under 2-years-old not be exposed to television or any kind of electronic screen. This recommendation has been met with support from some in the academic community (Miller et al., 2007; Christakis et al., 2004; Anderson & Pempek, 2005). Furthermore, at the Congressional Public Health Summit of July 26, 2000, six leading public health organizations issued a statement in which they concluded that the body of empirical research amassed since the 1970s indicated a causal relationship between media violence and aggressive behavior in children. In a meta-analysis, Williams, Haertel, Haertel, & Walberg (1982) found an average correlation of total television viewing and school achievement to be -.05.

The recent upsurge of digital media technology such as videos, e-books, handheld computers, console games, electronic toys, software applications, interactive whiteboards, and electronic learning systems has presented a new set of concerns that children may be negatively affected by expanded time spent attending to digital screens (Vandewater, Rideout, Wartella, Huang, Lee, & Shim, 2007). However, experts contend
that employing a combination of new and old media as well as parent and/or teacher mediation may be effective to allay these concerns (Alper, 2011, Bittman, Rutherford, Brown, & Unsworth, 2011; Lieberman, Bates, & So, 2009). More experts claim that the purposeful use of appropriate digital media, specifically interactive technology, can be used in a positive manner to aid with the development of children from birth to the age of eight in this age when digital media is ubiquitous (NAEYC & the Fred Rogers Center, 2012).

**Theoretical Framework**

The theoretical framework for this study will be based in the work of Bandura and Vygotsky. Bandura suggests that human beings learn much through the cognitive processes of observation and imitation. Humans acquire a significant amount of information simply by observing models and decoding what we see. In a series of experiments, Bandura, Ross, & Ross (1961, 1963a, 1963b) found that children imitate both aggressive and non-aggressive models whether in person or in film. These findings are supported by Bandura (1965). This study indicated that children who viewed the ending where the model was punished exhibited less aggressive behavior than the other two groups when placed in a room with the same blow-up doll. However, when the children were later offered inducements to act aggressively, all children acted aggressively. Essentially, the punishment of the model blocked the performance but not the acquisition of aggressive behavior.

Numerous studies support Bandura’s Social Learning Theory (Meltzoff, 2007; Nielson, 2006). In a literature review of the deferred imitation paradigm, Jones and Herbert (2006) found that the development of deferred imitation requires appropriate
modeling and that with this modeling, even infants can store and retrieve highly detailed memory representations through the use of cues and contexts.

Vygotsky's Social-Historical Theory focuses on the use of language as tool, which aids in the cognitive development of the young child. Central to this theory are the notions of the Zone of Proximal Development (ZPD) and scaffolding, tools with which the adult can move the mind forward, challenge it. Vygotsky (1933a) defined the ZPD as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or with more capable peers" (p. 86). With a deft hand, the adult can accentuate a child's development by scaffolding, or providing a slight amount of assistance in problem solving at the appropriate time, lessening that assistance as the child develops (Vygotsky, 1933a).

Maximizing Reading Instruction

This section will explore the ways in which Bandura's and Vygotsky's theories may be applied to reading instruction in order to influence emergent literacy in preschool children. First, an examination of the use of general scaffolding techniques is discussed followed by a review of reciprocal teaching, a reading instruction technique that borrows from both Bandura and Vygotsky. Next, two specific interactive reading techniques, dialogic reading and explicit print-referencing, are examined.

Scaffolding techniques have been used widely in the instruction of emergent literacy (Chien et al., 2010; McGee & Ukrainetz, 2009; Neumann et al., 2009; Pentimonti & Justice, 2009). Studies have suggested that it is the shared experience, not simply the act of reading to a child, which is fundamental to maximizing reading growth of young
children (Debruin-Parecki, 2009; Liszkowski, Carpenter, Henning, Striano, & Tomasello, 2004). Further, the quality and quantity of caregiver-child interactions in preschool settings has been linked to emergent literacy outcomes in low-income children (Burchinal, Vandergrift, Pianta, & Mashburn, 2010).

Reciprocal teaching, a method developed by Palincsar and Brown (1984), borrows from the theories of both Bandura and Vygotsky. In this method an adult, or more capable peer, models how a reader should interact with text in order to guide a less experienced reader to more sophisticated text interactions. These interactions include predicting, clarifying, questioning, and summarizing, techniques designed to increase comprehension. Reciprocal teaching has been used in a variety of settings to improve comprehension of inexperienced readers (Strickland, 2011; Williams, 2010; Alfassi et al., 2009; Pilonieta & Medina, 2009).

Similar to the shared book reading approach of reciprocal teaching, dialogic reading is an interactive method designed to engage young readers in sophisticated encounters with text, thereby increasing emergent literacy. In the seminal study, Whitehurst et al. (1988) concluded that dialogic parent-child reading can affect the child’s language development significantly. The authors cite the dearth of empirical evidence suggesting a “causal connection between early picture book reading and growth in language skills” (p. 552) as the impetus for their study. Whitehurst et al. (1988) designed research to test the theory that simply reading to a child is not as effective as reading with a child using dialogic reading techniques. It is important to note that dialogic reading is not a general term for reading interactively with a child. Dialogic reading is a specific program, in which parents are trained to use evocative techniques with few
questions which can be answered with a yes or a no. Parents also learn to provide
children with maximally informative feedback including expansions and corrective
modeling. Finally, parents are trained in progressive change that is sensitive to the child's
developing abilities.

Dialogic reading techniques have been used to aid emergent literacy in a number
of areas. Blewitt, Rump, Shealy & Cook (2009) found that questioning techniques used
by adults during read-alouds improved the vocabulary acquisition of three-year-old
children. Zevenbergen, Whitehurst & Zevenbergen (2003) found that the use of dialogic
reading techniques aided in comprehension and narrative abilities of 4-year-old Head
Start participants. In a comprehensive study of the Early Head Start and Evaluation
Project, Raikes et al. (2006) sought to determine the amount of dialogic reading 2,581
low-income mothers used with their young children and the effects that experience had
on emergent literacy. They concluded that most mothers associated with Early Head Start
read to their children regularly and that children whose mothers employed dialogic
reading techniques experienced increased vocabulary, comprehension, and cognitive
abilities. Mol, Bus, de Jong & Smeets (2008) conducted a meta-analysis of Dialogic
Reading studies to ascertain whether or not the shared reading technique can exert
substantial influence on emergent literacy. The authors reported a significant, but small
effect size for all 16 studies. Huebner and Payne (2010) found that brief training sessions
for parents in dialogic reading techniques produced lasting effects in the way these
parents read with their children.

While dialogic reading is a shared reading experience using open-ended
questioning techniques, some argue that more explicit print-referencing techniques need
to be incorporated by adults to enhance the print knowledge/print awareness of children (Piasta, Justice, McGinty & Kaderavek, 2012; Lovelace & Stuart, 2007; Hammett, Van Kleek & Huberty, 2003). Research indicates that preschool children seldom attend to or discuss print during shared reading experiences with adults (Evans, Williamson & Pursoo, 2008; Evans & Saint-Aubin, 2005). However, when adults point to print, the amount of time children spend attending to print increases (Evans et al., 2008; Justice, Weber, Ezell, & Bakeman, 2002). Moreover, various studies suggest that children will attend to and learn what they are explicitly taught, whether it is alphabet knowledge and print awareness (Molfese et al., 2006; Justice, Chow, Capellini, Flanigan, & Colton, 2003), phonological awareness (Nancolis, Lawrie & Dodd, 2005), or phonemic awareness (Yeh, 2003).

Explicit print-referencing includes verbal and non-verbal techniques used to entice the child to attend to and focus on specific print concepts while involved in adult-child shared reading (Justice & Ezell, 2000; 2002; 2004). Verbal techniques include asking questions and/or commenting about print. Examples include, “What’s the first word of this sentence?”, “Do you see the letter S in this word?”, and “That word says ‘the.’” Non-verbal techniques include pointing to specific print and tracking print with the finger. Piasta et al. (2012) have devised and implemented a comprehensive explicit print-referencing intervention named Project STAR (Sit Together and Read) which have produced significant improvements in early print knowledge and consequent literacy skills two years post intervention.
Statement of Problem

There is a lack of research specifically exploring the efficacy of using interactive reading techniques to maximize the effectiveness of educational television on emergent literacy. Consequently, this study will focus on the ability to apply interactive reading methods, specifically dialogic reading techniques combined with explicit print-referencing techniques, to the viewing of educational television in order to maximize the literacy development in preschool children.

Research question. One research question will address this issue:

1. Do students who receive scaffolding in the form of interactive reading techniques while viewing educational television perform better on measures of emergent literacy, specifically alphabet knowledge (AK) and phonological awareness (PA), than do children who view educational television with no scaffolding?

Hypothesis.

1. Children who receive scaffolding in the form of interactive reading techniques while viewing educational television will perform better on measures of emergent literacy, specifically AK and PA, than will children who view educational television with no scaffolding.

Design and Methods

This study will use a quasi-experimental design. A convenience sample of two preschool classrooms containing 19 children between the ages of 31- and 44-months, will be assigned to an intervention condition and a control condition. All groups will view eight episodes of *Word World* over a 6-week period, with the difference being that the teachers in the experimental groups will perform interactive reading techniques during
and after viewing, while the control groups will not be exposed to interactive reading techniques. The experimental group teacher will undergo training in interactive reading techniques. To promote fidelity of treatment, each viewing session will be videotaped and coded for the type and frequency of interactive reading techniques used (or lack thereof in the control groups). Two coders will be used, and interrater reliability will be calculated. Analysis of Covariance (ANCOVA) will be used to determine if there are significant differences in AK and PA due to the use of interactive reading techniques while viewing the educational television program *Word World*.

**Overview of Chapters**

Chapter I has explored the importance of emergent literacy, as well as the influence television may exert on the development of preschool children. Rooted in the theoretical framework provided by Bandura and Vygotsky, techniques to maximize the use of educational television for the purpose of improving emergent literacy have been introduced. Chapter II will provide a more thorough examination of the literature exploring the concepts introduced in Chapter I. Chapter III will include a detailed description of the study design and methodology. Chapter IV will present the findings of the study, and Chapter V will discuss the significance of these findings as well limitations to the present study and avenues for future research.
Chapter II: Literature Review

Introduction and Chapter Overview

This chapter will present findings from prior studies that addressed the efficacy of interventions used to enhance emergent literacy in preschool children. It will begin by addressing studies exploring the use of television as an educational tool. Next, a theoretical background will be explored as a rationale for the effectiveness of using shared book reading practices to enhance the emergent literacy in this population. This will be followed by a review of empirical studies using shared book reading practices, specifically dialogic reading and explicit print-referencing techniques, to enhance emergent literacy. Emerging patterns regarding the understandings, omissions, and limitations of this research will be discussed, providing a foundation for the methodological approach proposed in chapter three.

Positive Influence of Educational Television

This section describes the research into the efficacy of using educational television to enhance child development. The discussion begins with the seminal research, mostly formative in nature, into the use of Sesame Street as an agent of general child development. This general perspective is followed by more specific look into the merits of educational television on literacy achievement. The section culminates with a discussion of how recent iterations of educational television programming affect the development of preschool children. Studies aimed at understanding the impact of Blue's Clues, Between the Lions, and Dora the Explorer will be examined.

Two reviews of the extant research into the impact of Sesame Street on the academic and social growth of preschool children have been conducted during the last
two decades. To mark the 30th anniversary of the premiere of Sesame Street, Fisch, Trugilo, and Cole (1999) conducted their review, and Moses (2008) examined the role that educational television has in developing the literacy of preschool children. Fisch et al. (1999) found few studies that used empirical data to assess the impact of the show. Instead, the bulk of articles included here are formative in nature, used by the show’s producers to enhance programming. Four of the seven empirical studies from peer-reviewed journals examined the impact of exposure to Sesame Street on the academic skills of preschool children (Rice et al., 1990; Reiser et al., 1988; Reiser et al., 1984; Diaz-Guerrero & Holtzman, 1974). Additionally, the authors analyzed seminal reports conducted by the Educational Testing Service (ETS; Ball and Bogatz, 1970; Bogatz and Ball, 1971) and a study conducted for the Children’s Television Workshop (Zill, Davies, and Daly, 1994).

After production of the first season, the first study analyzing the impact of Sesame Street on academic outcomes of preschool children was conducted by Ball and Bogatz (1970) for the ETS. Nine hundred forty-three children between the ages of 3 and 5 were divided into two groups. One group of children was prompted to watch episodes of Sesame Street over a 26-month period. The other group was not prompted to watch the show. Exposure to Sesame Street ranged from zero times per week to more than five. The children participated in a battery of pretests and posttests to determine alphabet and number knowledge as well as knowledge of the names of body parts, relational terms, and skills related to sorting and classification. Results indicated that children who viewed Sesame Street outperformed children who had not. Children who viewed the most
experienced the most gains on all measures. The authors posit that three-year-old children experienced the most gains perhaps because they had the most to learn.

A year later, Bogatz and Ball (1971) carried out a 2-pronged study that included a replication and a follow-up of the original Ball and Bogatz (1970) study. The replication explored the impact of viewing the second season of Sesame Street, an expanded version of the first season, would have on 283 children aged 3 to 5 years. This new experiment confirmed the findings of the previous study. For the second part of the study, the authors surveyed the teachers of 283 children from the original study. The teachers were asked questions regarding the children’s verbal and quantitative abilities, attitude toward school, and attitude toward peers. Results indicated that more frequent viewers of the first season of Sesame Street were rated higher on school readiness and attitude than were their counterparts, who had viewed the show less frequently or not at all. The authors contend that this is a strong indication that frequent viewing of Sesame Street will aid in the school preparation of young children. Results from Zill et al. (1994) support these findings. Using data from a national survey of 10,888 parents, the authors performed a correlational analysis, revealing that preschool children who viewed Sesame Street regularly were better able to recognize letters of the alphabet, tell stories connected to reading, and were more likely to read on their own in subsequent years.

Studies from peer-reviewed journals confirm these findings. Rice et al. (1990) conducted a two-year longitudinal study assessing the impact of viewing Sesame Street on the vocabulary acquisition of 3-year-old children (n = 166) and 5-year-old children (n = 160). Analysis of demographic statistics revealed a homogeneous population in that most children were white and lived in intact families; however, there appeared to be a
wide range of educational and professional levels within this population. Prior to measuring the amount of time participants spent viewing *Sesame Street* during the two-year window, the authors conducted pre-viewing interviews to ascertain how much parents encouraged children to view *Sesame Street* and to administer Peabody Picture Vocabulary Test-Revised (PPVT-R) to the children. After the two-year viewing window, the authors re-administered the PPVT-R to assess vocabulary acquisition.

Amount and type of television viewing were measured by diary. Each family member completed a diary for one week in each spring and fall for a total of five diaries. All viewing was reported in 15-minute intervals for times between 6:00 am and 2:00 am for each day with viewing defined as being present for at least half of a 15 minute interval in which a show was turned on. Validity for this method was assessed by computing diary errors such as incorrect program listed for an incorrect time, resulting in the exclusion of two subjects, whose diaries contained a large number of errors. Two hundred seventy-one of the initial 326 subjects were deemed to have returned sufficient data (four or five diaries) for examination, and 261 subjects participated in the PPVT-R post-test.

Separate multiple regressions were performed for each cohort to ascertain the relationship of viewing *Sesame Street* in Waves 1 and 2 (the first two sets of diaries) to the initial PPVT-R assessment. It is important to note that the PPVT-R was administered *before* viewing was measured. Results of these multiple regressions indicated that viewing *Sesame Street* was positively related to vocabulary acquisition at ages 3 and 5. The PPVT-R was administered again *after* viewing *Sesame Street* in Waves 4 and 5 was completed. A new set of multiple regressions indicated that viewing *Sesame Street*
significantly predicted vocabulary acquisition in the younger cohort (5-years-old) but not the older cohort (7-years-old). The authors refer to the rapid growth of vocabulary in children ages 3- to 5-years-old to explain why the older cohort might have been less influenced by viewing *Sesame Street*. Although the authors recognize the limitations of correlative data as well as those of a relatively homogeneous sample, they conclude that this study reveals the potential of using television as a means to teach vocabulary and as a "medium for learning" (p. 427) in general.

In order to determine the extent to which scaffolding during co-viewing would aid learning from *Sesame Street*, Reiser et al. (1984) assigned 23 3- and 4-year-old white children (female = 12) from middle income families in Tallahassee, Florida to an experimental condition \( n = 14 \) and a control condition \( n = 9 \). All children viewed three edited versions of *Sesame Street*, which contained content for the letters P, Q, V, and W and the numbers 6 and 9, over a 5-day period. The children in the experimental group viewed each episode with an adult, who asked the children to name the letters and numbers as they appeared on the screen and provided the children with feedback whether corrective or laudatory. The children in the control group viewed each episode with an adult, but the adult did not ask questions or offer feedback.

Prior to viewing the episodes, each child was given a pretest using flash cards with the letters and numbers on them to determine how many of the letters and numbers they could accurately identify. The posttest, administered three days after the final episode was viewed, was identical to the pretest. Results of the pretest showed that children in the experimental group identified more letters and numbers correctly \( M = 4.3; SD = 1.8 \) than did the children in the control group \( M = 3.4, SD = 2.3 \). On the
posttest, the experimental group (M = 6.6; SD = 2.2) outperformed the control group (M = 3.7; SD = 1.8). Using the pretest scores as a covariate, the authors employed a multiple regression to examine the posttest data. Interaction between the covariate and the treatment conditions was not found to be significant. An analysis of covariance determined that adjusted scores on the posttest for the experimental group were 6.4 compared to 3.9 for the control group. Cohen's $d$ indicated that the effect size was large. The authors conclude that while viewing Sesame Street can be beneficial for preschool children, viewing the show while an adult scaffolds the learning by asking questions and providing feedback is more helpful. However, external validity for this experiment is mitigated by the use of a small sample size.

Using the same three edited versions of Sesame Street episodes as well as the identical pretest and posttest as did Reiser et al. (1984), Reiser et al. (1988) sought to establish which of four viewing conditions contributed to the most learning for 95 3- and 4-year-old children attending nine separate preschools in Tallahassee, Florida. Most children were from middle income families and 56 were male, 39 were female, 70 were white, 23 were black, and 2 were Hispanic. The initial sample included 205 children, but 96 were excluded because they answered eight or more questions correctly on the pretest, and 14 more were excluded due to absences. The remaining 95 children were assigned randomly to one of three treatment groups or a control group to watch the Sesame Street episodes with an adult on an individual basis. In the “Attention” group ($n = 23$), children viewed the episodes with an adult, who made comments designed to draw the children's attention to the screen. The adults in the “Question” group asked the children ($n = 25$) questions regarding the letters and numbers. During the “Question and Feedback”
sessions, the adult asked the children (n = 24) prompting questions and provided corrective or laudatory feedback. Children in the control group (n = 23) viewed the episodes, but had no interaction, with the adult.

As with the experiment conducted by Reiser et al. (1984), adjusted posttest mean scores were calculated using the pretest scores as a covariate. The children in the "Question and Feedback" group had the highest adjusted mean of correct answers (M = 7.1), followed by the "Question" group (M = 6.7), the "Attention" Group (M = 6.0), and the control group (M = 5.4). The authors conclude that viewing Sesame Street facilitates the letter and number knowledge of preschool children but that viewing the show with an adult, who scaffolds the information by asking questions and providing feedback, is the optimal means of facilitating this learning. As with the previous experiment, external validity is limited due to the small sample size.

Diaz-Guerrero and Holtzman (1974) performed an experiment to determine the effect of Plaza Sesamo, a Spanish language edition of Sesame Street, on the development of 221 3-, 4-, and 5-year-old children from the lowest socioeconomic situations in Mexico City. The children were divided equally by age and gender, assigned randomly to an experiment or control group, and then administered a battery of nine tests before, during, and after viewing 130 episodes of Plaza Sesamo over a 6 month period. The episodes were shown during 50-minute sessions 5 days a week. For purposes of analysis, the authors organized these nine tests into three categories. The first category, content-achievement, included the General Knowledge, Numbers, and Letters and Words tests. Next, the cognitive-content category included the Relations, Parts of the Whole, Ability to Sort, Classification Skills, and Embedded Figures tests. The final category called
independent-cognitive measures included the Oral Comprehension test. The authors’ hypothesis that the content-achievement category, with specific test criteria addressed by Plaza Sesamo should reveal the most significant differences between experimental and control groups was supported; however, they found it striking that there were significant differences between the experimental and control group in the cognitive-content and independent-cognitive domains even though Plaza Sesamo did not address these areas specifically. Although the studies addressed by Fisch et al. (1999) are somewhat outdated, they do provide evidence that viewing educational television, especially with an adult using scaffolding techniques, can exert a positive influence on preschool children.

Some research suggests that viewing educational television as a preschool child can have lasting positive effects on literacy measures. Anderson et al. (2001) conducted a study of 655 adolescents, who participated in one of two studies as preschool children, to examine this relationship. The first of these studies (Anderson et al., 1985) focused on the television viewing habits of 334 5-year-old children from Springfield, Massachusetts over a 2-month period, and the second study (Huston et al., 1990) examined the television exposure of 326 children from Topeka, Kansas aged 3-years ($n = 160$) and 5-years ($n = 166$) over a 2-year period. The preschool studies had different purposes and designs, but they each used identical methods of tracking television exposure, parent-kept diaries similar to the ones described in the study conducted by Rice et al. (1990).

Anderson et al. (2001) were able to trace and interview 570 and were able to obtain high school transcripts of 491 of the original 655 participants from both studies. Independent variables for this study were the television-viewing habits taken from the parent-kept diaries completed when the participants were 5-years-old. The dependent
variables related to academic success, perspectives, and behaviors and were derived from telephone interviews and high school transcripts when the participants were adolescents. The authors found that high preschool viewing of educational television such as *Sesame Street* and *Mister Roger's Neighborhood* resulted in higher grades in English, higher leisure book reading, and higher value attached to achievement as adolescents. The results were more robust for boys than for girls. The authors also discovered, however, that high viewing of non-educational television, especially those programs that contained violence, was linked with lower academic skills and higher aggression in adolescents.

A more recent review of the literature conducted by Moses (2008) confirmed the findings of these studies from the Fisch et al. (1999) review and examined others exploring the influence of viewing educational television on the literacy of young children (Prince, Grace, Linebarger, Atkinson, & Huffman, 2002; Rice & Woodsmall, 1984; Sproull, 1973; Vandewater & Bickham, 2004; Wright et al., 2001). In a 3-year longitudinal study, Wright et al. (2001) found that young children viewing educational television frequently scored higher on a battery of academic measures than did young children, who viewed such content infrequently. The initial sample included 2- and 4-year-old children from 236 families living in Kansas City, KS, Kansas City, MO, and Lawrence, KS. Due to attrition, path analyses were conducted on 182 of the children at study's end three years later. According to demographic information, this population represented a racially diverse group of children typically from low- to middle-SES, with intact families (77%).

Oral time-use diaries were used to collect television viewing data. This process included bi-monthly telephone interviews, where parents would describe all activities
during the previous day from midnight to midnight. The name, type, and duration of each television program the child viewed were recorded. Using this method, the authors were able to obtain an average of 3.3 diaries per child in year 1 of the study, with more success in the last two years (4.4 in year 2, 5.1 in year 3). Programs were classified into four separate categories: They included (1) child-audience, informative or educational; (2) child-audience, fully animated with no educational or informative purpose; (3) child-audience, other; and (4) general-audience. Outcome measures included (1) reading skills, (2) number skills, (3) vocabulary, and (4) school readiness. Reading and number skills were measured using two subtests of the Woodcock-Johnson Tests of Achievement, vocabulary was assessed using the Peabody Picture Vocabulary Test - Revised (PPVT-R), and school readiness was measured by School Readiness Scale of the Bracken Basic Concept Scales.

Path analyses revealed that children, who viewed more educational/informative programming at ages 2- and 3-years scored higher on all four measures at 3-years-old than did those children, who watched less. The authors indicate that results for the younger group held up over time. This study supports the findings of Rice and Woodsmall (1988), who found that viewing educational television programming could exert a positive impact on the vocabulary development of 3- and 5-year-old children. These studies are supported further by Vandewater and Bickham (2004), who found that despite an array of family stressors ranging from poverty to family conflict, viewing educational television programming exerted a positive influence on the reading abilities of young children.
Using a single episode of the preschool educational television program Blue's Clues, Crawley et al. (1999) conducted a study to ascertain the impact of repeated exposure to high quality programming on the attention to, interaction with, and comprehension of that programming for 3- to 5-year-old viewers. The authors chose to examine the influence of Blue's Clues because this program has been designed to elicit audience participation. The authors reported that the creators of the show hypothesized this type of participation "would increase the mental effort the viewers invest in the program," thus helping "children to sustain interest in and enjoyment of the program" (p. 631).

The sample of 108 children, recruited from New York and Connecticut day care centers, included 36 3-year-olds, 38 4-year-olds, and 34 5-year-olds. This ethnically diverse sample was comprised of 41% African Americans, 36% White Americans, 21% Hispanic Americans, and 2% Asian Americans. Forty-eight participants were female. The authors attempted to divide participants in equal groups according to age, gender, and ethnicity, but due to an uneven number within each category, six children were assigned randomly to groups. One group viewed the of Blue's Clues episode "Snack-time" once, one group viewed this same Blue's Clues episode five times on five consecutive days, and one group viewed one episode of The Busy World of Richard Scarry.

During viewing, each child was videotaped to determine the frequency of each child's attention, verbal responses, and nonverbal responses to the program. Interobserver reliability was determined by having the five coders code the same video. Phi correlations between pairs of coders for attention ranged between .97 and .99, and for interactions, they ranged between .76 and .92. To assess comprehension of the programs,
each child was given a test, comprised of questions including (1) educational content items, (2) entertainment content items, (3) far transfer items, where concepts of the thinking games used in each program were applied to new stimuli, (4) items applying problem-solving strategies modeled in the program to content from the program, and (5) items applying these same problem-solving strategies to content different from that in the program. Children viewing a program once were given the comprehension test immediately after that viewing, and children viewing the *Blue's Clues* episode on five consecutive days were administered the test immediately after the fifth viewing.

The authors combined the single-viewing group session of *Blue's Clues* with the initial viewing session of the repeated-exposure group, and compared the attention, non-verbal interaction, and verbal interaction scores with those from the group viewing *The Busy World of Richard Scary*. Analyses of variance revealed significantly greater attention to and non-verbal interaction with *Blue's Clues*. Differences in verbal interaction were not significant. A multivariate analysis of variance (MANOVA) was used to analyze the percentage of correct answers according to age (3) x gender (2) x conditions (3) x question type (5). The authors found a main effect for condition, $F(2,90) = 16.16, p < .001$, with the highest scores attributed to the group viewing *Blue’s Clues* five times, the next highest scores to the group viewing *Blue’s Clues* once, and the lowest scores to the group viewing *The Busy World of Richard Scary*. These results indicate that repeated viewing of educational television shows, especially those like *Blue’s Clues* created to elicit audience interaction, affects attention and comprehension positively for young children.
Additional research suggests that viewing *Blue's Clues* may exert lasting effects. Experienced *Blue's Clues* viewers between the ages of 3- and 5-years comprehend more and are more interactive with the program than inexperienced *Blue's Clues* viewers of the same age (Crawley et al., 2002). The authors assert that these findings show that a television program can teach children a style of viewing that may transfer to other programs. A 24-month longitudinal study into the influence of viewing *Blue's Clues* on 120 3- to 5-year-old children revealed that children, who had access to the show, scored higher on measures related to information acquisition, expressive vocabulary, problem solving, and social behaviors (Anderson et al., 2000).

Further empirical evidence has indicated that viewing another educational program, *Between the Lions*, can exert positive influence on the emergent literacy of preschool children. This educational television program is designed to direct viewer attention to concepts of alphabet knowledge and phonological awareness, especially blending and elision (Rath, 2000). In order to assess the effects this program may exert, Uchikoshi (2006) conducted an experiment with 150 Spanish-English bilingual kindergarten children, from a public school located in a large urban school district in the north eastern United States. Dividing this sample into three separate groups, the author compared the effects of viewing episodes of *Between the Lions* (*n* = 57), episodes of *Arthur* (*n* = 51), or neither program (*n* = 42) during school hours.

Using stratified random sampling, the author divided six classrooms into two groups according to gender and pretest scores from the English version of the PPVT. Children from four other classrooms comprised the control group. Between October and May, both viewing groups were exposed to one 30-minute episode of their designated
program three times per week. This resulted in a total of 54 viewing experiences for each group. To ensure that children were attentive and orderly, they were supervised by classroom teachers or the researcher. The control group viewed no educational television at school during this period.

English versions of the Elision, Blending, and Sound Matching subtests of the Comprehensive Test of Phonological Processing (CTPP) were used to assess phonological awareness in each participant. To measure letter-word identification abilities, the Letter-Word Identification subtest of the Woodcock Language Proficiency Battery-Revised (WLPB-R) was used. Each participant was assessed prior to viewing educational television episodes, after viewing half (27) of the episodes, and after viewing all episodes.

After controlling for (1) classroom differences, (2) home viewing of educational television, (3) initial English vocabulary, (4) initial Spanish vocabulary, (5) the total number of children's books in the home, (6) library experience, and (7) years in the United States, the author found that the children, who viewed Between the Lions during class hours, fared better on the Elision and Blending subtests of the CTPP than did the children, who viewed Arthur or no educational television. These results support those of Linebarger (2000), who found that 5-year-old children exposed to 17 episodes of Between the Lions experienced greater rates of growth on phonological awareness tasks than did their classmates, who had not viewed the program. Another study, qualitative in design, conducted by Jennings et al. (2009) suggests that the “outside-in” and “inside-out” skills elicited by Between the Lions is the mitigating factor leading to language improvements of preschool children.
Further research into the impact of specific educational television programming has been conducted exploring the merits of *Dora the Explorer* (Carter, 2008) as well as *Zoboomafoo, Pinky Dinky Doo,* and *Clifford the Big Red Dog* (Linebarger & Piotrowski; 2009). Carter (2008) discusses the enhancement of preschoolers’ geographic knowledge and emergent literacy. Linebarger and Piotrowski (2009) examine the impact of narrative structure within educational television programming on the preschoolers’ knowledge of story and narrative skills.

**Influence of Co-Viewing.** While the previous section discussed the merits of specific educational television programming on the development of children, research into the value of how children experience the programming is examined. Early research into the effects of viewing educational television on the language development of young children has addressed the importance of adult-child co-viewing (Sproull, 1973; Singer and Singer, 1976; Friedrich-Cofer et al. 1979). In an experiment with 73 kindergarten children, Friedrich and Stein (1975) found that verbal labeling and role-playing with adults enhanced the learning experience of these children. Explored earlier in this paper, it has been argued by Reiser et al. (1984) and Reiser et al. (1988) that while educational television may be beneficial to the language acquisition of the developing child, co-viewing educational television with an adult, who can use scaffolding to facilitate this development, is optimal. Valkenburg et al. (1998) found, in an experiment with 124 elementary school-aged children, that adult mediation enhanced the children’s knowledge of and attitudes toward opera. A review of the extant literature regarding media and the development of young children revealed that adult mediation in the form of drawing the child’s attention to important aspects of the program and asking and answering relevant
questions is essential to maximize language development from educational television viewing (Kirkorian et al. 2008).

Jinqiu and Xiaoming (2004) tested the effects of adult-child television co-viewing in an experiment using 26 5-year-old preschool children in China. Randomly, the children were placed into a treatment group \( (n = 12) \), who would view the animated cartoon, Bambi, with their parents, and a control group \( (n = 14) \) watched the program by themselves at a child care center. The significance levels of chi-square tests performed using demographic data including gender, parents' education, family income, and daily exposure to television ranged between 0.066 and 0.838, revealing no significant differences between the groups according to this demographic data.

Comprehension and memory tests were used as cognitive measures for this experiment. For comprehension, the children were asked to explain the meanings and significance of certain scenes as they pertained to the general plot. The memory test, a two-pronged measurement, required the children to retell the entire story and to list as many animals from the story as they could remember. The comprehension measurement had a maximum score of 8 and the memory measurement had a maximum score of 10. The combination of these scores was computed as the total cognitive score for this experiment. T-tests revealed that children in the treatment group performed significantly better on memory and overall cognition but not on comprehension than did members from the control group, although members from the treatment group did score higher on all three measurements.

The authors contend that these findings reveal the value of parent-child television co-viewing regarding the cognitive development of the child; however, the small sample
size and a lack of measurement validity and reliability limit the relevance of these findings. While more recent research into the efficacy of adult-child television co-viewing is needed, it is clear that with the use of proper scaffolding techniques, an adult can enhance a child's cognitive development through this medium.

Co-viewing with electronic books. In the digital age, electronic books (e-books) have begun to be used to enhance the emergent literacy of preschool-aged children. Parish-Morris, Mahajan, Hirsch-Pasek, Golinkoff, and Collins (2013) investigated the efficacy of this practice using 165 parent-child dyads with children between the ages of 3- and 5-years. Specifically, the study sought to test the use of parents’ use of dialogic reading and children’s story comprehension. Parent-child dyads were assigned randomly to an e-book reading group, a traditional book group, or a control group. Results indicated that dialogic reading and children’s story comprehension were more robust for the children in the traditional book group. It is conjectured that the lack of dialogic reading affected the lack of children’s story comprehension. In a review of the literature into the efficacy of using e-books with preschool-aged children, Salmon (2013) found that in order for the practice to be most effective with emergent literacy outcomes, interactive features within the e-books and adult interaction were necessary. These conclusions support those found by Korat, Segal-Drori, and Klien (2009).

Potential Misuse of Television

While its supporters extol the benefits of using television to augment the development of young children, there are those who condemn the practice as harmful. This section examines the research indicating that watching television can lead to adverse consequences for children. These consequences may include heightened risk of attention
deficit disorder, decreased toy play, and obesity. In order to understand this criticism, it is useful to examine Piaget's cognitive developmental theory as it relates to a young child's intentional learning.

**Piaget's Cognitive Developmental Theory and intentional learning.** Piaget (1932, 1946) believed play to be an important means for the child to develop socially, emotionally, and cognitively by interacting with the environment. That is, through play, a child constructs much of his/her reality. As children negotiate their environments, their thought is marked by unsophisticated *transductive* logic, moving from incident to incident rather than recognizing chronology or cause and effect. Moving from sensorimotor intelligence into preoperational thought, they become decentered and less egocentric. That is, they are able to focus on more than one characteristic of an object, and they begin to view the world from a variety of perspectives. This as well as the symbolic area of language and images creates illogical and unsystematic thinking, forcing the child to organize and reorganize these thought processes. This reorganization allows the child to create schemas for cognitive development (Piaget, 1964).

Piaget (1961) referred to this generative process as *equilibration* to describe the interaction of maturation, physical experience, and social interaction in the development of the child, which allows for this reorganization. As the child encounters moderately novel experiences, interactions, and thoughts, he/she reacts according to the assimilation/accommodation continuum. Toward the assimilation pole, there is less change because the child is able to incorporate the external world into previous internal structures. That is, with assimilation, the child is able to incorporate the new thought into the internal world without changing that internal world. However, with accommodation,
the child must change his/her thought processes in order to incorporate, or adapt to, the new experience or perspective. This assimilation/accommodation then forces the child to restructure everything he/she previously thought. In Piaget's words, "every new problem provokes a disequilibrium (recognizable through types of dominant errors) the solution of which consists in a re-equilibration, which brings about a new original synthesis of two systems, up to the point of independence" (p. 281). In short, this disequilibrium, or confusion, is a necessary facet of child development, which allows for new and more sophisticated understanding of, and adaptation to, the world and the child's place in it.

With equilibration, a child is often thrust into a state of flux or confusion, and it is a child's natural inclination to attempt to adapt to and understand his/her environment and thoughts in an effort to create normalcy. If that environment is an attractive television program with advertisements, distractors, and little to no educational content, the child's cognition may develop in a manner that is perceived to be disorganized or delayed by many experts.

Piaget's equilibration process, where the child makes sense of his/her world though active thought construction can be linked to the notion of intentional learning, where the young child is a competent individual with complex worldviews (Leggett & Ford, 2013). These authors assert that intentional learning involves the child deciding to commit and persist in learning, using cognitive strategies (Piaget's equilibration process) to develop, and taking responsibility to become an autonomous learner. Tomasello, Carpenter, Call, Behne, and Moll (2005) assert that intentionality is shared, that human cognition relies on the ability to collaborate with others in a social setting. Long, Volk, and Gregory (2007) echo this collaborative aspect of intentionality, using the notion of
syncretism to blend cultural practices into new learning. In a two studies, Gardiner (2013) examined the intentional learning of children ages 3- to 5- years-old with transparent apparatuses (Study 1) and opaque apparatuses (Study 2). The author found that when a toy was placed in plain view of the child, or in transparent apparatuses, children used their own reasoning of causality, but when the apparatuses were opaque, or hid the toy, the children sought the help of the adult to find it. Clearly, it is the opinion of these experts that the intentionality of a child be respected, with the understanding that the sensitive scaffolding of a more experienced learner is also necessary at times (Leggett & Ford, 2013, Vygotsky, 1933). The next section explores the occurrence and influence of television used as the only agent to occupy the child’s attention for long periods of time.

**Television as babysitter.** Throughout the decades, using television as a de facto babysitter has been a point of concern (Beyons & Eggermont, 2014; Evans, Jordan, & Horner, 2011; Gantz & Masland, 1986; Gadberry, 1974). Beyons and Eggermont (2014) used survey data of 844 children between that ages of 6-months and 6-years to ascertain that many parents, even those with higher education, have positive views on the use of television to occupy their children. These positive attitudes, in turn, correlate with increased television viewing by children. In a survey of 60 parent-child dyads with children between the ages of 6- and 13-years-old, Evans et al. (2011) discovered that the majority of both parents and children view the television as a positive and beneficial presence in the home, and that to limit the use of television in the home would cause more conflict between siblings as well as between children and parents, and it would deter parents from completing their work and home obligations. Gantz and Masland (1986) interviewed 325 mothers of children between the ages of 2- and 12-years old,
finding that although most mothers rated television viewing as the least desirable activity for their children, they used the practice extensively as a means to occupy their children. Gadberry (1974) compared the activities during play and television viewing of 22 male children between the ages of 4- and 6-years old. She found that during television viewing, these children displayed significantly less physical activity such as walking, talking, and interacting with the environment than did the children in the free play condition. Further, the children in the television viewing condition, the children displayed more attention shifts.

The American Academy of Pediatricians (AAP) has issued a recommendation that young children not be exposed to any kind of electronic screen including television. In a review of the literature that supports this recommendation, Anderson and Pempek (2005) describe studies with findings that exposure to television may result cognition and language delays as well as attention deficits. Specifically, using the National Longitudinal Survey of Youth with data available for 1278 children age 1 and 1345 children age 3, Christakis et al. (2004) found that exposure to television at those ages is related to attention deficits at age 7. This may be due in part to the prevalence of background noise created by television that can decrease the quality and quantity of parent-child interactions (Kirkorian et al., 2009) as well as decrease focused toy play in young children (Schmidt et al., 2008). Moreover, the sedentary, passive nature of watching television coupled with the consumption of more high density foods while doing so contributes to obesity in young children (Blass et al., 2006).

This criticism is tempered by the content-based hypothesis asserted by Anderson et al. (2001). Here, the authors found that when the television is perpetually on in the
home without regard to content, development may be negatively affected, leading to lower grades, attention problems, or aggression during adolescence, but the consumption of more educational television in childhood exerts a positive effect on grades, creativity, and attitudes toward achievement and aggression in later years. However, Mates and Strommen (1995) assert that *Sesame Street*, the most popular educational television program in history, focuses on phonological awareness to the detriment of the processes, such as actually reading and writing, in which people learn to become literate. Further, Schmidt et al. (2007) found through two experiments that young children respond more accurately to direct experience with real human beings than they do through mediated experience with televised beings.

**Maximizing Reading Instruction**

This part of the literature review focuses on research into techniques used to maximize emergent literacy in preschool children. First, the skills most likely to advance conventional literacy are identified and discussed. Next, there is a discussion regarding research into the merits of interactive reading in general. This is followed by examination of the research indicating that two specific interactive reading techniques, dialogic reading and explicit print referencing, produce beneficial effects on emergent literacy.

**Identification of Measures.** When embarking on a study to ascertain whether an educational television intervention can be useful in helping preschool children to become literate, it is essential to identify and focus on the skills and concepts proficiency at which are most likely to foster conventional literacy in this population. There is considerable research indicating that phonological awareness (PA) and alphabet knowledge (AK) in preschool children are strong predictors of subsequent conventional literacy (Anthony &
Lonigan, 2004; Catts et al., 2001; Lonigan et al., 2000; NICHD, 2000; Schatschneider et al. 2004; Whitehurst & Lonigan, 1998). Some argue that PA and AK are causal factors in becoming literate (Adams, 1990; Gosawami, 2002; Lonigan, 2006; Phillips & Torgesen, 2006; Richgels, 2002).

The National Early Literacy Panel (2008) was established to analyze, synthesize, and summarize the extant research regarding literacy development in children from birth to age 5 in order to make recommendations for educational policy and practice. To ensure the use of high-quality research, the panel collected only peer-reviewed studies using empirical data from English language academic journals for this purpose. One area of focus for this undertaking was to identify which emergent literacy skills were related to later conventional literacy skills such as reading, writing, and spelling. The Panel identified PA and AK as two of the emergent literacy skills found to be predictive of these later conventional literacy outcomes.

The literature search conducted by the Panel yielded 110 studies involving 13,426 children assessing zero-order correlations of PA on conventional literacy skills and 87 studies involving 12,207 children assessing zero-order correlations of AK on the conventional literacy skills of decoding, reading comprehension, and spelling. For decoding, the meta-analyses revealed that children's PA produced a moderate relationship of 0.40 averaged across 69 studies of 8,443 children and children's AK revealed a strong relationship of 0.50 averaged over 52 studies of 7,570 children. For reading comprehension, children's PA yielded a moderate relationship of 0.44 averaged across 20 studies involving 2,461 and children's AK produced a moderate relationship of 0.48 across 17 studies with 2,038 children. For spelling, children's PA revealed a
moderate relationship of 0.40 across 21 studies with 2,522 children and children's AK produced a strong relationship of 0.54 across 18 studies with 2,619 children. Further, multivariate studies revealed that both PA and AK were significant predictors of decoding, reading comprehension, and spelling after other important variables such as age, gender, SES, and other literacy predictors were controlled for. The Panel members contend that because these findings are the result of such a large number of studies involving a large number of children, these substantial findings are highly reliable.

**Interactive Reading.** Since the publication of *The Read Aloud Handbook* (Trelease, 1979), the notion that an adult should read to a child at least 20 minutes per day has become popular. A recent entry in the Google search engine with the words “read to children twenty minutes a day” revealed over 285 million results; however, empirical evidence from peer-reviewed journals revealing salutary effects for children resulting from simply reading to them for a particular frequency is difficult to obtain. Conversely, there is a wealth of empirical evidence indicating that it is the interaction between adult and child during reading that helps a child develop literacy (Debruin-Parecki, 2009; Whitehurst et al., 1988; Piasta et al., 2012). Debruin-Parecki (2009) asserts that “[i]t is primarily through interactive dialogue that children gain comprehension skills, increase understandings of literacy conventions, and are encouraged to enjoy reading” (p. 386). Two types of interactive reading techniques will be explored in this experiment: they are dialogic reading and explicit print referencing.

**Dialogic Reading.** Whitehurst et al. (1988) conducted a study finding that dialogic parent-child reading can exert a positive effect on a child’s emergent language. This study focused exclusively on 2- and 3-year-old-children from intact, middle class
families. The authors cite the dearth of empirical evidence suggesting a causal relationship between reading to preschool children and subsequent growth of emergent literacy as the impetus for their study. The authors set forth to test the theory that simply reading to a child is not as effective as reading with a child using dialogic reading techniques in order to increase child responses.

It is important to note that dialogic reading is not a general term for reading interactively with a child. Instead, dialogic reading is a specific program, in which parents are trained to use evocative techniques with few questions which can be answered with a yes or a no. Parents also learn to provide children with maximally informative feedback including expansions and corrective modeling. Finally, parents are trained in progressive change that is sensitive to the child’s developing abilities.

Dialogic reading is a technique adults can use to engage children in meaningful reading experiences (Whitehurst, 1988; Whitehurst & Lonigan, 1998; Zevenbergen & Whitehurst, 2003). This technique is comprised of the PEER sequence, which includes the use of CROWD prompts. The entire PEER sequence, which includes the adult (1) prompting the child to speak using one of the CROWD prompts, (2) evaluating the response, (3) expansion of the response by rephrasing or adding information to it, and (4) repetition of the prompt, should be used on each page the adult/child dyad reads together (Zevenbergen & Whitehurst, 2003). Table 1 displays the components for each letter of the dialogic reading PEER sequence.
Table 1

**Components and explanations of the PEER Sequence**

<table>
<thead>
<tr>
<th>Letter of Acronym</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>Prompt the child to speak</td>
</tr>
<tr>
<td>E</td>
<td>Evaluate the response</td>
</tr>
<tr>
<td>E</td>
<td>Expand the response</td>
</tr>
<tr>
<td>R</td>
<td>Repeat the Prompt</td>
</tr>
</tbody>
</table>

During the PEER sequence, the adult engages the child with one of the CROWD prompts, a variety of questions and comments designed to elicit responses from the child while reading. These prompts include 1) completion prompts, 2) recall prompts, 3) open-ended prompts, 4) wh-prompts, and 5) distancing prompts. More detailed descriptions of these prompts can be found in Table 2.

Table 2

**Components and explanations of the CROWD Dialogic Reading Acronym**

<table>
<thead>
<tr>
<th>Letter of Acronym</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Completion prompts ask children to fill the blank.</td>
</tr>
<tr>
<td>R</td>
<td>Recall prompts ask children to remember specific details.</td>
</tr>
<tr>
<td>O</td>
<td>Open-ended prompts ask the children to explain or describe.</td>
</tr>
<tr>
<td>W</td>
<td>Wh-prompts ask who, what, when, where, why, and how.</td>
</tr>
<tr>
<td>D</td>
<td>Distancing prompts ask children to relate the stories to experiences outside the story.</td>
</tr>
</tbody>
</table>
The subjects for the Whitehurst et al. (1988) seminal study were 30 children between ages 21 and 35 months, all of whom tested in the normal range of skills for their age. The children were from intact middle-class families, whose parents volunteered for the study as a result of an advertisement in the local newspaper. These subjects were divided randomly between experimental and control groups. Parents in the experimental group were trained in dialogic reading during a 4-week program, and parents in the control group were instructed to read to their children as usual. All families were required to audiotape the reading sessions 3 to 4 times per week for 4 weeks. At the end of the 4 weeks, all children were administered 3 post-tests: the verbal expressive subscale of the Illinois Test of Psycholinguistic Abilities (ITPA), the Peabody Picture Vocabulary Test-Revised (PPVT), and the Expressive One Word Picture Vocabulary Test (EOWPVT). The children were re-tested 9 months later. To ensure fidelity and reliability, coders blind to family assignment transcribed the audiotapes, coding 14 categories of parent behavior and 3 categories of child behavior. An additional observer scored 12 tapes at random. The authors conducted an Analysis of Variance (ANOVA), finding intra-class correlation across 17 categories was a quite strong .86.

Conducting simultaneous one-tailed t tests, the authors found that the experimental group outperformed the control group significantly for the ITPA and the EOWPVT. The children in the experimental group outperformed the control group on the PPVT, but not significantly, and group differences for all tests diminished in significance at 9 months. Regarding practical implications, the authors found the potential for substantial positive effects on children's language development through parent training. Theoretically, the authors assert that these findings provide a new
perspective for the pervasive conclusion that simply reading to a child is the single most important factor in a child’s language development, and that these findings suggest the importance of a child’s active role in responding during reading.

These findings, however, are tempered by significant limitations to the study. First, the small sample size ($n = 30$) and lack of diversity in the sample limit the ability to generalize these findings to the population at large. Next, sampling bias may have occurred since the participants volunteered because of an advertisement in the local newspaper. There is also the possibility of a Hawthorne effect, where the participants may be inspired to try harder because they are a part of a special program. There could have been pre-existing differences in the language development of each child, skewing the results. Finally, a lack of control over the parents’ abilities to be sensitive to progressive change in the child’s developing abilities inhibits the intervention from providing uniform instruction.

Since the completion of this experiment, various studies have sought to replicate these findings using children of differing age and socio-economic statuses (SES). Mol et al. (2008) conducted a meta-analysis of these studies to ascertain whether or not dialogic parent-child reading can exert an appreciable effect on the emergent literacy of preschool children. In order to locate studies replicating the seminal study conducted by Whitehurst et al. (1988), Mol et al. (2008) searched the following data bases: Psychological Abstracts Online, Education Resources Information Center, Dissertation Abstracts Online, and Silver Platter’s Information Retrieval System. To be considered for this meta-analysis, studies had to reflect dialogic reading programs, include participants with no mental, physical, or sensory handicaps, contain outcome variables that were objective measures
of expressive and/or receptive vocabulary, be reported in English, and could be either published or unpublished. This search resulted in a total of 16 studies including 626 children from various demographic backgrounds ranging in age from 2- to 6-years-old.

Measurements of expressive vocabulary included the Expressive One-Word Picture Vocabulary Test, the Illinois Test of Psycholinguistic Abilities, and the mean and/or total length of utterances during sessions (MLU). Measurements of receptive vocabulary included the Peabody Picture Vocabulary Test and the Bracken Basic Concept Scale. The meta-analysis computed and compared the mean effect size of these measures for the dialogic intervention groups and the reading-as-usual control groups.

Mol et al. (2008) reported a significant but small effect size for all 16 studies. Interpreting the data, the authors found that dialogic reading is more effective with expressive than receptive vocabulary, that older children (4- and 5-years-old) are affected less by dialogic reading than are younger children, and that groups at-risk for language and literacy problems benefited less than groups not at-risk. The authors note that older children may have benefited less in these studies because the techniques used in dialogic reading may have been too simplistic for that age group. Additionally, the at-risk children may not have benefited because their reading skill set had not matured enough to take full advantage of dialogic reading. Mol et al. found that the results of the meta-analysis suggest, in accordance with the findings of the seminal study performed by Whitehurst et al. (1988), dialogic reading may be useful in developing the language of young children so that they are ready to learn when they enter school.

**Explicit Print-Referencing.** While dialogic reading techniques focus on concept of story, other research has explored the efficacy of using explicit print-referencing to
enhance the emergent literacy of preschool children (Hammett et al., 2003; Justice et al., 2002; Justice & Ezell, 2002; 2004; Lovelace & Stuart, 2007; Piasta et al., 2012). Explicit print-referencing includes using verbal and non-verbal techniques to draw the reader’s attention to specific letters, words, and print conventions. This technique calls for parents, teachers, and clinicians to ask questions, provide prompts, and point to specific print and tracking so that the child will attend to the features of print. Research suggests that explicit print-referencing techniques are important because young children rarely attend to or discuss letters and words while experiencing picture books with adults or by themselves (Evans et al., 2009; Evans & Saint-Aubin, 2005; Justice et al., 2005).

Lovelace and Stewart (2007) found that the use of explicit print referencing techniques could be implemented to facilitate the emergent literacy, specifically print awareness across 20 measures, in 4- and 5-year-old children with language delays. Similarly, the use of an explicit print referencing has been an effective intervention improving print awareness of 3- to 5-year-old children considered to be at-risk for language delays (Justice & Ezell, 2002). Both studies are limited by the use of small samples. Recent studies, however, with larger sample sizes support the findings of these earlier studies (Justice et al., 2010; Piasta et al., 2012).

Justice et al. (2009; 2010) conducted Project STAR (Sit Together and Read) in Virginia and Ohio to study the effect of using explicit print-referencing in preschool classroom settings to enhance emergent literacy. Eighty-four preschool teachers from two sequential cohorts were assigned to 3 random conditions during the 2005-2006 and 2006-2007 school years. Conditions involved whole-class read-alouds employing (1) high-dose
print-referencing, (2) low-dose print-referencing, and (3) a comparison condition excluding print-referencing.

This particular study (Justice et al., 2010) focused on the discrepancy of emergent literacy outcomes between the high-dose print referencing condition and the comparison condition because it would provide the most rigorous test of the effects of print-referencing. The sample included 379 children (175 male, 204 female) between 3- and 5-years-old from 59 classrooms assigned randomly to each condition. Two-hundred-one children participated in the high-dose print-referencing condition, and 178 children took part in the comparison condition.

Although an average of six children per classroom was chosen at random to be tested, all children in each classroom participated in the whole-class read-alouds. In both conditions, these read-alouds were conducted four times per week for 30 weeks using the same storybooks (provided to each teacher by the research team) in the same order for a total of 120 read-alouds. The singular difference between conditions was that teachers in the high-dose print-referencing condition were trained in, and used, print-referencing techniques during the read-alouds. This training included (1) a 1-day workshop prior to the beginning of the academic year, (2) a 3-hour follow-up workshop midway through the program, (3) a manual, *Engaging Children with Print* (Justice & Sofka, 2005), which included specific print-referencing techniques and information about program scope, sequence, and frequency, (4) specific objectives for each story, and (5) written feedback on their use of print-referencing techniques (teachers videotaped their reading sessions every two weeks for a total of 15 videos) at weeks 8 and 22.
In order to assure that teachers and children had no contact with the reading material before intervention, each book was sealed in an envelope, and after the four sessions, teachers were asked not to read these specific books to the children again to ensure fidelity of exposure. The teacher videos were used to ensure fidelity of treatment. Trained coders, blind to the condition to which a teacher was assigned, used a fidelity coding catalogue (FCC) developed for this study to ascertain the frequency with which teachers used the specific print-referencing objectives as well as print-referencing techniques in general. The specific objectives were coded as either yes or no, and the general techniques were coded for the raw frequency with which four categories, (1) print organization, (2) print meaning, (3) letters, and (4) words, were referenced. The authors report statistically significant and large differences in the number of verbal print references between the two groups of teachers ($d = 0.96, 1.05, \text{and } 0.99$) for the fall (week/book 1), the winter (week/book 14), and the spring (week/book 30) sessions. These findings, the authors assert, indicate that children in the high-dose print-referencing condition were exposed to a considerably larger amount of verbal print-referencing during read-alouds than were children in the comparison condition during the 30-week intervention.

The measures for this study were grouped into two general categories, *language ability* and *print knowledge*. *Language ability* was derived using the composite score of the Clinical Evaluation of Language Fundamentals—Preschool: 2 (CELF—P:2; Wiig, Secord, & Semel, 2004). This composite score is composed of three subtests of the CELF—P:2, (1) Sentence Structure, (2) Word Structure, and (3) Expressive Vocabulary. *Print knowledge* was derived by using a composite based on the combination of (1) the
Preschool Word and Print Awareness Test (PWPA; Justice & Ezell, 2001), (2) the Phonological Awareness Literacy Screening for Preschool (PALS—PreK), Upper-Case Alphabet Recognition subtest (Invernizzi, Sullivan, Meier, & Swank, 2004), and (3) the PALS—PreK Name Writing subtest (Invernizzi et al., 2004). These tests were administered in the fall (pre-intervention) and in the spring (post-intervention). Results indicate no difference between conditions for the general category language ability; however, children in the high-dose print-referencing condition outgained children in the comparison condition in print knowledge by .177 points (Cohen’s $d = 0.21$) between fall and spring measurements. These results indicate, the authors assert, that with modest adjustments preschool classroom teachers can positively affect the print knowledge of their students, thus providing them with emergent literacy skills they will need for future academic success.

Piasta et al. (2012) used Project STAR in a longitudinal study designed to ascertain the effects of explicit print-referencing on later literacy skills. During the 2004-2005 or 2005-2006 academic years, 550 4-year-old children were assigned randomly to one of three conditions (high-dose Project STAR, low-dose Project STAR, regular reading program) to participate in a 30-week shared book reading program in their preschool classrooms ($n = 85$). All children experienced the same 30 commercially available books in the same order.

Children in the high-dose condition participated in four sessions per week for a total of 120 sessions, and children in the low-dose condition participated in two sessions per week for a total of 60 sessions. The two Project STAR conditions were identical in all other ways. Teachers were trained in similar fashion as those Project STAR teachers from
the Justice et al. (2010) experiment. Children in the regular reading condition participated in the same number of sessions as those in the high-dose Project STAR condition, but the teachers of these classrooms were trained to focus on the general importance of shared-book reading instead of explicit print-referencing strategies.

Children were assessed up to four times over the 3-year period of this experiment. Two emergent literacy skills (AK and PA) were assessed at the beginning and the end of the preschool year, and literacy skills were assessed 1-year post intervention (after kindergarten) and 2-years post intervention (after first grade). AK was assessed using the Uppercase Alphabet Recognition subtest of the Phonological Awareness Literacy Screening for Preschool (Invernizzi, Sullivan, Meier, & Swank, 2004), and PA was assessed using the Rhyming subtest from Get It, Got It, Go! (GGG; http://ggg.umn.edu). Literacy skills were assessed at both post interventions using the Letter-Word Identification subtest, the Spelling subtest, and the Comprehension subtest of the Woodcock-Johnson Tests of Achievement III (Woodcock, McGrew, & Mather, 2001).

Results indicated that children participating in the high-dose Project STAR condition outperformed children participating in the regular reading condition in word reading, spelling, and comprehension at the 1-year post intervention assessment. Children from the low-dose Project STAR scored higher on word reading and spelling than did those from the regular reading condition, but these results were not statistically significant. There were no statistically significant differences between the outcomes for high- or low-dose Project STAR conditions at 1-year post intervention assessments.

At the 2-year post intervention assessments, children from the high-dose STAR condition scored higher on word reading, spelling, and comprehension than did the
regular reading condition, and they displayed significantly higher outcomes than did children from the low-dose STAR condition on word reading and comprehension assessments. Children in the low-dose STAR condition had significantly higher scores on spelling than did children from the comparison condition, but they did not have significantly higher scores on word reading or comprehension outcomes. Consistent with the findings of Justice et al. (2010), post hoc analyses found no significant differences in conditions for language ability using the Peabody Picture Test-IV. The authors assert that the findings of this experiment suggest a causal link between using explicit print-referencing techniques with preschool children with later literacy outcomes.

**Chapter Summary**

This chapter has explored the research into the efficacy of using educational television to enhance the emergent literacy of preschool children. Although the use of television with children has been criticized in a number of areas, evidence suggests that specific programming focusing on educational content can exert a positive influence on children, and that this positive influence can be enhanced if content is viewed in the presence of an adult, who interacts with the child. Research into the efficacy of shared book reading, specifically dialogic reading and explicit print-referencing, has indicated that children’s emergent literacy has been enhanced when scaffolding techniques are employed. This study will address the gap in the literature resulting from the lack of research into the application of scaffolding or applying interactive reading techniques to enhance the child viewing experience of educational television. Hence, this study will address the following research question: Do students who receive scaffolding in the form of interactive reading techniques while viewing educational television perform better on
measures of emergent literacy, specifically alphabet knowledge (AK) and phonological awareness (PA), than do children who view educational television with no scaffolding? Chapter III will outline the methodology of applying shared book reading techniques to the viewing of educational television aimed at enhancing the emergent literacy of preschool children.
Chapter III: Methods

Introduction and Chapter Overview

This chapter presents a method to determine the effects interactive reading techniques such as dialogic reading and explicit print referencing, combined with viewing educational television, exert on the emergent literacy of preschool children. First, the participants will be described, followed by a listing of the apparatus and materials needed to complete this experiment. Next, the measures for emergent literacy, specifically phonological awareness (PA) and alphabet knowledge (AK) will be described. Then, the procedure for this experiment, a replication of the procedure used by Justice et al., (2009), Justice et al., (2010) and Piasta et al. (2012), will be explained in detail, followed by a description and explanation of the data collection and analysis procedures.

Participants

Child participants. This study included a convenience sample of 19 preschool children between the ages of 31 and 44 months, who attend a child learning and research center located in a Mid-Atlantic urban locale. This center is a preschool environment, where university faculty and students work with children to enhance academic, social, and emotional skills. Table 3 provides a detailed description of the demographic makeup of the preschool children in the intervention group. The original sample included 26 preschool children. This attrition will be described more thoroughly in the Limitations section of the Discussion chapter. The mean age in months for the intervention group \( n = 8 \) at the beginning of the study was 40.75, (SD = 3.20). Six participants were white (75.0 %), one was Asian (12.5 %), and one was Middle Eastern (12.5 %). Seven participants (87.5 %) were female. Data regarding (1) level of maternal education, (2) level of in-
home reading with an adult, (3) level of in-home viewing of educational television, and (4) level of in-home co-viewing of educational television was gathered using the Interactive Reading Parent Survey (see Appendix A) prior to this study's intervention.

Five mothers (62.5 %) had earned graduate degrees, while three mothers (37.5 %) had earned bachelor's degrees. Six children (75 %) read between three and five hours per week with an adult, one child (12.5 %) read less than one hour per week with an adult, and one child (12.5 %) read more than five hours per week with an adult. Five children (62.5 %) viewed educational television alone between three and five hours per week, one child (12.5 %) viewed educational television alone between one and three hours per week, and two children (25 %) viewed educational television alone more than five hours per week. Five children (62.5 %) viewed educational television with an adult between one and three hours per week, two children (25 %) viewed educational television with an adult between three and five hours per week, and one child (12.5 %) viewed educational television with an adult more than five hours per week.
Table 3

*Characteristics of Intervention Group Preschool Students*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percentage</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total n</strong></td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age (in months, at beginning of study)</strong></td>
<td></td>
<td>40.75</td>
<td>3.20</td>
<td>36-44</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>12.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle Eastern</td>
<td>1</td>
<td>12.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>6</td>
<td>75.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>87.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
<td>12.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maternal education (highest level)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school diploma</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school diploma/equivalent</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-year college degree</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>3</td>
<td>37.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate degree</td>
<td>5</td>
<td>62.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not reported</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Child’s level of in-home reading with an adult</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than one hour per week</td>
<td>1</td>
<td>12.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>-------</td>
<td>-----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between one and three hours</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between three and five hours</td>
<td>6</td>
<td>75.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than five hours</td>
<td>1</td>
<td>12.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Child's level of in-home viewing of educational television alone**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Less than one hour per week</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Between one and three hours</td>
<td>1</td>
<td>12.5</td>
</tr>
<tr>
<td>Between three and five hours</td>
<td>5</td>
<td>62.5</td>
</tr>
<tr>
<td>More than five hours</td>
<td>2</td>
<td>25.0</td>
</tr>
</tbody>
</table>

**Child's level of in-home viewing of educational television with adult**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Less than one hour per week</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Between one and three hours</td>
<td>5</td>
<td>62.5</td>
</tr>
<tr>
<td>Between three and five hours</td>
<td>2</td>
<td>25.0</td>
</tr>
<tr>
<td>More than five hours</td>
<td>1</td>
<td>12.5</td>
</tr>
</tbody>
</table>

Table 4 presents parallel data for the preschool children in the control group. The mean age in months for the control group (n = 11) at the beginning of the study was 33.91 (SD = 2.63). Six participants were white (54.5 %), two were Asian (18.2 %), one was African American (9.1 %), one was Middle Eastern (9.1 %), and one was of mixed race (9.1 %). Eight participants (72.7 %) were male. Four mothers (36.4 %) had earned graduate degrees, four mothers (36.4 %) had earned bachelor's degrees, and one mother (9.1 %) had earned a two-year degree. Four children (36.4 %) read between three and five
hours per week with an adult, four children (36.4%) read between one and three hours per week with an adult, and one child (12.5%) read less than one hour per week with an adult. Five children (45.5%) viewed educational television alone between three and five hours per week, and four children (36.4%) viewed educational television alone between one and three hours per week. Seven children (63.6%) viewed educational television with an adult between one and three hours per week, and two children (18.2%) viewed educational television with an adult between three and five hours per week. The parents of two children (18.2%) did not respond to the Interactive Reading Parent Survey. These children were included in the ANCOVA including only the Pre-IGDIs and Pre-PALS as covariates, but since the data needed for the ANCOVA with age, level of maternal education, level of in-home reading, level of in-home viewing of educational television, and level of in-home co-viewing of educational television as covariates was missing, they were excluded from that ANCOVA.
Table 4

*Characteristics of Control Group Preschool Students*

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Percentage</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total n</strong></td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age (in months, at beginning of study)</strong></td>
<td></td>
<td>33.91</td>
<td>2.63</td>
<td>31-38</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>1</td>
<td>9.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>2</td>
<td>18.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle Eastern</td>
<td>1</td>
<td>9.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed Race</td>
<td>1</td>
<td>9.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>6</td>
<td>54.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td>27.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>8</td>
<td>72.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maternal education (highest level)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school diploma</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school diploma/equivalent</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-year college degree</td>
<td>1</td>
<td>9.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>4</td>
<td>36.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate degree</td>
<td>4</td>
<td>36.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not reported</td>
<td>2</td>
<td>18.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Child's level of in-home reading with an adult</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than one hour per week</td>
<td>1</td>
<td>9.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between one and three hours</td>
<td>4</td>
<td>36.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between three and five hours</td>
<td>4</td>
<td>36.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than five hours</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Reported</td>
<td>2</td>
<td>18.2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Child’s level of in-home viewing of educational television alone

<table>
<thead>
<tr>
<th>None</th>
<th>0</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than one hour per week</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Between one and three hours</td>
<td>5</td>
<td>45.5</td>
</tr>
<tr>
<td>Between three and five hours</td>
<td>4</td>
<td>36.4</td>
</tr>
<tr>
<td>More than five hours</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Not Reported</td>
<td>2</td>
<td>18.2</td>
</tr>
</tbody>
</table>

Child’s level of in-home viewing of educational television with adult

<table>
<thead>
<tr>
<th>None</th>
<th>0</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than one hour per week</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Between one and three hours</td>
<td>7</td>
<td>63.6</td>
</tr>
<tr>
<td>Between three and five hours</td>
<td>2</td>
<td>18.2</td>
</tr>
<tr>
<td>More than five hours</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Not Reported</td>
<td>2</td>
<td>18.2</td>
</tr>
</tbody>
</table>

**Teachers.** The two teachers participating in this experiment work at the preschool center. They are similar in race/ethnicity and education level. Each is listed as White,
non-Hispanic, and each has earned a Master's Degree in Early Childhood Education.

Preschool teaching experience ranges between one half year and two and one half years.

A description of the teacher characteristics appears in Table 5. The teacher in the intervention group was trained in interactive reading techniques applied to educational television.

Table 5

*Characteristics of Teachers in the Preschool Center*

<table>
<thead>
<tr>
<th>Pre-K Teaching</th>
<th>Race</th>
<th>Education</th>
<th>Experience in Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention Group Teacher</td>
<td>White</td>
<td>Graduate Degree</td>
<td>2.5</td>
</tr>
<tr>
<td>Control Group Teacher</td>
<td>White</td>
<td>Graduate Degree</td>
<td>1.5</td>
</tr>
</tbody>
</table>

**Setting, Apparatus, and Materials**

The preschool center provides education and care for children between the ages of 8 weeks through 4 years. The preschool center is a comprehensive facility, where each lead teacher has a Master's Degree in Early Childhood Education, assisted by graduate level practicum students from the early childhood or elementary education departments within the university. The staff collaborates with the various departments within its university affiliated education department to apply the most recent research to the instruction and care they provide the children. Careful planning by this staff allows the
child to explore and play while developing socially, cognitively, emotionally, and physically.

Intervention and control groups viewed eight episodes of *Word World* from Season 5 entitled (1) Bed Bugs, (2) Bear's Bed Sled, (3) Totally Terrific Duck, (4) Welcome Home, Duck, (5) The Really Red Ruby, (6) Firefighters to the Rescue, (7) Race to the Spaceship, and (8) Sandbox Surprise. See Table 4 for the implementation schedule. *Word World* is an educational television program focusing on emergent literacy concepts such as print awareness, phonological awareness, alphabet knowledge, and comprehension, and it is partially funded by the U. S. Department of Education. *Word World* stars animated animals, whose bodies are comprised of the words that spell the type of animal they are. For instance, a duck has a "D" for his head, and the "UCK" are shaped to form his body. In each episode, these talking word-animals experience adventures, where they must build words correctly in order to accomplish tasks. When the animals correctly build that episode's word or words, these words morph into the things they represent, and the animals can use them. Phonological awareness, alphabet knowledge, and vocabulary awareness are stressed as a result. This educational television program was chosen for this intervention because of its prominent use of systematic phonics, alphabet, and vocabulary instruction through a colorful, imaginative medium. A perusal of many episodes of *Word World* revealed that each show provides a language-rich environment for the enhancement of emergent literacy, so the researcher's best judgment was used in selecting particular episodes.
Measures

The children’s emergent literacy skills, specifically phonological awareness (PA) and alphabet knowledge (AK) were assessed before and after the intervention by a trained examiner. Children were assessed prior to intervention to detect if any had abnormal delays. Any child exhibiting scores on either test two or more standard deviations below the mean would have been excluded from the study, but since all children taking pre-tests scored within this range, no children had to be excluded from the study. This is explained more thoroughly in the Results chapter. Also, these pre-assessments were used as covariates in the study. These assessments, conducted post intervention, also served as the study’s outcome measures. The Rhyming subtest of Individual Growth and Development Indicators (IGDIs), previously referred to as Get it, Got it, Go!, was used to assess PA (McConnell et al., 2002; Missall, 2002), and the Uppercase Alphabet Recognition subtest of the Phonological Awareness Literacy Screening for Preschool (PALS-PreK; Invemizzi et al., 2004) was used to assess AK. Both assessments were used to measure emergent literacy in a recent study (Piasta et al., 2012).

Rhyming IGDIs. For the Rhyming IGDIs (Missall, 2002), children are presented a series of cards, each containing four pictures. The stimulus picture is placed at the top of the card, and located under it are three pictures representing one correct answer and two incorrect answers. The examiner points to the picture at the top of the card, says its name, and then points to the other three pictures saying their names. The examiner asks the child to point to the bottom picture that sounds the same as the top picture. This occurs for two minutes with the child’s score being the number of correct responses.
Test-retest reliability for this assessment has been measured as $r > .83$ (Missall & McConnell, 2004).

The Rhyming IGDI has been found to correlate positively with other measures of phonological awareness and emergent literacy such as the Peabody Picture Vocabulary Test- Third Edition (PPVT-3; $r = .56$ to $.62$, $p < .05$), Concepts about Print (CAP; $r = .54$ to $.64$, $p < .01$) and Test of Phonological Awareness (TOPA; $r = .44$ to $.62$; Missall and McConnell, 2004). An assessment of concurrent validity indicated moderate to high correlations with the Picture Naming IGDI ($r = .46$ to $.63$, $p < .01$) and the Alliteration IGDI ($r = .43$; Missall, 2002). Concurrent validity has also been established with DIBELS Letter Naming Fluency ($r = .48$ to $.59$) and Onset Recognition Fluency ($r = .44$ to $.68$; McConnell et al., 2002; Missall, 2002)

**PALS-PreK.** The Uppercase Alphabet Recognition subtest of the Phonological Awareness Literacy Screening for Preschool (PALS-PreK) is an assessment used to determine alphabet knowledge. The examiner presents all 26 uppercase letters of the alphabet in random order and asks the child to name each. The child’s score is the number of letters correctly named. For this assessment, Cronbach’s alpha is relatively high ($\alpha = .84$), and inter-rater reliability is $r = .99$.

The PALS-PreK has been found to be a valid assessment. Regarding construct validity, a factor analysis produced one factor with an eigenvalue of 2.9, accounting for 34% to 76% of variance in scores across all tasks. Content validity for the AK portion of the PALS-PreK was established by including all 26 letters of the alphabet in the assessment. For criterion-related validity (concurrent validity), the correlation between the PALS-PreK tasks and the *Test of Awareness of Language Segments Part A* was
medium-low but significant ($r = .41, p < .01; n = 87$). Between the PALS-PreK and the *Child Observation Record*, the correlation was medium–high and significant ($r = .71, p < .01; n = 70$). Between the PALS-PreK and the *Test of Early Reading Ability-3*, the correlation was medium-high and significant ($r = .67, p < .01; n = 73$). As for predictive validity, the correlation of scores on the PALS-PreK and the PALS-K was found to be moderately high and significant ($r = .53, p < .01$). Multiple regression analyses revealed that overall PALS-PreK significantly predicted variance in spring performance on PALS-K ($R^2 = .305$). Moreover, the correlation between the PALS-PreK and the PALS 1–3 was found to be moderately high and significant ($r = .56, p < .01$). Here, multiple regression analyses indicated that overall PALS-PreK significantly predicted variance in fall first-grade performance PALS 1–3 ($R^2 = .342$) (Invernizzi et al., 2004).

**Procedure**

Over a span of six weeks, a quasi-experimental design was employed to ascertain the effectiveness of employing scaffolding using interactive reading techniques while viewing educational television on the emergent literacy of preschool children. The two classes of preschool children ($n = 8; n = 11$) were assigned randomly to an intervention group and a control group. Prior to any in-class viewing of *Word World*, all participants took the Rhyming subtest of Individual Growth and Development Indicators IGDIs (Missall, 2002) and the Uppercase Alphabet Recognition subtest of the Phonological Awareness Literacy Screening for Preschool (Invernizzi et al., 2004) as screening tests for PA and AK, respectively. Informed consent was obtained from parents before students participated in this study. The teacher working with the intervention group used interactive reading techniques to engage students with one episode of *Word World*
(approximately 12.5 minutes in duration) three times per week. Refer to Table 6 for the implementation schedule. Because interactive reading techniques added time spent viewing each episode, the intervention groups spent up to 25 minutes per episode. The teacher associated with the intervention group received training in these processes before and during intervention. The control group teacher showed the same episodes of *Word World* to her students, but she received no training in the use of interactive reading techniques. She was instructed to conduct class as she would normally during the viewing of videos. Because *Word World* is recommended by the U. S. Department of Education, viewing the program without interactive reading techniques offered valid educational opportunities. Control group students did not experience the added benefit of interactive reading techniques to supplement the material. Upon completion of the intervention, each student re-took the IGDI and the PALS.
Table 6

*Interactive reading intervention implementation schedule for the 6-week period*

<table>
<thead>
<tr>
<th>Episode Name</th>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed Bugs</td>
<td>Monday, April 21</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Bear’s Bed Sled</td>
<td>Wednesday, April 23</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Totally Terrific Duck</td>
<td>Friday, April 25</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Welcome Home, Duck</td>
<td>Monday, April 28</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>The Really Red Ruby</td>
<td>Tuesday, April 29</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Firefighters to the Rescue</td>
<td>Thursday, May 1</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Race to the Spaceship</td>
<td>Tuesday, May 6</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Sandbox Surprise</td>
<td>Thursday, May 8</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Bed Bugs</td>
<td>Friday, May 9</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Bear’s Bed Sled</td>
<td>Monday, May 12</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Totally Terrific Duck</td>
<td>Tuesday, May 13</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Welcome Home, Duck</td>
<td>Wednesday, May 14</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>The Really Red Ruby</td>
<td>Monday, May 19</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Firefighters to the Rescue</td>
<td>Wednesday, May 21</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Race to the Spaceship</td>
<td>Thursday, May 22</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Sandbox Surprise</td>
<td>Monday, May 26</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Bed Bugs</td>
<td>Wednesday, May 28</td>
<td>11:00 – 11:25</td>
</tr>
<tr>
<td>Bear’s Bed Sled</td>
<td>Friday, May 30</td>
<td>11:00 – 11:25</td>
</tr>
</tbody>
</table>
**Teacher training.** The teacher working with the intervention group was trained in explicit print-referencing techniques. Prior to intervention, the teacher participated in a 3-hour training workshop led by the researcher as well as written feedback on a weekly basis during the intervention. This workshop was four-pronged: first, the teacher received instruction regarding (1) the importance of emergent literacy for later conventional literacy, (2) the use of educational television to enhance emergent literacy, (3) the theoretical background underlying the importance of engaging children by reading *with* them as opposed to reading *to* them, and (4) the use of specific interactive reading techniques such as dialogic reading and explicit print-referencing to engender this engagement.

Next, the teacher viewed demonstrations of these interactive reading techniques using dialogues created from combining the explicit print-referencing techniques of Project STAR (Justice et al., 2009; Justice et al., 2010; Justice & Sofka, 2010; Piasta et al., 2012) with episodes of the educational television program *Word World*, which will be used during the intervention. See Appendix C for examples. After viewing the demonstrations, the teacher participated in sessions where she practiced using techniques, and received feedback on her performance. The teacher was able to use these dialogues as references during the intervention. During the experiment, weekly meetings between experimenter and the teacher in the intervention group were used to reinforce the training experienced during the workshops. Here, the teacher viewed taped recordings of her sessions in order to receive feedback designed to help her improve upon her techniques. The intervention group teacher was provided a copy of *Engaging Children with Print: Building Early Literacy Skills through Quality Read-Alouds* (Justice and Sofka, 2010) as
training material during the workshops and reference material during the intervention.
This book provides systematic details of the training in explicit print-referencing used by
Justice et al., (2009), Justice et al., (2010) and Piasta et al. (2012), the three studies on
which the procedure of this experiment are based. The teacher in the control group was
provided no training, and she was instructed to conduct instruction as she would normally
during the viewing of any video medium. See Appendix A for the detailed teacher
training schedule.

The interactive reading technique of explicit print referencing involves engaging
children directly with the four instructional domains of print knowledge by use of verbal
and non-verbal references. Verbal references include (1) questions about print, (2)
comments about print, and (3) requests about print. Nonverbal references include (1)
pointing to print (e.g., the teacher pointing at a specific letter or word) and (2) tracking
print (e.g., the teacher running a finger through a sentence as it is read) (Justice & Ezell,
2004). Specific examples of both verbal and nonverbal references are provided by the
Interactive Reading Sample Dialogues in Appendix C. The domains are (1) print
meaning, (2) book and print organization, (3) letters, and (4) words (Justice et al., 2009).
Table 7 provides the four domains of print knowledge along with sample references used
with children employing the Project STAR technique with the Bed Bugs episode of Word
World. Some domains (e.g., page order and page organization) do not translate well to the
fluid nature of video programming, so they will be omitted from the process. The omitted
facets will have an N/A for not applicable in the sample reference section of the table.
<table>
<thead>
<tr>
<th>Print Target</th>
<th>Sample Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Instructional Domain 1: Print Meaning</strong></td>
<td></td>
</tr>
<tr>
<td>Print function: Understands the relation between meaning and print</td>
<td>This is the word “bed.” The word turned into a real bed.</td>
</tr>
<tr>
<td>Environmental print: Knows the purpose of print embedded within the environment</td>
<td>N/A</td>
</tr>
<tr>
<td>Concept of reading: Understands the meaning behind reading and the contexts in which it occurs</td>
<td>Let’s read the words. What do you think they’ll tell us?</td>
</tr>
<tr>
<td><strong>Instructional Domain 2: Book and print organization</strong></td>
<td></td>
</tr>
<tr>
<td>Page order: Knows the order in which pages are read in a book</td>
<td>N/A</td>
</tr>
<tr>
<td>Author: Knows the role of the author</td>
<td>Name created <em>Word World</em>.</td>
</tr>
<tr>
<td>Page organization: Knows that reading occurs from the top of the page to the bottom of the page</td>
<td>N/A</td>
</tr>
<tr>
<td>Title of the book: Knows the role of the title of the book</td>
<td>This is the title of the show.</td>
</tr>
<tr>
<td>Print direction: Knows that reading must occur from left to right</td>
<td>It tells the name of the show. Words begin here and move to here.</td>
</tr>
<tr>
<td><strong>Instructional Domain 3: Letters</strong></td>
<td></td>
</tr>
<tr>
<td>Upper- and lower-case letters: Knows that letters come in these two forms</td>
<td>This is the letter “D.” Do you see that this uppercase letter</td>
</tr>
<tr>
<td>Names of letters: Knows the name of most of the upper-case letters</td>
<td>is bigger than the lowercase letters?</td>
</tr>
<tr>
<td>Concept of letter: Knows that letters are symbols used in written language</td>
<td>What is this letter called?</td>
</tr>
<tr>
<td>Do you see a letter from your own name?</td>
<td></td>
</tr>
</tbody>
</table>

**Instructional Domain 4: Words**

| Word identification: Identifies some words in familiar contexts | This is the word “the.” Can you help me find it in other places? |
| Short and long words: Knows that the number of letters in words can vary from few to many | This word is “bed.” It only has three letters. |
| Letters and words: Knows that letters are different from words | This is the letter “b.” It is the first letter in the word “bed.” |
| Concept of word in print: understands that written words correspond to spoken words | Help me point to each word as I read it. |

Adapted from Justice, Kaderavek, Fan, Sofka, and Hunt (2009) and reprinted with permission.

**Fidelity of Intervention**

To promote fidelity to intervention, each class was videotaped each week and coded using an adaptation of the fidelity coding checklist (FCC) developed for Justice et al. (2009). This checklist was used to code the raw frequency and type of dialogic reading.
and explicit print referencing techniques the teachers use during viewing sessions.

Explicit print referencing was coded for interactions across (1) print meaning (2) print organization, (3) letters, and (4) words, the four print knowledge domains as prescribed by Justice et al. (2009). The two coders were the investigator of the study and a graduate student in the education department of a university in the Mid-Atlantic region.

When coding was completed, each coder tallied the number for each of the above interactive reading technique categories. These tallies were recorded as raw scores and then converted to FCC scores. For instance, if a coder tallied 12 completion prompts, the raw score would be 12, and these scores would be converted to FCC scores using a 6-point Likert-type scale of 0 (none) to 5 (very high) use of interactive reading techniques. After viewing each video, both coders concurred that the teacher in the intervention group scored a 5 = very high for each session, and the teacher in the control group scored a 0 = none for each session. Each week, teachers were provided feedback concerning their instruction, including the scores on the checklist. See table 8 for the conversion scale.
Table 8

Converting raw scores to FCC scores

<table>
<thead>
<tr>
<th>Raw Score</th>
<th>FCC Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0 = none</td>
</tr>
<tr>
<td>1-3</td>
<td>1 = very low</td>
</tr>
<tr>
<td>4-7</td>
<td>2 = low</td>
</tr>
<tr>
<td>8-11</td>
<td>3 = moderate</td>
</tr>
<tr>
<td>12-18</td>
<td>4 = high</td>
</tr>
<tr>
<td>19 +</td>
<td>5 = very high</td>
</tr>
</tbody>
</table>

Adapted from Justice, Sofka, Sutton, and Zucker (2009) and reprinted with permission.

Data Collection & Analysis

Data regarding (1) level of in-home viewing of educational television, (2) level of in-home co-viewing of educational television, (3) level of in-home reading, and (4) level of maternal education were gathered using the Interactive Reading Parent Survey (see Appendix A) prior to intervention. The director of the center provided data for (5) age, (6) gender, and (7) ethnicity. To promote confidentiality, all data were stored on password protected server. The study’s investigator created this instrument, and as such, there are no known psychometric characteristics available for the instrument.

Prior to intervention, the Rhyming IGDI (Missall, 2002) and the Uppercase Alphabet Recognition subtest of the PALS- PreK (Invernizzi et al., 2004) were used as screening tests to ascertain whether any of the participants suffer from any abnormal language delays, thus excluding them from consideration in the experiment. Two-tailed t-tests were employed to determine if differences exist between the two groups in terms
data collected using the Interactive Reading Parent Survey. Upon completion of the intervention, each student re-took the IGDI and the PALS. ANCOVA was implemented in order to determine if, after controlling for pre-test differences, statistically significant differences existed between the two groups’ post-IDGI and post-PALS scores.

**Chapter Summary**

This chapter presented a process to examine combining interactive reading techniques such as dialogic reading and explicit print referencing with viewing educational television to determine the extent to which they affect the emergent literacy of preschool children. The participants, the apparatus, and materials needed to administer this experiment were discussed. The measures for phonological awareness (PA) and alphabet knowledge (AK), the two facets of emergent literacy under examination, were described. The procedure for this experiment, a replication of the procedure used by Justice et al., (2009), Justice et al., (2010) and Piasta et al. (2012), was explained. A description of the data collection and analysis procedures culminated this chapter. The next chapter, Chapter IV, will discuss the results of these analytic procedures.
Chapter IV: Results

Introduction and Chapter Overview

Chapter I introduced the essential concepts linked to the value of merging educational television with interactive reading techniques to enhance emergent literacy. Chapter II explored these concepts in finer detail. These chapters included discussions regarding (1) the importance of early literacy foundations, (2) the use of television as a vehicle for child development, (3) a theoretical framework as a foundation for the proposed study based in the research of Bandura and Vygotsky, and (4) research addressing the value of using interactive reading techniques to augment emergent literacy. Evidence suggests that both educational television (Moses et al., 2008; Anderson et al., 2001; Fisch et al., 1999) and the use of interactive reading techniques (Piasta et al., 2012; Justice et al., 2010; Whitehurst et al., 1988) can be beneficial to child development, specifically to the development of emergent literacy; however, a lack of research into the combination of these two phenomena led to the proposal of this study addressing the following research question:

Do students who receive scaffolding in the form of interactive reading techniques while viewing educational television perform better on measures of emergent literacy, specifically alphabet knowledge (AK) and phonological awareness (PA), than do children who view educational television with no scaffolding?

Chapter III described the methods used to address this question, and Chapter IV presents the results of this study.
Data Analysis

Before implementation of the intervention, students in the intervention and control groups were administered the Rhyming IGDIs (Missall, 2002) and the Uppercase Alphabet Recognition subtest of the PALS- PreK (Invernizzi et al., 2004) to establish a baseline score for PA and AK respectively. These assessments were also used as screening tests to determine whether any of the participants suffer from any abnormal language delays, thus excluding them from consideration in the experiment. Results of both the Pre-IGDI and the Pre-PALS revealed that no children scored two or more standard deviations below the mean on either test. Thus, no children had to be excluded from the study due to abnormal delays. Any child exhibiting scores on either test two or more standard deviations below the mean would have been excluded from the study, but since all children taking pre-tests scored within this range, no children had to be excluded from the study. Upon completion of the intervention, the IGDIs and the PALS were re-administered to each student. A series of ANCOVAs was implemented in order to determine if, after controlling for pre-test differences, statistically significant differences existed between the two groups' post-IGDI and post-PALS scores.

Each class was videotaped each week, and the taped sessions were coded using an adaptation of the fidelity coding checklist (FCC) developed for Justice et al. (2009) in order to promote fidelity to intervention. This checklist facilitated the coding of the raw frequency and type of dialogic reading and explicit print referencing techniques the teachers employed while scaffolding the reading skills while viewing the episodes of Word World. Explicit print referencing was coded for interactions across (1) print
meaning, (2) print organization, (3) letters, and (4) words, the four print knowledge domains as prescribed by Justice et al. (2009).

When coding was completed, each coder (i.e., the investigator of the study and a graduate student in Old Dominion University's Darden College of Education) tallied the number for each of the above interactive reading technique categories, and these tallies were then converted to FCC scores. For instance, if a coder tallied 12 completion prompts, the raw score would be 12, and these scores would be converted to FCC scores using a 6-point Likert-type scale of no (0) to very high (5) use of interactive reading techniques. After coding all videotaped sessions, both coders agreed that the teacher in the intervention group scored a 5 (very high) for each session, and the teacher in the control group scored a 0 (none) for each session. Each week, teachers were provided feedback concerning their instruction, including the scores on the checklist. See table 6 above for the conversion scale.

Group Equivalency

Analysis of demographic data presented in Table 9 reveals that the intervention group and the control group are not equivalent for the following variables. The intervention group is older (M = 40.75 months, SD = 3.20 to M = 33.91 months, SD = 2.63.) The mothers of the children in the intervention group attained more education (M = 2.63, SD = 0.52 to M = 2.40, SD = 0.70) than did the mothers of the children in the control group. These means represent that from the intervention group five mothers had attained graduate degrees and three mothers had attained bachelor degrees compared to four mothers with graduate degrees, four mothers with bachelor degrees, and one mother with a two-year degree.
The children in the intervention group read more at home ($M = 3.88$, $SD = 0.84$) than did the children in the control group ($M = 3.33$, $SD = 0.71$). This means that in the intervention group, one child read more than five hours per week, six children read from three to five hours per week, and one child read less than one hour per week. Conversely, in the control group, four children read three to five hours per week, four children read one to three hours per week, and one child read less than one hour per week. The children in the intervention group viewed more educational television at home alone ($M = 4.13$, $SD = 0.64$) than did the children in the control group ($M = 3.44$, $SD = 0.53$). This translates to two students viewing more than five hours, five students viewing three to five hours, and one student viewing between one and three hours of educational television alone per week in the intervention group, with four students viewing three to five hours and five students viewing one to three hours of educational television alone from the control group. Also, the children in the intervention group co-viewed more educational television at home ($M = 3.50$, $SD = 0.76$) than did children in the control group ($M = 3.22$, $SD 0.440$). This means that, in the intervention group, one student spent more than five hours, two students spent from three to five hours, and five students spent between one and three hours co-viewing educational television with an adult, while, from the control group, two children spent three to five hours and seven children spent one to three hours co-viewing educational television with an adult.

The differences in age ($p = .000$) and level of in-home viewing of educational television alone ($p = .033$) were statistically significant. The level of maternal education ($p = .445$), the level of in-home reading ($p = .174$), and the level of in-home co-viewing of educational television ($p = .382$) were not statistically significant in their differences.
All significance levels were tested at $\alpha = .05$. Gender and ethnicity were not included in the t-tests because they are categorical variables; however, a comparison of these two variables shows that the intervention group is 75% white and 88% female while the control group is 55% white and 27% female.

Table 9

$t$-test Results Comparing Intervention and Control Group Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention</strong></td>
<td><strong>Control</strong></td>
<td><strong>Intervention</strong></td>
<td><strong>Control</strong></td>
</tr>
<tr>
<td>Age (in months)</td>
<td>40.75</td>
<td>33.91</td>
<td>3.20</td>
</tr>
<tr>
<td>Maternal Education</td>
<td>2.63</td>
<td>2.40</td>
<td>0.52</td>
</tr>
<tr>
<td>In-Home Reading</td>
<td>3.88</td>
<td>3.33</td>
<td>0.84</td>
</tr>
<tr>
<td>Ed TV (Alone)</td>
<td>4.13</td>
<td>3.44</td>
<td>0.64</td>
</tr>
<tr>
<td>In-Home Ed TV Co-Viewing</td>
<td>3.50</td>
<td>3.22</td>
<td>0.76</td>
</tr>
</tbody>
</table>

* ($p < .05$)
Main Analyses

Pre-test covariates. ANCOVAs were implemented to determine if, after controlling for pre-test differences, statistically significant differences existed between the two groups' post-IGDI and post-PALS scores. Table 8 displays the ANCOVA for the Alphabet Knowledge subtest of the PALS-PreK assessment with the Pre-PALS as the only covariate, and Table 9 displays this information for the Rhyming subtest of the IGDIs assessment for PA with the IGDI Pre-test as the only covariate. All significance levels were tested at $\alpha = .05$.

Table 10 indicates that, prior to adjusting for differences between the two groups' Pre-PALS scores, the Intervention Group identified an average of 17.13 alphabet letters correctly (SD = 8.95), while the Control Group identified an average of 10.64 alphabet letters correctly (SD = 8.78). After adjusting for pre-PALS group-wise differences, adjusted means for these groups were 14.97 (SE = 0.55) and 12.21 (SE = 0.46) respectively, a difference that is statistically significant ($p = .002$).
Table 10

ANCOVA of PALS Assessments for AK with Pre-PALS as Only Covariate

<table>
<thead>
<tr>
<th></th>
<th>Pre-PALS Mean</th>
<th>Standard Deviation</th>
<th>Post-PALS Mean</th>
<th>Standard Deviation</th>
<th>Adjusted Mean</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention Group</td>
<td>13.25</td>
<td>7.69</td>
<td>17.13</td>
<td>8.95</td>
<td>14.97</td>
<td>.002*</td>
</tr>
<tr>
<td>Control Group</td>
<td>9.91</td>
<td>7.91</td>
<td>10.64</td>
<td>8.78</td>
<td>12.21</td>
<td></td>
</tr>
</tbody>
</table>

* (p < .05)

Table 11 indicates that prior to adjusting for the Pre-IGDIs assessment, the Intervention Group identified an average of 5.75 rhyming pictures correctly (SD = 2.82) and the Control Group identified an average of 1.64 rhyming pictures correctly (SD = 1.03). These levels are statistically significant (p = .027).
Table 11

ANCOVA of IGDIs Assessments for PA with Pre-IGDIs as Only Covariate

<table>
<thead>
<tr>
<th></th>
<th>Pre-IGDIs Mean</th>
<th>Standard Deviation</th>
<th>Post-IGDIs Mean</th>
<th>Standard Deviation</th>
<th>Adjusted Mean</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention</strong></td>
<td>3.63</td>
<td>2.62</td>
<td>5.75</td>
<td>2.82</td>
<td>4.48</td>
<td>.027*</td>
</tr>
<tr>
<td><strong>Group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>0.91</td>
<td>0.94</td>
<td>1.64</td>
<td>1.03</td>
<td>2.56</td>
<td></td>
</tr>
</tbody>
</table>

* (p < .05)

Chapter Summary

This chapter presented the finding related to the research question addressing the influence of implementing interactive reading techniques while viewing educational television to enhance emergent literacy for preschool-aged children. First, data collection and analysis procedures were discussed. Next, a t-test displaying group equivalency pertaining to demographic variables was addressed. ANCOVA, adjusting for only the Pre-PALS and Pre-IGDI assessments to determine if statistically significant differences exist between the post-IGDI and post-PALS scores for the intervention and control groups were then discussed. Statistically significant group-wise differences did exist
between the intervention group and the control group for the ANCOVA adjusting for only the Pre-PALS assessment \( (p = .002) \) and for the ANCOVA adjusting for only the Pre-IGDIs assessment \( (p = .027) \). As support for the ANCOVA, a Mann-Whitney \( U \) test was performed, resulting in differences between intervention group and control group scores for both the Post-PALS and Post-IGDIs, with only the Post-IDGIs having significant results \( (p = .000) \). Chapter V will discuss the findings of this study. First, the major findings related to this study’s research question along with an interpretation of these findings, the relationship these findings have to previous studies, and the clinical relevance of these findings will be discussed. Next, the limitations, both for validity and reliability will be discussed. Suggestions for future research will then be made, and the chapter will end with a summary and conclusion.
Chapter V: Discussion

Introduction and Chapter Overview

In this chapter, the findings will be discussed. First, the context for this study will be revisited followed by the major findings related to this study’s research question along with an interpretation of these findings, the relationship these findings have to previous studies, and the clinical relevance of these findings will be discussed. Next, the limitations, both for validity and reliability will be discussed. Suggestions for future research will then be made, and the chapter will end with a summary and conclusion.

Context of Study

In order to survive and potentially flourish in a literate society, one must be able to read. Experts contend that illiteracy places an individual at risk of living in poverty and, possibly, incarceration (Alfred & Chlup, 2009; Schafft & Prins, 2009). Research has indicated that approximately 30 million American adults lack Basic Prose Literacy Skills and that approximately 11 million Americans cannot read well enough to answer simple written questions (Baer, J., Kutner, M., Sabatini, J. & White, S. 2009). Illiteracy is a crisis on an individual level as well as on a national level in the United States.

Education is considered to be a key factor in alleviating this crisis. Unfortunately, Keiffer (2008) and Jordan et al. (2007) found that if a student enters school with a developmental deficit compared to peers, efforts to mitigate this deficit are unlikely to be successful. Early attention to language acquisition, emergent literacy, is essential for later conventional literacy (Davidson, Fields, & Yang, 2004; Van Kleeck, 2008). Therefore, much research has focused on the long-term success of quality preschool experiences (Debruin-Parecki, 2009; Masse & Barnett, 2007; Schulman & Barnett, 2005).
Specifically, the early acquisition of emergent literacy skills such as phonological awareness (PA) and alphabet knowledge (AK) are related to conventional literacy (Crim et al., 2008; Dockrell, Stuart & King, 2010; Neuman & Dwyer, 2009; NELP, 2008; NICHHD, 2000). Building on the theoretical work of Vygotsky (1933) and Bandura (1965), interactive reading techniques such as dialogic reading (Blewitt, Rump, Shealy & Cook, 2009; Raikes et al., 2006; Whitehurst et al., 1988) and explicit print referencing (Piasta, Justice, McGinty & Kaderavek, 2012; Lovelace & Stuart, 2007) have been developed and used effectively to enhance the acquisition of emergent literacy. Because of the positive influence interactive reading techniques have shown to exert on emergent literacy when using printed text, it seems reasonable to expect that this type of activity may be effective when combined with other educational activities such as the viewing of educational television.

For over half a century, the developers of educational television have sought to influence the academic and socio-emotional development of young children (Fisch, Tugilo, & Cole, 1999; Ball & Bogatz, 1970). A review of the literature concludes that emergent literacy can be enhanced when children view educational television (Moses, 2008). Here, the author analyzed 14 studies with a composite population of 15,391 children between 2- and 5-years of age. The findings indicate that when these children viewed moderate amounts of any television programming, emergent literacy was enhanced. Additionally, the results showed that when the content of programming viewed by these children was aimed at emergent literacy, those pre-literacy skills were enhanced over and above the growth experienced by children, who viewed programming without such content.
Other research has found that parent/child co-viewing of educational television further enhances this type of development (Kirkorian et al., 2008). In a summary of the extant literature on the effects of digital media on the cognitive development of young children, Kirkorian et al. (2008) support the findings of Moses (2008) indicating that viewing programs containing educational content exert the most positive effects. The authors assert that parent/child co-viewing is the mitigating factor minimizing negative effects while enhancing positive effects of digital media on the cognitive development of young children.

The educational program chosen for the present study was *Word World*. This educational program focuses on emergent literacy concepts such as print awareness, phonological awareness, alphabet knowledge, and comprehension. Partially funded by the U. S. Department of Education, *Word World* features computer generated animals and settings, which are spelled for the eponym of each animal or facet of setting. For instance the barn is spelled BARN, with the features of the barn incorporated into the building, and dog is spelled DOG, with the D used as the dog's head and the OG used as the dog's body. As the action for each episode, the talking word-animals act as the protagonists facing conflicts, which they must build words to solve. The resolution of each episode is the correct building of a word, which then morphs into an animated version of the word's eponym. Facets of emergent literacy such as phonological awareness, alphabet knowledge, and vocabulary are stressed in each episode.

Due to a lack of research into the effects of combining interactive reading techniques with the viewing of educational television to ascertain whether emergent
literacy can be enhanced exists, this study sought to address the following research question:

1. Do students who receive scaffolding in the form of interactive reading techniques while viewing educational television perform better on measures of emergent literacy, specifically alphabet knowledge (AK) and phonological awareness (PA), than do children who view educational television with no scaffolding?

**Major Findings**

**Interpretation of findings.** The present work examined the efficacy of combining interactive reading techniques with the viewing of educational television to enhance emergent literacy. The results of this study indicate that preschool children who view educational television with scaffolding in the form of interactive reading techniques provided by an adult fare better on measures of emergent literacy, specifically on measures for AK and PA, than do preschool children who view educational television without such scaffolding. To interpret these findings, it is important to examine them in relationship with previous studies, to examine the relevance of such findings, and to understand the limitations of the present study.

**Findings' relationship to previous studies.** The present study is related to previous studies in two major ways: first, this study is related to studies incorporating interactive reading techniques to enhance emergent literacy, and second, the study emulates studies examining the efficacy of adult/child co-viewing of educational television to enhance academic development. First, the findings from the present study reflect those from studies that interactive reading techniques enhance emergent literacy
when applied to static print media such as a storybook (Piasta, et al., 2012; Justice et al., 2010; Whitehurst et al., 1988).

In the seminal interactive reading study, Whitehurst et al. (1988) found that children experiencing interactive reading techniques in the form of dialogic reading outperformed children not experiencing the intervention on measures related to emergent literacy. Mol et al. (2008) conducted a meta-analysis of studies seeking to replicate the Whitehurst et al. (1988) study. The authors reported a significant but small effect size for all 16 studies in the meta-analysis. Further, the authors reported that the effect size was much smaller for studies using children 4- to 5-years-old than for studies with children 2- to 3-years old, and that effects are negligible when children are at the greatest risk of failure.

The teacher in the present study was trained in a manner similar to the teachers who conducted the interventions in the Piasta et al. (2012) and Justice et al. (2010) studies. In a 3-year longitudinal study, Piasta et al. (2012) found that preschool students experiencing high doses of explicit print referencing during storybook reading outperformed preschool students with low doses of explicit print referencing and no explicit print referencing on the same measures used to assess AK and PA for the present study. These differences were maintained in assessments one year and two years post intervention.

The findings from Piasta et al. (2012) coincide with Justice et al. (2010). During a 30-week intervention, Justice et al. (2010) compared language outcomes for preschool students experiencing a high-dose print referencing condition and preschool students experiencing no print referencing while participating in storybook reading. Again, there
was a statistically significant difference on outcome measures for AK and PA for children experiencing the high dose print referencing condition compared to children experiencing no print referencing. Although these studies investigated interactive reading with storybooks, a static print medium, it is reasonable to conjecture that similar practices would be conducive to the enhancement of emergent literacy when applied to the viewing of the more fluid medium of educational television.

Accordingly, the present study sought to investigate the efficacy of adult/child co-viewing of educational television, specifically using a combination of the interactive reading techniques used by Whitehurst et al. (1988), Piasta et al. (2012), and Justice et al. (2010). Before examining the used of interactive reading techniques in this manner, though, it was important to examine the efficacy of adult/child co-viewing of educational television in general. The findings of the present study are reflective of the literature review investigating the effects of adult/child co-viewing performed by Kirkorian, Wartella, and Anderson (2008). The authors found that co-viewing educational television, with the adult drawing the child’s attention to the screen and scaffolding content and skills, was essential in the language development of preschool children.

These results support the findings of Jinqiu and Xiaoming (2004), Valkenburg et al. (1998). Jinqiu and Xiaoming (2004) discovered that children in the viewing television with an adult performed better on all tests than did children, who viewed television alone, with the results from tests for memory significant revealing significant differences. Valkenburg et al. (1998) found, in an experiment with 124 elementary school-aged children, that when children experienced opera with an adult, the children’s knowledge of and attitudes toward opera were enhanced.
With advances in technology, a profusion of digital media has become available, much of which may be useful for influencing emergent literacy in a positive manner. Studies investigating the efficacy of adult/child interaction using electronic books (e-books) have taken place recently (Parish-Morris, et al., 2013; Salmon, 2013). Parish-Morris et al. (2013) investigated the efficacy of adult/child interaction, specifically in the form of dialogic reading, with e-books using 165 parent-child dyads with children between the ages of 3- and 5-years. Randomly, these dyads were placed in an e-book group and a traditional book group. The findings revealed that dialogic reading and children’s story comprehension were more robust for the children participating in the traditional book group. The authors speculate that the lack of dialogic reading, perhaps due to the novelty of the technology, affected the lack of children’s story comprehension in the e-book group. Salmon (2013), in a review of the literature into the usefulness of using e-books with preschool-aged children, found that e-books are most effective in enhancing emergent literacy when adult interaction accompanies the practice.

**Relevance of findings.** These findings are relevant to clinical settings. Investigators in clinical settings can use interactive reading techniques combined with co-viewing educational television to enhance the emergent literacy of preschool children. Preschool teachers can implement the techniques implemented during this investigation, and the knowledge that viewing educational television in the classroom can be beneficial to emergent literacy may open avenues of instruction related to digital media within preschool curricula. Parents can emulate the techniques used in this studies intervention while viewing educational television programming with their children. Additionally, the
findings of the present study add to the body of knowledge within child developmental theory.

**Relevance for parents and preschool teachers.** This study’s findings indicate that with relatively little modification to current practices, parents and teachers can enhance emergent literacy for preschool children. Employing interactive reading techniques such as dialogic reading and explicit print referencing, whether with television media, print media, or other electronic media such as educational books and games found on computer devices, may influence the acquisition of AK and PA in a positive manner. In order to implement these techniques, teachers and parents would need minimal training similar to that which the teacher in the intervention group of the present study underwent. This training, which can take as little as three hours, can be used effectively to aid in parent and teacher facilitation of interactive reading techniques.

The influx of new digital media such as e-books, hand-held computers, console games, electronic toys, software applications, interactive white boards, and electronic learning systems, presents more opportunity to exert a positive influence on the emergent literacy of preschool children. With this opportunity is the concomitant potential for children and adults alike to misuse this new technology or for the technology to be inappropriate for education (Lieberman, Bates, & So, 2009). Likewise, the educational television content used for this study, *Word World*, is a high-quality educational program designed to enhance literacy. Parents and teachers should be mindful that not all programming aimed at preschool children is appropriate for the acquisition of emergent literacy.
Relevance for theorists. The findings of this study have theoretical implications. Bandura’s (1977) Social Learning Theory is based on the notion that human beings learn through the social processes of modeling, observation, and imitation. Interactive reading techniques applied to the viewing of educational television include these processes. When an adult asks a question about programming content, points to a specific word or letter, and traces a line of print—all hallmarks of interactive reading—the adult is modeling the process of reading for the child. With the use of interactive reading techniques, clearly a social activity, the child has the opportunity to observe and imitate this behavior, thus becoming a better reader in the process.

The findings of this study are supported by the theoretical underpinnings of Vygotsky’s (1933a) Social-Historical Theory of Child Development. Interactive reading techniques utilize the zone of proximal development (ZPD) and scaffolding, central tenets of this theory. By interacting with the child, the adult can detect the areas where the child may struggle, and the child can use the adult as scaffolding to emergent literacy. The parent can use the PROMPT/CROWD techniques implemented by Whitehurst et al. (1988) to ask completion questions, recall questions, open-ended questions, and distancing questions that may elicit responses, engaging the child in the text. Aligned with Piasta et al. (2012) and Justice et al. (2010) the parent can use the verbal and non-verbal cues of explicit print referencing to call attention to print features, words, and letters.

The findings of this study coincide with numerous studies researching the efficacy into using scaffolding techniques to enhance emergent literacy (Chien et al., 2010; McGee & Ukrainetz, 2009). Pentimonti and Justice (2009) assert that specific scaffolding
techniques such as interactive reading, especially when used within the whole classroom setting, influence emergent literacy of preschool children in a positive manner. Neuman et al. (2009) found that emergent literacy is positively influenced when parents employ similar scaffolding techniques within the home. Here, the author found that parents could help children trace letters and use directional language similar to that of dialogic reading and explicit print referencing, but that the parent could use whole body movements and environmental print as a means to enhance the development of AK and PA.

**Limitations of Study**

Several limitation of the present study warrant discussion. Although Whitehurst et al. (1988) used an intervention similar in length to the present study in their seminal study on the effects of dialogic reading on emergent literacy, a longer intervention would be optimal for a comparison of this kind. Since the interactive reading intervention implemented for this study is recommended for ongoing usage, it is reasonable to expect that a longer intervention may produce more salubrious effects for the children in the intervention group than the findings reported here. On the other hand, the children from the control group may experience more robust emergent literacy growth through their own intentional learning from repeated viewings of the *Word World* episodes without scaffolding. A study of longer duration may be beneficial in addressing these concerns.

The lack of diversity within the sample (63 % White) and the sample size ($N = 19$) inhibit the ability to generalize the findings from this study to a larger population. The uniqueness of the setting, a child learning research center within a university, may lead to other problems with the ability to generalize findings. The teachers for both the intervention and control groups have earned their master's degrees in early childhood
education and the teaching assistants assigned to each class are graduate students at the university. Hence, the center places an emphasis on developmentally appropriate activities, including those that enhance emergent literacy. Further, the mothers of all children in the study have some college education with nine holding graduate degrees and seven holding bachelor degrees. None of the children participating in the present study are on scholarship, and the tuition of the center is such that those who attend likely are located in the middle- to upper middle-socioeconomic statuses.

Preschool children from a variety of backgrounds may experience advantages or incur obstacles that influence their emergent literacy beyond the scope of what was investigated during this study. There is no requirement that teachers in day care centers hold college degrees, and while a college degree does not guarantee quality care, nor does the lack of one equate to poorer care necessarily, the opportunities for best educational practices are higher when the caregivers have more education in the field of early childhood. Longitudinal research into the socio-emotional development of children within child care centers and the quality of care within those centers indicates higher quality of care is correlated with reduced negative behavior and that lower quality of care is related to poorer child functioning (Belsky & Pluess, 2012; Harrison, 2008). It is not unreasonable to infer that with more negative behavior and poorer child functioning which may be manifested in child care centers lacking the quality of the center used in the current study, emergent literacy may be affected negatively. Further, children from families with mothers experiencing higher levels of education and socio-economic status may enjoy opportunities for emergent literacy that others may not. The findings of this
study can be generalized to a population, whose families are highly educated and relatively affluent and who attend a child care center with similar characteristics.

The small sample size exacerbates the lack of group equivalency between the intervention group and the control group because, due to limited degree of freedom within the sample, the data reflecting the differences cannot be controlled for using ANCOVA. This means that internal validity may be affected negatively. On all quantitative descriptive data, the intervention group manifests higher means than does the control group. For instance, the mean age of the intervention group is 40.75 months, SD = 3.20, and the mean age of the control group is $M = 33.91$ months, $SD = 2.63$. On average, the children in the intervention group are almost seven months older than the children in the control group. This age disparity could have some bearing on the development of emergent literacy, and unfortunately, this potential confounding variable cannot be controlled for statistically.

Moreover, at the time of the study, the mothers of the children in the intervention group had attained more education ($M = 2.63$, $SD = 0.52$ to $M = 2.40$, $SD = 0.70$) than had the mothers of the children in the control group. Within the intervention group, five mothers had attained graduate degrees and three mothers had attained bachelor degrees whereas from the control group, four mothers with graduate degrees, four mothers with bachelor degrees, and one mother with a two-year degree. It is not unreasonable to suspect that mothers with higher levels of education may exert a more positive influence on their child's emergent literacy than do mothers with lower levels of education. Again, because of the lack of degrees of freedom within the sample size, ANCOVA cannot be used to control for this potentially confounding variable.
Parents reported that the children in the intervention group read more at home than did the children in the control group (M = 3.88, SD = 0.84 to M = 3.33, SD = 0.71). This disparity of means reflects that in the intervention group, one child read more than five hours per week, six children read from three to five hours per week, and one child read less than one hour per week. Within the control group, four children read three to five hours per week, four children read one to three hours per week, and one child read less than one hour per week. Since the amount of reading a child does affects the level of their emergent literacy, this disparity in amount of time read at home could account for the differences in AK and PA favoring the intervention group, and again, this potential confounding variable cannot be controlled.

Continuing this trend, parents reported that the children in the intervention group viewed more educational television at home alone (M = 4.13, SD = 0.64 to M = 3.44, SD = 0.53) and co-viewed more educational television with an adult at home (M = 3.50, SD = 0.76 to M = 3.22, SD 0.440) than did the children in the control group. From the intervention group, two students viewed more than five hours, five students viewed three to five hours, and one student viewed between one and three hours of educational television alone per week while, form the control group, four students viewed three to five hours and five students viewed one to three hours of educational television alone. Further, one student spent more than five hours, two students spent from three to five hours, and five students spent between one and three hours co-viewing educational television with an adult from the intervention group, and, from the control group, two children spent three to five hours and seven children spent one to three hours co-viewing educational television with an adult. This gap in viewing educational television alone and
co-viewing educational television with an adult between the children in the intervention group and children in the control group could have an influence on the higher AK and PA scores favoring the intervention group, but, again, this influence is unknown due to an inability to control for these potentially confounded variables via ANCOVA. A comparison of the two categorical variables collected for the population of this study reveals that the intervention group is 75% white and 88% female while the control group is 55% white and 27% female. As categorical variables, this information would not have been used in an ANCOVA, and it is difficult to assess how this disparity might influence emergent literacy; nevertheless, this lack of group equivalency is a limitation of the present study.

A factor mitigating this possible negative influence on the internal validity of the present study is that only two of these potentially confounding variables were statistically significant. These variables were differences in age ($p = .000$) and level of in-home viewing of educational television alone ($p = .033$). Significance levels were tested at $\alpha = .05$. If ANCOVA had been performed, the only variable used would have been age and level of in-home viewing of educational television alone. In sum, regarding the lack of group equivalency, the small sample size, due to limited degrees of freedom, nullifies the use of ANCOVA to determine the influence covariates such as age, maternal education, in-home reading, and in-home co-viewing of educational television may exert on AK and PA. This exacerbates the lack of group equivalency because the data reflecting the differences cannot be controlled for using ANCOVA. This means that, for this study, internal validity may be affected negatively.
Directions for Further Inquiry

Noting these limitations, this study points to avenues for future research into the use of interactive reading techniques such as dialogic reading and explicit print referencing applied to the viewing of educational television. To address the group equivalency limitation present in this study, research using more subjects with randomization to ensure group equivalency should be conducted. A study with a longer duration and a more diverse sample of participants, such as the 30-week intervention, with 84 teachers and 551 students assigned to random groups employed by Justice et al. (2009, 2010) would address some of the major internal and external validity limitations of the present study. Longitudinal studies, similar to the one employed by Piasta et al. (2012), would be useful in exploring the lasting effects of applying interactive reading techniques to educational television viewing on emergent literacy as well as later conventional literacy.

The present study incorporated the use of only one program, Word World, with which to apply interactive reading techniques. With its emphasis on AK, PA, vocabulary acquisition, and print awareness as well as socio-emotional well-being, self-awareness, and social awareness, Word World is a natural fit for the preschool environment. Other programs with similar qualities should render similar findings to those of the present study, but research needs to bear this out. It may be beneficial to explore how interactive reading techniques might be used with a variety of programming, such as those with primarily entertainment content to enhance emergent literacy. In a study of longer duration, multiple educational television programs could be used. Instead of the
continuous use of one show, Word World, a variety of programming may reflect actual viewing habits more accurately.

While it may be reasonable to conjecture that the findings of this study may to apply to different media such as e-books, hand-held computers, console games, electronic toys, software applications, interactive white boards, and electronic learning systems future research needs to investigate this. As mentioned previously, research has been conducted to ascertain the effects of incorporating interactive reading techniques with e-books (Parish-Morris, 2013; Salmon, 2013). The findings of Ihmeidah (2014), which reveal that children reading e-books fared better on measures of print awareness and vocabulary contrast those of Parish-Morris (2013) indicating that story comprehension was superior for children reading traditional books rather than e-books. Future research needs to be implemented in this area adding to the body of knowledge that is interactive reading applied to various types of media.

In this new digital age, concerns of the detrimental effects of an environment saturated with media may exert on the developing child exist (Vandewater, Rideout, Wartella, Huang, Lee, & Shim, 2007). To address these concerns, experts argue that implementing a combination of new and old media may be effective (Alper, 2011) and that parental and/or teacher mediation is essential in exerting positive effects through the use of this media (Alper, 2011; Bittman, Rutherford, Brown, & Unsworth, 2011; Lieberman, Bates, & So, 2009). Still other experts contend that the purposeful and developmentally appropriate use of digital media may enhance the development of children from birth through the age of eight (NAEYC & the Fred Rogers Center, 2012).
Summary and Conclusion

Becoming literate is of supreme importance. Without literacy, the individual lacks access to education and employment opportunities. Experts assert that there is a connection between poverty, illiteracy, and incarceration (Alfred & Chlup, 2009). Results of the National Assessment of Adult Prison Literacy Survey (NAAPLS) performed by the U. S. Department of Education reveal sizeable gaps between literacy levels of those who are imprisoned in the United States and those who are not (Greenberg, Dunleavy, & Kutner, 2007). Unfortunately, children living in an environment where experiences with print media are rare and illiteracy is common are at greater risk or illiteracy than their counterparts who are live in environments where literacy is the norm (Schafft & Prins, 2009).

When children enter school lacking basic emergent literacy skills compared to their more literate counterparts, evidence suggests that this deficit will persist throughout their school experience and into adulthood (Keiffer, 2008; Jordan et al., 2007). Early interventions have proven efficacious in mitigating the lack of pre-literacy skills of some children (Debruin-Parecki, 2009; Masse & Barnett, 2007). Many effective emergent literacy interventions have focused on the use of educational television (Moses, 2008; Fisch et al., 1999), but others warn that the television is far from a panacea, citing potential harm in this practice. Inadvertently, some experts contend, the television can become a de facto babysitter used to occupy the child rather than enhancing the development of emergent literacy (Beyons & Eggermont, 2014; Evans, Jordan, & Horner, 2011). As children are voracious learners, with an intentionality governed by a
complex world perspective (Leggett & Ford, 2013), exposure to inappropriate content could lead to detrimental results (Kirkorian et al., 2009).

The question, then, is how best to use this medium to enhance emergent literacy. For millennia, the deepest thinkers have sought to understand how, when, and why learning occurs in the human being. Factors influencing learning have been thought to range from the innate as a product of the genes to the extrinsic as a product of the environment. This nature/nurture conflict dates back to the ancient philosophers Plato and Aristotle and continues today (e.g., Tam, 2014; Eagly & Wood, 2013). Platonic idealism posited that ideas are the realm of the innate and that the mind and soul are essential to all learning (Janaway, 2014). Conversely, Aristotelian realism asserts that reality exists in the physical world and that knowledge is acquired by forming images through experience with the environment (Fleming, 2006).

Centuries later, Locke, in accordance with Aristotle, refuted the doctrine of innate ideas, contending that people are shaped by their social environments, especially their education. Locke asserted that it was useful to think of the child’s mind as tabula rasa, a blank slate on which everything comes from the environment (Locke, 1690). Rousseau, whom some see as the progenitor of modern developmental psychology (Crain, 2011), held that children should be reared according to nature’s plan, that they should be given freedom to grow according to their innate curiosity and experience in the physical world (Rousseau, 1762).

The debate continued into the 20th century as Skinner argued growth of human language is a result of environmental experience (Skinner, 1957) and that internal events such as thoughts and feelings do not exist in human beings. Instead, Skinner argued,
humans are products of stimuli, responses, and reinforcements in the environment (Skinner, 1971). Chomsky (1957, 1959) countered with his innateness hypothesis centering on a universal grammar, arguing human grammar, or the system of rules used to create sentences, is so intricately complex and that the linguistic achievements of young children are too extensive to be explained by environmental influence alone. Many argued that Chomsky’s review of Skinner’s work was so thorough and effective that it rendered Learning Theory, in general, obsolete; however, Schlinger (2008) points out through citations, book sales, and university course offerings that Skinner’s work has remained influential.

Piaget (1961) maintained that children develop cognitively as a result of the process of equilibration. This process results from the interaction of physical maturation, physical experience, and social interaction accompanied by the creation of schema attached to prior knowledge. Within this process, as the child encounters moderately novel experiences, interactions, and thoughts, he/she is thrown off balance or into disequilibrium. The child, then, must assimilate and/or accommodate that new information. This equilibration process can be associated with the idea of intentional learning, where the young child is a recognized as a capable individual with multifaceted perspectives (Leggett & Ford, 2013). This concept of intentional learning involves even the very young child’s autonomous decision to persevere in his/her development.

Vygotsky (1933b) argued, though, that human beings learn from the tools, or signs, passed down by the culture and that the most important sign contributing to human development is speech. Speech, he argued, could free the mind from the present and allow us to reflect on the past or surmise about the future. While Vygotsky recognized the
importance of intentionality for human development, he attempted to create a theory that would allow for the interplay between those intrinsic forces and the extrinsic influence of the social environment. To this end, Vygotsky posited that through scaffolding, an adult can aid in a child’s development. To do this, it is essential for the adult to have a profound awareness of the child’s zone of proximal development (ZPD). With patience, observation, and skill, the adult can enhance a child’s development by providing a slight amount of assistance at the appropriate time (Vygotsky, 1933a).

Accordingly, Tomasello et al. (2005) maintain that intentionality is shared, that human cognition relies on the ability to collaborate with others in a social setting. Long et al. (2007) support this collaborative aspect of intentionality, using the notion of syncretism to blend cultural practices into new learning. Further, Gardiner (2013) contends that when tasks are ambiguous, children seek the help of adults. These experts agree that the intentionality of a child must be respected, with the understanding that the insightful assistance of a more experienced learner is also occasionally advantageous (Leggett & Ford, 2013). Screens such as televisions, laptop computers, tablets, hand-held mini-computers have become ubiquitous, along with the existence of the potential for misuse of these devices. While the intentionality of the child to learn may be present, the vast amount of information that is easily accessible to the child renders this study important because parents and teachers, the more able thinkers, can ensure children are supported in this brave new world.

In the context of literacy instruction, the nature/nurture debate morphed into the whole language/direct instruction dispute, which began in the late 20th century and continues today. Whole language instruction proponents argue that children need to be
immersed in a holistic, language-rich environment focused on context and meaning (Daniels, Zemelen, & Bizar, 1999). Substantial research suggests that facets of emergent literacy such as AK and PA in preschool children are reliable predictors of later conventional literacy (Anthony & Lonigan, 2004; Catts et al., 2001; Lonigan et al., 2000; NICHHD, 2000). Many experts contend that AK and PA are causal factors in becoming literate (Adams, 1990; Gosawami, 2002; Lonigan, 2006; Phillips & Torgesen, 2006). Hence, the supporters of the direct instruction approach argue that to ignore these facets of instruction would be detrimental to the literacy development of the young child.

In accordance with Vygotsky’s Social-Historical Theory of Child Development, the present study sought to bridge the nature/nurture divide by investigating how the use of interactive reading techniques such as dialogic reading found to be effective by Whitehurst et al. (1988) and explicit print referencing employed effectively by Piasta et al. (2012) and Justice et al. (2010) may influence the emergent literacy of preschool children when applied to the viewing of the educational television program *Word World*. The limitations of this study notwithstanding, the findings are of import because as a novel approach to the enhancement of emergent literacy, this study can be used as a point from which other studies can build to ascertain how adults can best guide children to productive use of television, this ubiquitous opportunity to learn. In sum, the findings of the present study suggest that this combination of techniques can influence facets of emergent literacy such as PA and AK, the gateway to later literacy.
References


behavior during playtime and during television viewing. *Child Development, 45,*
1132-1136.

530-536.

in children’s imitation of relevant actions. *Journal of Experimental Child
Psychology, 119,* 54-72.

S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research*

Greenberg, E., Dunleavy, E., & Kutner, M. (2007). Literacy behind bars: Results from the
2003 national assessment of adult prison literacy survey. U.S. Department of


community-based implementation of dialogic reading. *Journal of Applied
Developmental Psychology, 31,* 195-201.


National Association for the Education of Young Children and the Fred Rogers Center for Early Learning and Children's Media at Saint Vincent College. (2012). Technology and Interactive Media as Tools in Early Childhood Programs Serving Children from Birth through Age 8.


Appendix A

Interactive Reading Parent Survey

Dear Parent/Guardian:

Thank you for allowing your son/daughter to participate in this study on the effects of combining interactive reading techniques with educational television to enhance emergent literacy. To further our efforts, it is important that we gain some information from you regarding your in-home educational television viewing habits as well as information regarding maternal education level. It should take a few minutes only to answer these five questions. All information collected will be kept confidential.

1. How often does an adult read with your child in the home? Circle one.
   - None
   - Less than 1 hour per week
   - Between 1 and 3 hours per week
   - Between 3 and 5 hours per week
   - Greater than 5 hours per week

2. How often does your child view educational television in the home? Circle one.
   - None
   - Less than 1 hour per week
   - Between 1 and 3 hours per week
   - Between 3 and 5 hours per week
   - Greater than 5 hours per week
3. How much of this time does an adult spend viewing educational television with your child? Circle one.

- None
- Less than 1 hour per week
- Between 1 and 3 hours per week
- Between 3 and 5 hours per week
- Greater than 5 hours per week

4. Which educational television shows does your child view most frequently? Circle all that apply.

- *Sesame Street*
- *Between the Lions*
- *Blue’s Clues*
- *Pinky Dinky Doo*
- *Word Girl*
- *Word World*
- Other, please specify ________________
5. What is the highest level of maternal education? Circle one.

- Less than high school
- High school diploma/equivalent
- 2-year college degree
- Bachelor's degree
- Graduate degree

Thank you for participating in this survey.

Sincerely,

James B. Godfrey
Old Dominion University
Appendix B

Teacher Training Implementation Schedule

Time: 3 hours

1. Importance of Early Foundations for Literacy

2. Educational Television as Intervention

3. Questions Regarding the Efficacy of Television as a Positive Medium for Children

4. Theoretical Framework
   
   A. Bandura’s Social Learning Theory
      
      i. Imitative learning
      
      ii. Self-efficacy
   
   B. Vygotsky’s Social-Historical Theory
      
      i. Zone of Proximal Development
      
      ii. Scaffolding

5. Maximizing Reading Instruction

   A. Explicit Print Referencing
      
      i. Findings
      
      1. Children have little contact with print in typical reading experiences.
      
      2. Adults can increase children’s contact with print by calling attention to print.
3. Children who have increased contact with print due to adult scaffolding during shared reading experiences manifest acceleration in the development of print knowledge.

ii. Print Knowledge

1. Print organization

2. Print meaning

3. Letters

4. Words

iii. Engaging Children

1. Verbal references
   a. Questions about print
   b. Comments about print
   c. Requests about print

2. Non-verbal references
   a. Points to print
   b. Tracks print

3. High support strategies
   a. Modeling the answer
   b. Eliciting the answer
   c. Coparticipation
   d. Reducing choices/Giving alternatives

4. Low support strategies
   a. Prediction
b. Explanation

c. Relating to child's experience

d. Encouragement

B. Dialogic Reading

i. PEER Sequence

1. Prompt
2. Evaluation
3. Expansion
4. Repetition

ii. CROWD Prompts

1. Completion
2. Recall
3. Open-ended
4. Wh-questions
5. Distancing

6. Statement of the Problem

7. Demonstration of the Application Interactive Reading Techniques to an Episode of *Word World*

8. Teachers will practice applying Interactive Reading Techniques to Episodes of *Word World*. Teachers will receive instructor feedback regarding these practice sessions
Ongoing

Time: Varies

1. Teachers will receive written feedback in weekly meetings between experimenter and teachers in the experiment groups. This written feedback will be used in conjunction with taped recordings of interactive reading sessions so that teachers will be able to improve upon their techniques.

2. Teachers in the experimental group will use *Engaging Children with Print: Building Early Literacy Skills through Quality Read-Alouds* (Justice and Sofka, 2010) as a reference throughout the intervention.
Appendix C
Interactive Reading Sample Dialogues

Bed Bugs

Target: Environmental Print

❖ High-Support Examples

1) TECHNIQUE: MODELING THE ANSWER
Teacher: In this show, most of the animals, buildings, and things are made up of letters and words. The word school just turned into a school. Who can show me where we see more letters and words?
Child: Right there? *(points to DUCK)*
Teacher: Exactly! Now watch that word turn into a duck.

2) TECHNIQUE: ELICITING THE ANSWER
Teacher: That word just turned into a building. Can anyone tell me what type of building that is?
Child: Is it a house?
Teacher: You are close. It is a barn, *(points to the letters)* b-a-r-n. It is a house for animals.

❖ Low-Support Examples

1) TECHNIQUE: ENCOURAGEMENT
Teacher: Who can find a G here at the park? I bet you can, George, since you spell it in your name all the time.
Child: It’s right there.
Teacher: You got it. It’s the last letter in the word swing.

2) TECHNIQUE: EXPLANATION
Teacher: Can anyone read what this word says?
Child: Word!
Teacher: Right on! You knew this word because this is a show about words.
Bed Bugs

Target: Upper- and Lower-Case Forms

❖ High-Support Examples

1) TECHNIQUE: COPARTICIPATION
   Teacher: This is an upper-case B.
   Child: Where?
   Teacher: It’s right here. (*Teacher points to the “Bs” in the title for “Bed Bugs”). These two letters are the upper-case letter “B”.

2) TECHNIQUE: REDUCING CHOICES/GIVING ALTERNATIVES
   Teacher: Which letter is the lower-case “b” and which is the lower-case “d”?
   Child: (Points to b and says b)
   Teacher: That’s right. This is the lower-case “b” and the other is the lower-case “d”.

❖ Low-Support Examples

1) TECHNIQUE: RELATING TO THE CHILD’S EXPERIENCE
   Teacher: What lower-case letter is this? Jed, I bet you know because your name has this letter in it.
   Child: d!
   Teacher: That’s right! It’s a d.

2) TECHNIQUE: EXPLANATION
   Teacher: Which insect begins with an upper-case letter?
   Child: “Bug”
   Teacher: That’s right. “Bug” begins with an upper-case “B” and “bee” begins with a lower-case “b”.

Bear's Bed Sled

Target: Concept of Reading

❖ High-Support Examples

1) TECHNIQUE: ELICITING THE ANSWER
Teacher: This show is called Bear's Bed Sled. See the snow falling? What do you think this show will be about?
Child: Sleeping? Sledding? Playing in the snow?
Teacher: Maybe all of these. We are going to watch the show, and when we see words appear, we will read them. These words will help us to understand what is happening in the show.

2) TECHNIQUE: MODELING THE ANSWER
Teacher: Since this show is called Bear's Bed Sled, I think that Bear is going to make a sled out of her bed. What else do you think she'll do?
Child: Ride her sled down a hill?
Teacher: I think you are right. Let's watch and see all the things Bear does during the show.

❖ Low-Support Examples

1) TECHNIQUE: PREDICTION
Teacher: Today, we are going to watch a show with all sorts of words in it. Look at this first scene. What do you think this show will be about?
Child: Winter? Snowball fights?
Teacher: It could be. Let's watch the show, read the words, and find out.

2) TECHNIQUE: RELATING TO THE CHILD'S EXPERIENCE
Teacher: Look at this scene. Does anyone's room look like this? See the word trunk?
Child: Yes, I have a trunk just like that where I put my toys.
Teacher: How about that? And, this trunk actually tells you it's a trunk because of the letters (points) t-r-u-n-k.
Bear’s Bed Sled

Target: Concept of Letter

❖ High-Support Examples

1) TECHNIQUE: COPARTICIPATION
Teacher: These are the letters “e” and “d”. We see these letters in lots of words. We see “e” and “d” in the words “bed,” “sled,” and “shed”. Let’s point to all the letters “e” and “d” we see.
Child: (points to “e” and “d”)
Teacher: Exactly! And, we’ll see the letters “e” and the “d” a few more times. Help me find them.

2) TECHNIQUE: MODELING THE ANSWER
Teacher: The letter “s” is in this word (points to sled) and this word (points to sled again). It’s also here in shed. Does this mean I can use the letter “s” in other words?
Child: Yes?
Teacher: That’s right. We see the letter “s” in words like sit, sad, Sam, and Sally.

❖ Low-Support Examples

1) TECHNIQUE: RELATING TO THE CHILD’S EXPERIENCE
Teacher: Can you think of any other words that end in “ed”? Ted, I bet you can.
Child: Ted! And Red!
Teacher: That’s right! Your name ends in “ed” and so does the color red.

2) TECHNIQUE: EXPLANATION
Teacher: Can you find all the words on this screen that end in the letters “ed”? 
Child: Bed, sled, shed 
Teacher: That’s right. The letters “ed” are in all those words. In fact every letter of the alphabet is used to make all kinds of different words.
Totally Terrific Duck

Target: Print Direction

❖ High-Support Examples

1) TECHNIQUE: REDUCING CHOICES/GIVING ALTERNATIVES

Teacher: *(Freezes screen with the title on it)* Where should I start reading on this screen? Should I begin here *(points the first word in the title)* or here *(points to the last word in the title)*.

Child: Here! *(points to the first word)*

Teacher: That’s right! We begin reading here, and we finish here. *(Runs finger along text)*

2) TECHNIQUE: ELICITING THE ANSWER

Teacher: *(Freezes screen with the title on it)* I start reading here. Who can show me where I start reading?

Child: Here?

Teacher: That’s right! I start here, where the first word is, and I go in this way. *(Runs finger along text)*

❖ Low-Support Examples

1) TECHNIQUE: EXPLANATION

Teacher: *(Freezes screen with the title on it)* Where do I start reading?

Child: Here!

Teacher: That’s right! We always start reading here *(points to first letter in first word)* and stop reading here *(points to last letter in last word)*.

2) TECHNIQUE: ENCOURAGEMENT

Teacher: *(Freezes screen with the title on it)* Samantha, can you show me which way I should read this screen? I bet you know this—you showed us last time.

Child: This way. *(Runs finger in correct direction)*

Teacher: I knew you would remember. Good job! We read this way, just like Samantha showed us.
Totally Terrific Duck

Target: Letter Names

❖ High-Support Examples

1) TECHNIQUE: ELICITING THE ANSWER
Teacher: Look, both of these words begin with the letter “t” – totally and terrific. Wow, that’s neat? What’s the name of this letter? (points to the t’s)
Child: (call out “t”)
Teacher: Yes, this is the letter “t”. Great job! We’ll see more “t’s” during the show. Let me know when you see one.

2) TECHNIQUE: MODELING THE ANSWER
Teacher: That’s the word “nest” right there. The letter “N” is the first letter in that word. Who can tell me the first letter in this word? (points to “Duck”)
Child: It’s a Duck.
Teacher: You said the word Duck just the right way. That is the whole word. The name of the first letter in Duck is “D”.

❖ Low-Support Examples

1) TECHNIQUE: RELATING TO THE CHILD’S EXPERIENCE
Teacher: Do you see the tie around Bug’s neck? How about Duck’s neck? Whose daddy wears a neck tie? Terry, I think you can name the first letter of that word since you use it every day when you write your name.
Child: T!
Teacher: I knew you could do it! The word tie begins with the letter “t”.

2) TECHNIQUE: ENCOURAGEMENT
Teacher: We have talked about the letters we see in words. You all did such a good job that we are going to do it again. When I point to the words
in the title, I want you to call them out. *(Points to the individual letters in the title)*

Child: (Call out letter names)

Teacher: I like how you are calling out the letter names. Right! This is a T, O, T, etc.
Welcome Home, Duck

Target: Function of Print

❖ High-Support Examples

1) TECHNIQUE: ELICITING THE ANSWER
Teacher: These words tell us where we are. Where are we?
Child: Word World!
Teacher: You are exactly right! These words tell us we are in Word World!

2) TECHNIQUE: REDUCING CHOICES/GIVING ALTERNATIVES
Teacher: This word has the letters s-u-n. Will this word turn into a sun or an airplane?
Child: Sun?
Teacher: Yes, let's watch the word sun turn into the sun.

❖ Low-Support Examples

1) TECHNIQUE: PREDICTION
Teacher: What do you think the words on the banner mean?
Child: They say hi to Duck?
Teacher: Almost. They say Welcome Home, Duck. Frog made a banner with words to welcome his friend home.

2) TECHNIQUE: EXPLANATION
Teacher: Can you show me the words on the banner.
Child: Here?
Teacher: That's right! These words on the banner are to let Duck know that Frog is happy he is home.
Welcome Home, Duck

Target: Letters and Words

❖ High-Support Examples

1) TECHNIQUE: COPARTICIPATION
   Teacher: This title has three words in it, Welcome Home, Duck. Let’s count the words while I point. (Points to words and counts them)
   Teacher and Children: 1-2-3
   Teacher: Yes – three words in this title. Now let’s count each letter in the word welcome.
   Teacher and Children: 1-2-3-4-5-6-7
   Teacher: Very good. Seven letters. How many letters are in the word welcome?
   Children: Seven!
   Teacher: Yes, there are seven letters in the word welcome.

2) TECHNIQUE: ELICITING THE ANSWER
   Teacher: Does this sign have three words or three letters on it?
   Child: Letters?
   Teacher: Almost – this sign has three words on it. Let’s count them: 1-2-3. Now let’s count the letters in the words. There will be many more letters than words. (Teacher counts.)

❖ Low-Support Examples

1) TECHNIQUE: EXPLANATION
   Teacher: How many letters are in the word block?
   Child: Five.
   Teacher: That’s right. There are five letters in the word block: b-l-o-c-k.

2) TECHNIQUE: ENCOURAGEMENT
   Teacher: How many letters are in the word rock? Jan, I’ll bet you know this.
   Child: 1-2-3-4
   Teacher: Exactly! Those four letters make up the word rock.
The Really Red Ruby

Target: Concept of Words in Print

❖ High-Support Examples

1) TECHNIQUE: ELICITING THE ANSWER
   Teacher: We are going to watch a show called The Really Red Ruby. This show has lots and lots of words in it. Who can point to four words in this title?
   Child: Points at the four words.
   Teacher: Right! Each of these is a word in the title of the show.

2) TECHNIQUE: REDUCING CHOICES/GIVING ALTERNATIVES
   Teacher: I’m looking at a thing that has a word on it. Does this have a word (points to a rock with the word rock on it) or does this have a word (points to a flower with no word on it)?
   Child: The rock has a word on it.
   Teacher: Right, the rock is spelled out in a word, and the flower is not.

❖ Low-Support Examples

1) TECHNIQUE: EXPLANATION
   Teacher: I see a word on this screen. Can anyone point to this word?
   Child: Points to ruby.
   Teacher: That’s right. The word ruby is spelled out right next to a real ruby.

2) TECHNIQUE: ENCOURAGEMENT
   Teacher: Who can find the word on this screen? Steve, I bet you can do this.
   Child: Points to the word raft.
   Teacher: Exactly! That is the word raft. You got it. Now, watch it turn into a raft that they can use to ride on the water.
The Really Red Ruby

Target: Word Identification

❖ High-Support Examples

1) TECHNIQUE: COPARTICIPATION
   Teacher: This word says ruby. I'll point to it and let's say it together! I bet we'll see this word again! Remember what it looks like so you can help me read it when we see it.
   Teacher and Children: 'Ruby!'
   Teacher: That's a fun word to say. Yes, this is the word ruby.

2) TECHNIQUE: ELICITING THE ANSWER
   Teacher: This word is ruby. What is this word?
   Child: Ruby.
   Teacher: Great job! This word does say ruby.

❖ Low-Support Examples

1) TECHNIQUE: EXPLANATION
   Teacher: Where are Frog and Sheep walking toward?
   Child: The mountains!
   Teacher: That's right. And, those mountains spell the word mountain.

2) TECHNIQUE: RELATING TO THE CHILD'S EXPERIENCE
   Teacher: What word do you think this is? (points to the word rope) John, I bet you know this word because I saw you jumping with one yesterday.
   Child: A rope.
   Teacher: Yes! Now let's watch the word rope turn into an actual rope.
Fire Fighters to the Rescue

Target: Letters and Words

❖ High-Support Examples

1) TECHNIQUE: COPARTICIPATION

Teacher: This screen has five words on it, Fire Fighters to the Rescue. Let’s count the words (points and counts)

Teacher and Children: 1-2-3-4-5!

Teacher: Great! There are five words on this screen. Now let’s count each letter in the word Fighter.

Teacher and Children: 1-2-3-4-5-6!

Teacher: Excellent! There are six letters in the word Fighter.

2) TECHNIQUE: ELICITING THE ANSWER

Teacher: This screen has five words on it. Does this screen have five words or five letters on it?

Child: Words!

Teacher: Yes, this screen has five words on it! We’ll find that there are many more letters than words on the screen. Let’s count the letters (begins counting).

❖ Low-Support Examples

1) TECHNIQUE: EXPLANATION

Teacher: How many letters are in the word Fire?

Child: Four!

Teacher: That’s right! There are four letters in the word Fire: F-i-r-e.

2) TECHNIQUE: ENCOURAGEMENT

Teacher: How many letters are in the word Rescue? Anne, I bet you know. We counted letters yesterday.

Child: 1-2-3-4-5-6!

Teacher: Great job! Those six letters make up the word Rescue.
Fire Fighters to the Rescue

Target: Word Identification

❖ High-Support Examples

1) TECHNIQUE: ELICITING THE ANSWER
Teacher: This word says rescue. Who can tell me what this word is?
Child: Rescue!
Teacher: You are exactly right. This yellow word says rescue.

2) TECHNIQUE: MODELING THE ANSWER
Teacher: I'm looking for the word box. Where can I find box? I'll look for it
on the screen. Ah! Here it is. This word says box. Who knows this
word?
Child: Box!
Teacher: This word is box. You all knew that. Great job!

❖ Low-Support Examples

1) TECHNIQUE: EXPLANATION
Teacher: Who knows what word this is? (points to the word fire)
Child: Fire!
Teacher: Excellent! Yes, this word says fire. You knew that because we read it
earlier in the title of our show.

2) TECHNIQUE: PREDICTIOIN
Teacher: This show is called Fire Fighters to the Rescue. Who can tell me
what words we might find in a show about fire fighters rescuing?
Give me some words, and we'll see if we can find them in the show.
Child: Fire, smoke, water!
Teacher: These are great guesses. Let's look for these words in the story.
Race to the Spaceship

Target: Concept of Letter

❖ High-Support Examples

3) TECHNIQUE: ELICITING THE ANSWER

Teacher: Look at this screen. The title reads, “Race to the spaceship.” I see the letter e a few times. Can someone point to all the words with the letter e in them?

Child: (points to all the words)

Teacher: Well done. All three of these words have the letter e in them.

4) TECHNIQUE: COPARTICIPTION

Teacher: This word says Spaceship. The letter p shows up two times in this word. Let’s make the shape of a p with our finger.

Teacher and Children: (make the shape of a letter p in the air)

Teacher: Excellent! The letter p is like a stick with a circle. It shows up twice right here in Spaceship.

❖ Low-Support Examples

1) TECHNIQUE: ENCOURAGEMENT

Teacher: You have done such an excellent job of finding letters today. Let’s try again. Who can find the letter k on this screen?

Child: (child points to the o in boat)

Teacher: Great job! There is the letter k in the word bike.

2) TECHNIQUE: EXPLANATION

Teacher: Can anyone point to the word that has two of the same letters in it?

Child: (points to racecar)

Teacher: Great job! And even though they are the same letters, one sounds like “s” and one sounds like “k”.
Race to the Spaceship

Target: Short Words and Long Words

❖ High-Support Examples

1) TECHNIQUE: REDUCING CHOICES/GIVING ALTERNATIVES

Teacher: Look at these two words. Which do you think is a short word—this word (points to the) or this word (points to spaceship)?

Child: (points to the)

Teacher: You are exactly right. The word the is a short word. It has only three letters in it. Spaceship is a long word—it has nine letters in it.

(Counts letters)

2) TECHNIQUE: MODELING

Teacher: Wow! That car is going really fast! This word (points to racecar) is a long word. It has (begins counting) seven letters in it. Is racecar a long word or a short word, do you think?

Child: Long word!

Teacher: Racecar is a long word with seven letters in it. Let's look back at the word car (rewinds show). Car is a short word with only three letters in it.

❖ Low-Support Examples

1) TECHNIQUE: RELATING TO THE CHILD'S EXPERIENCE

Teacher: This is the word boat. Annabel, is this word longer or shorter than your name?

Child: Shorter!

Teacher: Great job! The word boat has (counts the letters) four letters, and your name Annabel has (counts the letters) seven letters.

2) TECHNIQUE: PREDICTOIN

Teacher: Here is the word speedboat. Do you think speedboat will be one of the longest or shortest words in the show?

Child: Longest!

Teacher: Exactly! We know this because the word speedboat has nine letters in it.
Sandbox Surprise

Target: Title of Show

❖ High-Support Examples

1) TECHNIQUE: ELICITING THE ANSWER
   Teacher: This is the name of our show. It says Sandbox Surprise. What is the name of our show?
   Child: Sandbox Surprise!
   Teacher: You got it!

2) TECHNIQUE: COPARTICIPATION
   Teacher: We can find the name of the show at the beginning. Let’s point to it together.
   Child: (Points with teacher)
   Teacher: Great job! We just pointed to the title of our show: Sandbox Surprise.

❖ Low-Support Examples

1) TECHNIQUE: PREDICTOIN
   Teacher: Since the name of this show is Sandbox Surprise, what do you think will happen?
   Child: They might play in a sandbox. They might go to a park.
   Teacher: These are excellent predictions. Let’s find out what happens.

2) TECHNIQUE: EXPLANATION
   Teacher: What are the words at the start of the show called?
   Child: It’s name?
   Teacher: That’s right! The words at the beginning of the show tell us the title of the show. The title is the name of the show. The title of this show is Sandbox Surprise.
Sandbox Surprise

Target: Upper- and Lower-Case Forms

❖ High-Support Examples

1) TECHNIQUE: REDUCING CHOICES/GIVING ALTERNATIVES
   Teacher: Let's read the title again, Sandbox Surprise. The word Surprise has two versions of the letters s. Which is the upper-case S, this one or this one (points to the two letters).
   Child: (points to the first s)
   Teacher: You got it!

2) TECHNIQUE: COPARTICIPATION
   Teacher: Now I'm going to point to the upper-case S in Surprise (points to the letter) and to the lower-case s in Surprise (points to the letter). When I point I want you to call out upper-case or lower-case. (points to the second s)
   Child: lower-case!
   Teacher: Right! That's the lower-case s in surprise.

❖ Low-Support Examples

1) TECHNIQUE: ENCOURAGEMENT
   Teacher: Let's count the number of upper-case letters in the title of our show. Amy, I bet you can do it. You are great with upper-case letters?
   Child: (points to the two upper-case letters) Two!
   Teacher: That's exactly right! I knew you could do it!

2) TECHNIQUE: EXPLANATION
   Teacher: Mary, show a lower-case letter in our title.
   Child: (points to the b)
   Teacher: Very good. That is the lower-case b. Let's see if we can find an upper-case B later in our show.
VITA

James B. Godfrey
524 Wedge Drive
Virginia Beach, VA 23462
Email: jbgodfrey@odu.edu
Cell Phone: 757-589-6670

Education:
Old Dominion University, Norfolk, VA
PhD. in Early Childhood Education, December, 2014

Old Dominion University, Norfolk, VA
M.S. in Secondary Education, August, 1997

Duke University, Durham, NC
B.A. in Political Science, May, 1988

Teaching Experience:

06/10 – Present
Old Dominion University, Norfolk, VA
Adjunct Instructor, TLED

09/00 – Present
Virginia Beach City Public Schools, Virginia Beach, VA
English Teacher

01/00 - 06/00
Wake County Public School System, Raleigh, NC
Language Arts Teacher

08/97 - 06/98
Roanoke County Schools, Roanoke, VA
English Teacher